PUNJAB DISTRICT GAZETTEERS
VOLUME XVIII-A

MONTGOMERY DISTRICT

PART A

WITH MAP

BY

F. B. WACE, I.C.S., AND F. C. ISHAM, I.C.S.

1933

Revised Edition

COMPILED AND PUBLISHED UNDER THE AUTHORITY OF TH
PUNJAB GOVERNMENT.



Lahore:
Printed by the Superintendent, Government Printing, Punjab.

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Printed by the Superintendent, Government Printing, Punjab

1932

Price : 57.00

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PREFACE.

THIS is the third edition of the Montgomery District Gazetteer. The first was compiled and published in 1884, and the second by Mr. (now Sir Patrick) Fagan, Settlement Collector, in 1899-1900. This the third edition has been compiled by Mr. F. B. Wace, I.C.S., late Colonization Officer, Nili Bar at Pakpattan and Mr. F. C. Bourne, I.C.S., Settlement Officer, Lower Bari Doab Canal Colony. Since the second edition was published there have been profound changes in the general make up of the district. The considerable trans-Ravi portion has been removed, while agricultural conditions throughout the district have been revolutionised by the construction of the Lower Bari Doab Canal and the canals of the Sutlej Valley Project. The editors have retained such portions of the previous gazetteers as are still relevant. In particular for most of the historical material, for the description of the ancient tribes inhabiting the district and for an exhaustive discussion of the flora the editors are indebted to Mr. Purser's classical Settlement Report of 1878.

In compiling this volume the editors have received invaluable assistance from numerous departmental officers, and in particular from Mr. W. F. G. LeBailly, I.C.S., till recently Deputy Commissioner. The editors desire to acknowledge the courtesy of Mr. Arthur Probsthain of 41-Great Russell Street, London, for according permission to them to incorporate in the gazetteer extracts from Sir John Marshall's book on "Mohenjo-Daro and the Indus civilisation." The Director of Land Records has been good enough to arrange for the compilation of the maps at the end of this Volume. Generally individual contributions have been acknowledged in the text.

The greater part of this revision was carried out in 1933, and no endeavour has been made to bring the gazetteer up to date beyond that year. Publication has since then been delayed mainly in order that Government orders on the Lower Bari Doab Colony settlement might be included.

SIMLA :
14th July 1934.

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CHAPTER I.—DESCRIPTIVE.

Section A.—Physical Aspects.

(a) Name and area.

The District of Montgomery was so named, to quote a later section of this book, by way of a doubtful compliment to Sir Robert Montgomery, who was Lieutenant-Governor of the Province in the year 1865 when the headquarters were first moved from Gugera. The universally accepted vernacular form of the name is Mintgumri, although from a desire, apparently, to involve more than one ruler of the Province in the doubtful compliment, the form Mintgumarency has also been perpetrated.

The total area of the District is 2,722,412 acres or 4,253 square miles,* slightly larger than the combined areas of Devonshire and Somersetshire. The Headquarters station lies on the main Lahore-Karachi line of the North-Western Railway, and is almost exactly equidistant from Lahore and Multan, its position having been fixed, if tradition is to be believed, with a pair of compasses. The only habitation in the neighbourhood before the foundation of the modern town was a small settlement of local Sahu tribesmen called Sahiwal; even now the headquarters is generally referred to by this name among the Janglis. Its latitude is 30—40′ North, its longitude 73—10′ East, and approximate height above sea level is alleged to be 500 feet.

*Area of Tahsils.

	Acres.	Sq. miles.
Okara	460,307	719
Montgomery	790,447	1,235
Dipalpur	616,482	963
Pakpattan	855,176	1,336
	2,722,412	4,253

(b) Boundaries and general configuration.

The District forms roughly a parallelogram lying in the general direction north-east to south-west, between the rivers Ravi and Sutlej. It is approximately 80 miles from north-east to south-west and 55 miles from north-west to south-east—Ravi to Sutlej. The Ravi now forms the north-western boundary for the whole length of the District, with the District of Lyallpur on its further bank; similarly, on the south-east runs the River Sutlej, dividing the District from the Bahawalpur State and the Ferozepore District. On the north-east and the south-west lie the Districts of Lahore and Multan, but in neither case is there any clearly defined natural boundary. The historical section of the Gazetteer will show that the boundaries of the District have been subject to considerable variation in the past, and it is possible that the future may see still more radical changes, as with the extensive

CHAP. I, A. Physical Aspects.

development that has taken place both the Montgomery and the Multan Districts have become almost intolerably heavy charges, and the creation of a new district is much to be desired.

The District now comprises four Tahsils, Montgomery, Dipalpur, Okara and Pakpattan. Of these only Pakpattan has been the headquarters of a tahsil since the inception of the District; the three others were formerly at Harappa, Gugera and Hujra. The Okara and Montgomery Tahsils lie north of the old bed of the Beas, and receive irrigation from the Lower Bari Doab Canal; the Dipalpur and Pakpattan Tahsils lie to the south of it, and are now served by canals of the Sutlej Valley Project.

The extent to which canal irrigation has changed the character and even the physical aspects of the District can best be realised by a reading of the following extract from the last edition of the Gazetteer (1898-99) :—

"Almost in the middle of the District is the Bari Doab a ridge of high land runs from north-east to south-west, the whole length of the District. This ridge is often called the Dhaya, though the term is more properly applied to the slope to the top of the ridge from the lowlands at its foot. This slope is generally gradual and in places, especially on the northern or Ravi side of the ridge, almost imperceptible. The slope on the southern or Sutlej side is more marked, and towards the Lahore border it becomes very abrupt, and is cut into deep chasms by the rain-water running down into the valley beneath. The edge of the high bank here bears a remarkable resemblance to the right bank of the Beas as seen at Phillaur. The average breadth of this ridge is about ten miles. The country slopes down from the top of it to the rivers, the slope to the Sutlej opposite Montgomery being about 40 feet and to the Ravi half that. The Sutlej runs at an average distance of 25 miles from the centre ridge, the Ravi nowhere at a greater distance than 16 miles; while from Chichawatni to the Multan District the ridge forms the left bank of the Ravi. It is generally supposed that at some period in the long past, the Beas ran close under the ridge to the south and the Ravi to the north. The latter stream, following the usual course of the Punjab rivers, edged away to the west, while the Beas altered its course and fell into the Sutlej. This centre plateau is almost entirely uncultivated. The soil is generally inferior and saline; in places remarkably so. With a plentiful supply of water and good cultivation the greater portion of the land could be brought to bear fair crops. When the rains have been favourable grass grows abundantly. But even in the best seasons there are vast stretches of land where not a blade of grass is to be seen, and where even the hardy lana, a salsolaceous plant, is unable to live. In other places the lana flourishes; while in the better parts of this arid region the wan, jand and karil, relieved by a rare farash, are the only plants found that can lay claim to be more than mere shrubs. Water lies from 60 to 70 feet below the surface; it is sometimes very good, sometimes so brackish as to be almost undrinkable. The quality seems better towards Multan and worse

towards Lahore. The wisdom of our predecessors saw fit to locate the Sadr station of the district in one of the most arid and dreary spots to be found in the howling wilderness described above; in consequence whereof Montgomery has earned its unenviable but well-deserved reputation of being the worst penal settlement for Europeans in this part of India. The country between the ridge and the rivers is of a more hospitable character. The soil is generally of good quality; saline tracts are rare, and of no great extent: water is generally sweet and near the surface; vegetation is more abundant; and a considerable portion of the country is under cultivation. The *kikar* is indeed rare, except along the rivers or canals; and the better classes of trees are, of course, still less commonly met; but the *farash* grows in most places where there is a hollow in which the rain-water can lodge; and the trees mentioned in the preceding paragraph are more numerous and of a fairer growth than is usually the case on the ridge. The *farash* is the only tree that flourishes in the district; and the Ravi side appears to agree much better with it than the Sutlej side of the district. The vast extent of uncultivated land forming the north-western portion of Pakpattan, the southern *tahsil* of Montgomery, is, however, very little better than the ridge. Cultivation is chiefly confined to the land close along the rivers and to the tracts irrigated by the inundation canals in the Dipalpur and Pakpattan *tahsils*."

The uncultivated tracts of the district are known as the *bar*. They are thus described in Lieutenant Elphinstone's Settlement Report:—

"This waste is divided by the Jats of the Bari Doab into four distinct tracts—the Ravi *bar*, or jungle traversed by the old Ravi; the Ganji *bar*, which occupies the crest of the ridge called Dhaya; the Bias *bar*, traversed by the bed of the old Bias: and the Nili *bar*, which intervenes between the latter and the cultivated lands adjoining the Sutlej. The Ganji *bar* as might be expected from its elevated situation, is the most arid and naturally barren portion of the whole district. The other divisions of the *bar* jungle are chiefly composed of soil of good quality, which only requires irrigation to produce remunerative crops. The Ravi *bar* is at present remarkable for the dense forest with which it is clothed. This belt of forest, known as the *farash* jungle, extends for about 40 miles from Chuchak, in *parganah* Gugera, to Harappa."

To the ordinary observer, the "ridge of high land" is now unnoticeable; the Lower Bari Doab Canal follows its course for the greater part of its length, and irrigates both it and the lands on both sides of it, up to the Ravi riverain on the north and the Sukh Beas on the south. The "centre plateau", then almost entirely uncultivated, has now received the plentiful supply of water which it needed, and, though there are tracts of land which have defied the efforts of the cultivator and scientific and costly treatment by the Agricultural Department, the estimate that the greater portion of the land could be brought to bear fair crops has been fully justified. Whether the Sadr station has yet lived

CHAP. I, A. Physical Aspects.

down its unenviable reputation as a penal settlement is a matter of opinion; irrigation has at least made it a station of shady trees and green gardens, and the local Municipal Committee placed it on record, in an address to a visiting Governor, that it was their ambition to make Montgomery "a nice cosy little spot". They have not yet done so.

The Sukh Beas forms the boundary not only between the northern tahsils of Okara and Montgomery, and the southern tahsils of Dipalpur and Pakpattan, but also between the irrigation systems of the Lower Bari Doab and the Sutlej Valley, the latter having been, of course, only recently completed. The "vast extent of uncultivated land forming the north-west portion of the Pakpattan Tahsil" is thus also slowly being transformed into closely-populated agricultural country, though here again there are some parts which have so far refused to bear profitable crops.

Briefly it may be said that there is no part of the District to which the skill and persistence of the irrigation engineers of the Punjab have not brought the means of development and prosperity; new towns, of quite astonishing ugliness, have sprung up, and the distinctive scenery of the district, which was formerly that of the open and untrammelled, if arid, desert, has now been replaced by the soul-destroying regularity of rectangulated fields and villages built to type. The Ravi and Sutlej riverains and the older-populated parts of the Dipalpur Tahsil afford a welcome relief from this monotony.

(c) River system.

The only natural streams of the District are the Sutlej and the Ravi, which form its southern and northern boundaries.

The Sutlej.

The Sutlej is generally known by that name in the Dipalpur Tahsil; in Pakpattan its traditional name is the Nili, on account of the colour of its waters; in most circumstances this colour is not very obvious, but it is noticeable in shallow, slow-moving channels which are clear of silt. The course of the river, which was described in the last edition of the Gazetteer as "tolerably straight" but very changeable, has been greatly affected by the construction of the weirs at Ferozepore, Sulemanke and Islam (the last being in the Multan District). It is not only that at these points the river is tied down to definite channels, but that at most times of the year the volume of water left in the river is so greatly diminished that there is less tendency to wander. Nonetheless, the variations are still considerable in some reaches, the short but very violent flood season often blocking old channels and opening out new for the ordinary winter flow. The bed of the river has presented new and difficult problems to the engineers responsible for designing and maintaining the weirs; a sufficient

period has not yet elapsed since the building of the weirs to judge of their full effect on the inundations in the riverain villages above and below them. The average discharge in the river above Sulemanke in each month (measured over a period of three years) is as follows :—

	Cubic feet per second.
January	4,719
February	3,068
March	4,526
April	4,557
May	6,921
June	15,088
July	66,338
August	119,502
September	39,312
October	29,388
November	5,176
December	3,806

This discharge of course depends to some extent on the amount of water that is being taken off from the weir at Ferozepore.

The surface slope of the Sutlej varies much in short lengths, and has been found to range from 1 in 10,150 to 1 in 3,333 ; the average slope is about 1 in 5,000. The silt carried by the Sutlej, compared with that in the other Punjab rivers, is small in quantity and deficient in fertilizing quality. The bed of the river is broad and sandy, and the bank generally abrupt, but not more than 10 to 12 feet high ; large islands are found in the river, known as *donas* in Dipalpur and *bilaras* in Pakpattan. The river was formerly not fordable in Montgomery, but now in years of low supply, when the canals are drawing up to their indent, it can be crossed on foot in many places in the winter.

The Ravi. The Ravi has a longer course than the Sutlej, but is a much smaller river. Its banks are generally well defined and its course is considerably less tortuous than it used to be. The bed is less sandy than that of the Sutlej and the soil deposited by floods is of exceedingly good quality. But the volume of water in the flood season seems during the last 50 years to have decreased remarkably. Its stream dwindles to a very small size in the cold weather when it is fordable in many places and in some is less than 50 yards across. Of course with such a small stream islands can rarely be formed. Mr. Fagan in 1900 reported the average cold weather discharge at Shahdara—near Lahore—over a period of five years to have been 1,310 cusecs. The opening of the Upper

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Bari Doab Canal had naturally caused a great diminution in the amount of water in the stream during the cold season, but Mr. Fagan thought it doubtful whether it could seriously diminish the supply when the river was in flood. It is sometimes stated that the construction of the weir at Balloki on the opening of the Lower Bari Doab Canal tended further to decrease the water supply. Under the rules now in force the Lower Bari Doab Canal can for the most part only use the water brought down by the Upper Chenab Canal and passed over the level crossing at Balloki. The Lower Bari Doab Canal has no claim on Ravi water unless more than the indent of the Sidhnai Canal (usually 5,000 cusecs) reaches Balloki, in which case the Lower Bari Doab Canal is entitled to take the surplus. There is one exception to this rule, *viz.*, if the discharge reaching Sidhnai Head falls below 100 cusecs, then the Lower Bari Doab Canal is entitled to use the Ravi water reaching Balloki until such time as the discharge at Balloki rises above 700 cusecs. The average discharge in cusecs passing over the weir at Balloki during the winter months in the last five years was as follows :—

Months.	1928-29.	1929-30.	1930-31.	1931-32.	1932-33.
October	5,506	5,943	5,301	5,994	4,186
November	4,335	3,626	4,577	4,667	3,472
December	3,183·8	4,564	2,013	1,991	891
January	1,683	1,688	1,274	3,212	4,443
February	3,057	3,796	4,317	2,993	3,312
March	6,012	5,581	5,945	5,152	5,764

Under these rules it is clear that the Sidhnai Canal must have the first claim on practically all the Ravi water in the cold weather, while in the flood season the full indent of the Lower Bari Doab Canal is generally provided by the Upper Chenab Canal and Ravi water is not required.

Thus the continued failure in whole or in part of the inundations of the Ravi cannot with certainty be attributed either to the Upper Bari Doab Canal or to the Lower Bari Doab Canal. The main cause is probably to be found in the straightening of the bed of the river. The flow of the water being in consequence less checked by bends a smaller quantity spills over the country.

As the fall of the river is much less than that of the Sutlej, the volume smaller, and the soil of the banks of firmer quality, the adjoining villages are less liable to be completely annihilated than they are on the southern river. There is no boat traffic on the Ravi.

Budhs.

Along the rivers numerous inlets or creeks are to be found. Sometimes a branch of the river runs all the year round through these. But generally the entrance of these channels or creeks is higher than the cold weather level of the rivers. During the flood they are filled, and when the rivers fall they are transformed into lakes; a considerable quantity of water remains, which is used for irrigation by means of *jhallars*. These inlets are known as *budhs*. They are the places most suited for the heads of the small water-courses which the people sometimes construct. For as they are withdrawn from the main course of the stream, there is less chance of the head being swept away; and as the velocity of the water falls off when it enters one of these inlets, the sediment it brings down settles to a considerable extent in the *budh*, and the silting of the water-course is checked. Most of the fishing in the District is carried on in the *budhs*. As a rule the water in them does not last till the rivers rise again; indeed in many cases it does not last long enough to mature the spring crops. The construction of the great irrigation weirs has, of course, had the effect of decreasing both the number and size of these inlets; at the same time the extension of non-perennial canal irrigation far down into the Sutlej riverain has rendered less necessary the irrigation which used to be supplied by the *jhallars*.

Drainage channels and *nalas*.

The old Gazetteer has the following observations on the subject of old nalas:—

> A glance at the map will show the remarkable manner in which the whole district between the central ridge and the rivers is cut up by old nalas. These are not only interesting to the antiquarian and student of history, but are also of considerable importance as regards the extension of irrigation in the district, as most of the proposals to this effect make the utilization of one or more of these channels their basis. In some of these nalas bordering on the rivers, a precarious supply of water is even now obtained. The principal nalas are, between the Ravi and the ridge:—

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The Wahni; The Sukhrawa (1); The Sukhrawa (2)
Between the ridge and the Sutlej:—
The old Beas;
The old Sohag, with its off shoots—
(*a*) The Para;
(*b*) The Dhadar;
The Khad;
The Ding, with its branches—
(*a*) The Bhag,
(*b*) The Dhingi,
(*c*) The Kubrar
The Diwanwah,
The Ghag;
The Bakhilwah;
The Bisharat.

There follows a detailed description of the course of each nala; this it does not seem desirable to reproduce here, since under the new conditions most of the smaller nalas have practically disappeared, and their names only occasionally survive in the names of villages; those who are desirous of tracing their source can refer to the earlier editions of the Gazetteer. An account of the larger nalas will be found below; it will be noticed that the observation that most of the plans for the extension of irrigation in the district, take one or more of these channels as their basis, is completely falsified by the later development of irrigational design, for the large schemes which now cover the district have all been worked out independently, and even in spite of these nalas, which are employed, if at all, only as drainage channels or irrigation boundaries. They are, indeed, in many places, particularly in the Pakpattan Tahsil, one of the greatest difficulties that the irrigation engineer has to overcome, on account of their tortuous windings, and deeply eroded banks, and the abruptly varying levels of the land near their course.

The Sukh Beas.

The most important and most clearly defined of the channels which now remain is the Sukh, or Khushk, Beas, which, as mentioned above, forms the boundary not only between the northern and southern tahsils of the District, but also between the irrigation systems based respectively on the Ravi and the Sutlej. Its preservation is thus assured. It enters the Dipalpur *tahsil* near the town of Shergarh, and traverses the whole of the Montgomery district at a distance of about twenty miles from the Sutlej. The

popular story used to be that till the end of the eighteenth century the Beas, instead of joining the Sutlej near Ferozepore, flowed down this *nala*. Lieutenant Elphinstone (1858) doubted the correctness of this story, on the ground that the *nala* could not carry the volume of water in the Beas, which is a very convincing reason. As in the Ain-i-Akbari it is distinctly stated that the Beas and Sutlej united twelve *kos* nearer Ferozepore, the story may be dismissed as fiction. The subsequent change in the point of junction is due to the Sutlej, and not the Beas, having shifted its course; still it is a fact that water came down this *nala* till a comparatively short time ago. The year 1750 is fixed as the date it ceased to flow. There seems no reason to doubt that the *nala* was a branch of the Beas: there is nothing to connect it with the Sutlej. In order to ascertain what it originally was, it will be necessary to determine whether, when the Beas river ran under the Dhaya, it was at such a distance from this *nala* that both could have been independent streams. This might possibly have been the case in Montgomery. The question is, could it in Lahore and Multan? If so, the old Beas may be simply the continuation of the Kapurthala Bein, as the Sohag is of the Phagwara Bein. The *nala* is rarely more than 200 feet across; the depth is from 12 to 15 feet. Its carrying capacity is 3,400 feet per second.

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The only one of these channels in the Ravi Tahsils which retains any importance is that described in the Settlement Report of 1858 as the large Sukhrawa. This is a long and intricate channel which resembles the Sukh Beas in form and *mutatis mutandis* in origin. This channel has no direct access to the Ravi in the Okara Tahsil in which it begins to be distinctly marked in the neighbourhood of Mirak, some 15 miles north-east from Okara. It comes to an end in the neighbourhood of Harappa in Montgomery Tahsil where the Ravi Dhaya and the river converge, the Dhaya becoming practically identical with the left bank of the river near Chichawatni. This channel evidently at one time carried a large volume of water which Mr. Purser in his Settlement Report (1874) considers at one time to have been sufficient to admit of irrigation being conducted from its banks. It has introduced considerable complications in the canal irrigation system, but at the same time it is of value as the most important drainage channel, second to the Ravi itself, in the vicinity. It has now been canalised throughout for drainage purposes and means have been found to bring irrigation water on to practically all the culturable land on its winding banks.

Nalas north of the Sukh Beas.

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The nalas in the Dipalpur and Pakpattan tahsils which still merit description are the Khanwah Sohag, the Para, the Khad, the Bisharat and the Ding.

The nalas south of the Sukh Beas.

The Khanwah, the Sohag and the Para exemplify the older practice of making use of old stream beds to supply irrigation; the Khanwah is now almost exclusively an irrigation channel, whereas the Sohag and Para are used only partially, some portions having recently been thrown out of use as a consequence of the construction of the Sutlej Valley system, and some in previous remodellings of the original inundation canals. The Khanwah enters the Dipalpur Tahsil east of Hujra and following a winding course flows past Dipalpur and Shah Yakka; it is now difficult to say where the original nala ended and where it begins to be a modern irrigation channel; for a description of the new canal system, reference should be made to the appropriate section of the Gazetteer. The original Sohag nala left the Sutlej near Lalu Gudar, flowed past Haveli and from there runs in a westerly direction to some distance past Pakpattan; it then turns due south, but gets lost before it reaches the river again. The capacity of the nala at the head was estimated at 10,000 cubic feet per second. The bed is now generally sandy, and the banks steep; it is about as deep as the old Beas and from 200 to 400 feet broad. The name Sohag is said to mean a place where verdure and cultivation abound. Popular tradition has it that when, about 1760, the Nakkai Sikhs were defeated by the Diwan of Pakpattan near Bhuman Shah, many of the Sikhs were drowned in the Sohag. The Para is a branch of the old Sohag, which it leaves a little below Bunga Hayat, on the Pakpattan-Dipalpur road. The Para is 500 feet broad at its mouth; after one mile the breadth falls to 350 feet, which is again reduced to 200 after five miles; this is maintained for forty miles. The average depth is 10 to 15 feet. A large branch then goes off to the Beas, called the Nawabbin from a Nawab of Multan, who is said to have dug it in the eighteenth century to enable his wife to come down by water to Multan. The width is here 100 feet, which gradually diminishes till at the junction of the Para with the Sukhnai it is only 15 to 16 feet; the depth is three feet. The banks are generally steep. It is the lower reaches of the Para which have caused such difficulties with irrigation in the north-west of the Pakpattan Tahsil.

The Khad.

The Khad belongs to Dipalpur. It commences at Thakarke Mahmud, about nine miles to the east of Haveli, and runs thence to Izzatke Kala. From there, one branch goes straight to Nama Jindeke, one *viâ* Mulia Chishti, Nur Shah, Kanduwal, etc. From Nama Jindke it goes into the Pir Ghani budh. This nala, which

is not more then 20 miles long, is known by no less than four names in different parts of its course. To Maneke Nikkiwala it is called the Nikki; thence to Bukan Gudarke the Budhi, from there to Nama Jindeke the Khad and after that the Warnal. This is a fine deep nala with very steep banks; jhallars were used on it, and sometimes there was fine sailab. These conditions have now been changed, as the new Pakpattan Canal has cut across its course, and stopped off the river floods. The soil on its banks is generally very bad, and impregnated with kallar.

The Bisharat. The Bisharat is a more famous nala than the Khad, of which it is probably the continuation. It issues from the Pir Ghani *budh*, and after a remarkably tortuous course, passing close to Pakpattan, it falls into the Sohag at Pakka Sidhar. It is said to have been excavated by one Bisharat Khan about the beginning of the 14th century. This is clearly wrong. There are no signs of excavation, and it is incredible that anyone would dig such a winding channel, even with the object of diminishing the velocity of the stream, and thereby increasing its irrigating capacity. It was from a ferry on this nala that Pakpattan derived its name. It is a shallow and generally narrow nala; it dried up over 100 years ago, though water has since been occasionally found in it.

The Ding. The Ding is a continuation of an old channel near Pakpattan which was known as the Kamalwah on account of its having been constructed or adapted for irrigation purposes by Khan Kamal, Governor of Dipalpur in Akbar's time. Owing to the changes brought about by successive irrigation schemes in the area, it is now no longer possible to trace the course of the Ding in detail, but the name survives in the village of Darya Ding, south of Arifwala.

Jhils. There are no marshes or lakes in the District worthy of the name. There are a few low-lying places where water collects after heavy rain, or where spill water from the canals is apt to collect, but these are dry for the greater part of the year and are of little interest to either the farmer or the sportsman.

Deserted villages. *Thehs. Kholas.* In all parts of the district, mounds covered with the remains of earthen vessels and broken bricks are to be met, marking the site of what was once a village or town. These are known by the general name *theh* or *khola*, but each mound has a further distinguishing name, to which the general name is prefixed. These remains of former habitations are frequent along the old Beas. It should be remembered that these *theh* are not necessarily the ruins of villages inhabited at the same time. If a village is once abandoned from any cause, it is considered unlucky to build a new village on the old site. So many of these mounds

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merely represent the same village at different periods of its existence. If the history of this part of the Punjab during the 18th century is considered, the perpetual wars, desolating famines, and the general state of insecurity, will be found to afford other and strong reasons, besides the drying up of the irrigating streams, why many cultivated tracts should have relapsed into their primitive state of waste. But to the last-mentioned cause must be attributed the fact that the land was not again brought into cultivation. Not only did the stoppage of the water-supply necessarily lead to the abandonment of land irrigated by flow, but it was accompanied by a serious fall in the level of the water in the wells in the vicinity of the old nalas. Old wells exist all over the District; but most of these had fallen into complete disrepair on the coming of perennial irrigation.

(d) Brief sketch of geology and botany. Geology.

Our knowledge of Indian geology is as yet so general in its nature, and so little has been done in the Punjab in the way of detailed geological investigation, that it is impossible to discuss the local geology of separate districts. But a sketch of the geology of the province as a whole is published *in extenso* in the Provincial volume of the Gazetteer series, and also as a separate pamphlet.

Kankar.

Saltpetre, *kallar.*

The mineral products of the district are few and unimportant. Saltpetre used to be made extensively in this district. The method of manufacture is described in "Punjab Products." Saltpetre is made from saline earth called *kallar*, found on the site of deserted villages, and in the streets and the walls of old towns. This substance is used as a top-dressing by agriculturists. Some found at Dipalpur yielded about six per cent. of saline matter, which, on analysis, was found to consist of common salt mixed with a less quantity of sulphate of soda, and, in addition, very small quantities of lime and magnesian salt. This *kallar* must be carefully distinguished from *kallar shor*, the *reh* of Hindustan, which is most injurious to all cultivation. *Kallar shor* consists principally of sulphate of soda. When strongly developed, *kallar shor* seems to render all vegetation, except that of *phesak lani*, impossible. Soil impregnated with soda and other salts and known as *kallarathi* is common. It is found extensively in the Ganji Bar; in the north-western part of the Pakpattan tahsil; and in a good many of the older estates in Dipalpur which have been long under canal irrigation, and in the higher portions of several estates in the Sutlej riverain tract; in the last named area it appears to be extending with the extension of irrigation from the new canals. Mention should also be made of a variety of soil that is characteristic of some parts of the district, known as *bara* or, in its less virulent form *bari*. This has so far defied all efforts at profitable cultivation, in spite of the establishment of

a special experimental farm by the Agricultural Department at a heavy cost. It appears to be fine clay, heavily impregnated with alkali; when dry it is hard, smooth and shiny, and gives out a resonant tone when ridden over; when wet it is thin, glutinous and as treacherous as a quicksand. It is completely bare of all vegetation and affords a complete effect of mirage in the distance. CHAP. I, A.—Physical Aspects.

The earlier editions of the Gazetteer contained a very detailed account of the flora of the District; this account is so detailed and authoritative that it is reproduced in full in the paragraphs that follow. But it must be observed that the transformation of the District by means of perennial irrigation has also involved a profound change in the vegetation in all parts. Most of the shrubs and grasses described by Mr. Purser are now to be found only in those parts of the District left untouched by irrigation or in those containing soil too inferior for cultivation; and even of the trees, those which are characteristic of the Bar—the *jand*, *wan*, *ukhan* (*farash*), and *karil*—are steadily disappearing and being replaced by the valuable *shisham* and *kikar*. Nowhere is the change more striking than in the Montgomery Civil Station; here, where twenty years ago the *farash* was the only tree that had a chance of thriving, the growth of trees of every kind is now too thick to be healthy, and the problem is to keep them within reasonable limits. Along the roadsides in the Lower Bari Doab area the system of *darakhtpal* grants (whatever its defects from other points of view) has undoubtedly produced many miles of shady avenue trees. In the Sutlej Valley area, the planting of avenues has been carried out by the Public Works Department concurrently with the construction of the roads. The Forest Department is now in possession of three large areas for development as irrigated plantations, one at Chichawatni in the Lower Bari Doab area, and two in the Sutlej Valley Area, near Arifwala and Dipalpur. The Chichawatni Plantation is 11,539 acres in extent and has been under the management of the Department since 1913; those at Arifwala and Dipalpur have been more recently handed over, and much of the land in them is still in the initial stage of preparation by means of ordinary cultivation. Each is of approximately 10,000 acres in extent. Botany.

Mr. Purser's detailed account of the flora of the District is as follows:—

"From what has been said of the character of so much of the soil of the district and of the climate, it will be at once apparent that the natural vegetation cannot be of striking grandeur or beauty. Indeed, it might be called mean and monotonous. A closer examination shows, however, Vegetation.

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that, though stunted, it is far from unvaried. The number of different kinds of grasses and other plants of low growth is considerable. But there are not more than half-a-dozen species of trees of spontaneous growth. With plenty of water the district might become very fairly wooded. Near the rivers there is a good deal of timber, and along the Khanwah canal and in the villages adjoining it, more especially to the south, there is a fine belt of trees; while the abandoned station of Gugera presents specimens of most trees found in the plains of Upper India. The trees commonly met with are the *ukhan*, *kikar*, *ber*, *jand*, *wan*, and *karil*. The *ukhan* (*Tamarix orientalis*), also known as *pharwan* and *farash*, is the characteristic tree of the district. It is an evergreen, hardy and of rapid growth; it is the only tree that thrives at Montgomery civil station. Wherever there is a hollow in the ground an *ukhan* springs up. The timber is of little use, except for fuel. It is sometimes, but rarely, used on the Ravi for the wood-work of wells. The galls of this tamarisk, called *main*, are used for dyeing and tanning. There is another tamarisk with whitish leaves. It is apparently not found on the Setlej, but it is abundant between Chichawatni and Kamalia on the Ravi. *Pilchi* or *jhau* (*Tamarix Indica*) and *lei* (*Tamarix dioica*) are found on both rivers in flooded land. The difference between the two kinds is not very apparent. The twigs are used for making baskets and the cylinders of *kachcha* wells, also for fences to fields, and the sides of houses. The *kikar* (*Acacia arabica*) is very rare in the *bar*. It is not uncommon along the canals and rivers. The timber is used for agricultural implements. The cog-wheels of the Persian-wheel are almost invariably made of it. The fuel is good and much liked. The seeds are eaten readily by goats. The bark is used in tanning and in the distillation of native spirits. A shrub, the *babul*, bearing much the same relation to the *kikar* that the *pilchi* does to the *ukhan*, is occasionally seen; it never grows to such a size as would make its timber valuable. The *Kabula kikar* (*A. cupressi formis*) is rare. The timber is weak. The *ber* tree (*Zizyphus rulgaris* ?) is not uncommon in the cultivated parts of the district. The wood is of good quality, and is used in building. It yields a fine fuel, throwing out a clear heat. The fruit is not much esteemed, except in the case of the *pewandi* or grafted *ber*. The *kokan ber* or *mala* is a small bushy tree. The fruit is much eaten. Good walking-sticks are got from this tree. The *jand* (*Prosopis spicigera*) is always a small tree, rough and gnarled. The wood is strong, and is made into agricultural implements and household furniture. It is much used as fuel, and charcoal is prepared from it. But the charcoal is said to emit too many sparks to be much liked. The seed vessels, called *sangri*, are used as an article of food. This tree is met everywhere in the district, where it has not been cleared away. The great demand for fuel on the Sindh, Punjab, and Delhi Railway causes a steady decrease in the area under *jand*. The *karil* (*Capparis aphyita*) sometimes but seldom becomes a tree. It generally remains a mere shrub. It is found throughout the district. The wood is hard; it is used for rafters and *laths* (*barga*), principally on account of its supposed immunity from the attacks of white-ants. As fuel, it has a high reputation. The unripe fruit is called *dela*, and is used as a pickle. When ripe, the fruit is called *pinju* and is eaten in its natural state. The fruit of this shrub is a great standby to the poor in seasons of scarcity. The *wan* will grow anywhere in the

Trees.

The *ukhan*, *jhan*, *lej*.

The *kikar*.

Babul.

Kabuli kikar, *Ber*

Kokan ber.

Jand.

Karil.

The *wan*.

district. A somewhat saline soil seems to suit it best. It remains a shrub generally; it never becomes the fine tree it does in the Hindustani parts of the province, where it is called *jal*. Camels are fond of its leaves, but no other animal touches them. The wood is used for roofing and fuel, but the fuel is very inferior. It burns badly, gives out a great deal of smoke, and leaves much ash. The fruit is eaten to a large extent. It ripens about May. It is called *pekri* when still unripe, *pilu* when ripe, and *kokan* when dried and preserved.* Certain trees are generally grown about each well. The most common are the *pipal* (*Ficus religiosa*) and the *sohanjni* (*Hyperanthera pterygosperma*) or horse-radish tree. The *chachhara* (*Butea frondosa*) is found on the Ravi, but not on the Sutlej. This is the Hindustani *dhak*; but it never reaches the dimensions attained in the lower parts of the province. It is venerated by Hindus. The dye made from the flowers (*kesu*) and the gum exuded by the plant are well known. There are no other indigenous trees.

Pipal.

Sohanjni.

The chachhra.

There are very few plants, other than trees and grasses deserving of much notice. The *sarr* and the *lana* are the most important. The *sarr* (*Sachharum munja*) is found generally in sandy soil. It is abundant along the rivers and the distributing channels of the canals. There are two kinds, the white-topped and the red-topped, or rather purple-topped. The ropes made from the latter are much inferior to those made from the former. Every portion of this reed is useful. It consists of three parts. The lowest is a stout reed, about half an inch in diameter. This is called *kana*, and is used for roofing houses, and forming the *bands* with which *kachcha* wells are lined, and *pallas* or circular store-houses for grain are made. Above the *kana* comes the *til* in a sheathing petiole called *munj*. The *til* is separated from the *kana* and pulled out of the *munj*. It is used for screens called *pakhi*,† and for winnowing baskets. The *munj* is burned at one end, then beaten with a mallet, and finally twisted into a rope. The rope to which the earthen pots of a well are fastened, is almost invariably made of *munj*. The price varies very much, twenty seers per rupee is about the average. This reed grows in tufts; and in land subject to inundation the limits of proprietary rights are sometimes marked out by lines of *sarr* stools. The plant is usually burned down about the end of February. Fresh green shoots are then thrown out, which are fine fodder for cows and buffaloes, and increase the supply of milk. Many villages sell the produce of this plant for a round sum annually. A good deal of misapprehension to exist about the *lana* plant. There are three kinds of *lana*—*khangan khar* (*Coronylon Griffithii*), *gora lana*, and *maitar lana* (*solsolas*). There is also a plant called *phesak lani* (*Snœda molliflora*). *Sajji* (barilla, an

Plants other than trees and grass.

Sarr.

Khangan khar
Gora lana
Maitar lana,
Phesak lani,
Sajji.

*Mr. Purser, from whose Settlement Report the above paragraph is taken, writes that "I had no opportunity of testing the correctness of the names *pekri*, and *kokan*. They "are not given in "Punjab Products." The Punjabi name *vaur*, entered on page 597, is "not used in the Bari Doab. *Pilu* is certainly the name of the fruit, and seems "improperly applied to the tree itself; but it may be so used locally."

†Hindustani *sirki*. Remarks on page 518 of "Punjab Products" seem incorrect. Three species of *sarr* are mentioned on page 88 of "Punjab Manufactures."

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impure carbonate of soda) is made from the first two. No *sajji* is made from the others. The best *sajji*, called *lota sajji*, is made from *khangan khar*; an inferior quality, known as *bhutni sajji*, from *gora lana*. All four plants can be seen in the Montgomery civil station. There is no *khar* in the Dipalpur *tahsil*; at least only stray specimens will be found; but it is plentiful in Pak Pattan. *Khangan khar* and *gora lana* are smaller plants than *maitar lana*; the first is a thicker and juicier plant than the second; *maitar lana* is usually as ugly a plant as one could wish to see. It grows four or five feet high. It is found everywhere. Miles upon miles of the Pak Pattan *tahsil* are covered with it. *Phesak lani* is found in the Dhayas upland in huge stretches. In the lowland, there are occasionally large patches of it. Wherever it is found, the soil is bad and full of *kallar shor*. It is of a blackish-purple colour, and of no use whatever. Camels and goats eat all kinds of *lana*. Charcoal made from *maitar lana* is used by blacksmiths; while that of *gora lana* is much used in *hukkas*. Both these plants

Ak.

are utilized for fuel. They flower about the end of October. Some bushes have red, and some white flowers. When in flower, the three *lanas* present a very pretty appearance. The *ak* (*Calotropis procera*) is common, and found generally in poor sandy soil. Goats eat the leaves; and so will cattle if hard pushed, and if the leaves have been dried. The milky substance in the ducts is applied as an embrocation in some diseases of sheep and goats. The wood is used as fuel. The alleged *anti-kallar* properties of the plant are unknown in this district. No use is made of the floss in the seed-vessels.

Pitaka.

The *pitaka* is a fibrous plant abundant about Dipalpur, near the Sarai. It has large indented cordate leaves, and bears an orange flower. It flowers about the beginning of September. The fibre is made into ropes in the same manner as that of *sunn*, but the ropes are weak. The plant strongly resembles the jute plant (*Carchorus capsularis*), as described on page 242 of Dr. Royle's "The fibrous plants of India," a resemblance extending even to the name. Another fibrous plant commonly found in cotton-fields

Jhujan.

is the *jhujhan* (*Seshania aculeata*), also called *jaintar*, but this name applies properly to a different species. This plant grows five or six feet high, and may be seen about September in any canal village. The fibre has been used, but in this district the people consider the plant as almost useless. The stalk is occasionally employed in making thatches. This supposed uselessness is the subject of a popular saying:—

Jhujhan-da-ki seona,
*Jidhi dhup na chhawn.**

Bhophalli.
Jawahan.

The *bhophalli* is also a fibrous plant, but, except as fodder for goats, it is not put to any use. The *jawahan* or camel-thron (*Alhaki Maurorum*) is common enough. Good *tattis* can be made from this plant.

Harmal.
Gilo.

The *harmal* (*Peganum harmala*) grows in most places. It is abundant in the ground covered with broken pieces of brick about Pak Pattan. The seeds yield a black and brown dye, but are not utilized here. The *gilo* or *garham* (*Tinospora cordifolia*) is a creeper. An extract is made from the root, and is considered a good remedy in cases of fever and ague. The

Dhamak.

dhamak (*Fagonia cretica*) is a small prickly shrub like the *jawahan*. It is

*Why take any care of the *jhujaa*, which yields neither sun nor shade?" *Vide* "Punjab Products," pages 342, 508.

in flower about the end of August. The flowers are of a light pink colour. A medicine is prepared from it. The effects are very similar to, but not so certain as those of the *gilo*. It is much used in cases of headaches, boils, &c. Native women in the villages often make use of it in a *ghutti* or medicine given to new-born children. A plant not unlike a thistle is the *poli*. It is plentiful in spring about Gugera. An oil is extracted by *telis* from the oblong seeds. This is used as an article of diet. *Aleti*, commonly called *galehti*, is a small low-growing plant with little black seeds. In seasons of scarcity these are used by the poor people, made into bread. As the bread is intensely dry, it has to be eaten with butter-milk or milk. Sheep, goats, and camels eat the plant. It belongs to the *dudak* family, or that in which the plant contains milky juices. The flower is yellow. It appears in the beginning of August. *Gharrar madhana* is a plant growing about 18 inches high. The seeds are small and dark red: they ripen about the middle of August. The plant is considered good fattening fodder, especially for horses. The flower is supposed to resemble a churning staff (*madhani*); hence the name. This plant is hardly a grass. There are two kinds of *buin*, the white and the black *buin*. The former is the more common. It is usually found in light sandy soils, and is a guide in determining the quality of the soil. It is, however, far from being a certain guide. Camels eat the plant, and villagers apply it to boils and pimples. It is supposed to ease pain. Another plant, almost invariably found in poor light soils, is the *reshan*. But it is met with elsewhere. It grows about a foot high, and has a flower of the same shape and colour as that of a thistle. It abounds between the old Bias and Dipalpur. The *farid muli* or *farid buti*, also called *lathia* (*Farsetia Hamiltonii*) is very common. It is a small plant with pink flowers. The seeds are said to be poisonous, but were habitually used by Baba Farid Shakarganj, when he was hungry. The *puthkanda* (*Achyranthes aspera*) grows five or six feet high. It has but few leaves, and those near the ground. The long slender stems are covered with thorns which lie back close to the stem with their points directed downwards, hence the name *puth*, meaning the wrong way, and *kanda*, a thorn. The stem is used for cleaning the teeth; and the seed and leaves are employed medicinally. *Itsit* is a plant that grows along the ground. It is entered as a grass on page 245 of "Punjab Products," but it is not a grass. It is very like *chaulai* (*Amaranthus frumentaceus*). But the latter grows upwards. *Itsit* is of no use; but *chaulai* is used as a vegetable by poor people. Owners of dogs will soon become acquainted with the plant called *bhakra* (*Tribulus terrestris*). The spiked fruit of it constantly sticks in the feet of dogs, causing them to limp. The *hathi-sundi* is a plant which is not mentioned in any of the books under that name. The fruit is said to resemble the trunk of an elephant; and hence the name. Among other plants commonly found may be mentioned the *gawara*, *majehtra*, *gandi buti*, *ratkan*, *bukh in khab* or *kala mira*, *babuna soi*, *palak*, *para*, *arari* and *chilitra*. The last three are generally met with in lowlands flooded by the rivers.

Poli.

Aleti or galehti.

Gharrar madhana.

Buin.

Reshan.

Farid muli.

Puthkanda.

Itsit.

Chaulai.

Bhakra.

Hathi-sundi.

It remains now briefly to mention the more common grasses. The most common is *chhimbar*. It is a low growing grass with round culms, and throws out runners. It is found in good sweet soil, and is readily eaten by cattle. The flower is called *phumni*; *chhimbar* is not unlike

Grasses.

Chhimbar.

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khabbal or *talla* (H. *dabh*) ; but the blade of the latter is much broader and the whole leaf-branch larger and flatter than that of the *chhimbar* ; and the stems thrown out at the joints of the *khabbal* are horizontal, while those of the *chhimbar* are vertical. The *khabbal* is excellent grass and found only in good soil.

Khabbal or talla.

Talla is not to be confounded with *talli*, which is something like a shamrock, with leaves of a bright rich green colour. It is found in inundated land where the soil is good. It is a fine food for buffaloes, cows and bullocks.

Talli.

Dabh.

Dabh is a coarse strong grass, which remains green most part of the year. The leaves are long, narrow, flat, and have a tendency to curl up. They are used for thatching and for covering the floors of mosques. The roots are coarse and long, and grow down to a point ; in fact form a triangle with the apex at the bottom. It is not a strengthening grass. The long slender flower is pretty.

Lonak.

Lonak is also a poor grass, except when green ; and then even it is of only middling value. Cattle do not care for it much. It is often found in somewhat saline soils. The culms are round and slender, and generally about 18 inches high. Sometimes it grows as high as 30 inches.

Dhaman.

On the other hand, *dhaman* is a fine grass, and is said to increase the yield of milk of animals eating it, and the quantity of *ghi* obtained from the milk ; but horses will not eat it, as it is bitter. The leaves are long and flat. The plant grows vertically. The head, which is not unlike that of *kangni*, is black when unripe, and white when it has come to maturity.

Palwahan.

The *palwahan* is a tall grass, generally several feet high, with slender stems and flat narrow leaves. It is usually found in good soil. By some it is considered the best of all grasses. There are four flower-stalks at the end of each culm, bearded like barley. The grass is of a purple colour.

Kheo.

Kheo is a grass consisting of slender round stems growing straight up.

Gharm.

Gharm or *gharb* is a tall coarse grass with a woody stem. It is often found growing round a *karil* bush. Goats and camels are said not to eat it. It is an inferior grass.

Dhiddan.

Dhiddan is not unlike *kheo*. It is common in the *bilaras* of Pak Pattan. It grows about two feet high. It is sometimes called *sarkuli*. It should not be confounded with a plant found in rice-fields of the same name. This is not unlike wild *sawank*, but *sawank* grows more horizontally than *dhiddan*.

Sawank.

Sawank is of two kinds—*bijwan*, or cultivated, and *saia* or wild. The wild *sawank* is a good grass. It fattens and brings cattle into condition soon. The grain is small and eaten by Hindus on fast days. It is also used by poor people, made into paste called *bhat* or *phat*, and eaten with milk or butter milk. It grows in firm soil.

Kuri.

Kuri is a grass not unlike *chhimbar*. It is a different grass from *kura*, which is found in *kangni* fields generally. The latter has a thick stem, broad leaves, and grows a couple of feet high.

Kura.

Khawi.

Khawi grows about two feet high, in clumps ; often in hard lowlying land. But it is plentiful in the *bar*, along the Montgomery and Dipalpur road. The flowers are fluffy. When ripe, the plant is of a brownish red colour. It is a fragrant grass, and a scent is said to be made from it. The milk of cattle eating it is supposed to become perfumed. The people assert that the roots yield the *khus* with which *tattis* are made ; and that *panni* is a different grass. But the two seem very like each other.

Panni.

Panni is used for thatching.

Dila.

Dila is a grass found in hard inundated lands. It is very common in the rice-fields about Dipalpur. There are two kinds, the big

and the little. The former is yellow, the latter brown. Cattle eat both, but there is no nourishment in them. The root is like the grain of gram. Pigs root up the ground to get at it. It is called *mothra*, and is considered useful in brain diseases. Pigs are also said to have a fancy for the roots of *murk*, a small low-growing grass, with double compound stems, and a small red knob at the end of each branch of the stem. It is found in soft soil, and is abundant on the banks of the Deg. It is a fair grass for fodder. It differs from *muruk*, which is also a small low-growing grass. *Murkan* has very fine and slender round culms. It is a famous grass, having given its name to a famine. *Lamb* is not unlike *lonak*, but it is much smaller and more irregular. It is produced when there is heavy rain. It is eaten by cattle; and when green increases the yield of milk and butter. *Chinikki* is a small grass, growing about one foot high. It is not unlike *lonak*; but the difference is easily seen. The flower of *chinikki* is broader and not so long as that of *lonak*. It is eaten by all cattle; but is an ordinary grass, and has no great reputation. It is generally found in soft high land. *Luki* is a grass about 7 or 8 inches high. It consists of a slender stem, with a number of whorls. The lower whorl consists at times of as many as ten arms; the upper ones generally of five. This grass may be at once known by the regularity with which the arms of the whorls spring from the same centre. *Lumbar* is a small low grass, not unlike the tail of a fox. It is said to derive its name from this resemblance. *Kanh* is simply a rush found in inundated lands. The roots resemble those of *dabh*. *Maina* is a grass not unlike *talla* and found also in lowlands. The flower is said to be different. Poor people boil the leaves and use them as a vegetable. *Salyara*, *itsit* and *leli* are not grasses. The first is a large shrub; the second has been noticed before; and the third is a creeper found among wheat in spring. *Leha* is said to be a thorny plant.

Murk.

Murkan.

Lamb.

Chinikki.

Luki.

Lumbar.

Kanh.

Maina.

Salyara.

Leli.

It would not now be correct to say that no use is made of the floss from the seed vessels of the *ak* plant. This now finds a market in Europe, where it is used as a substitute for Java Kapok *e.g.*, in stuffing life-belts and in the manufacture of artificial silk. But there are few, if any, persons in the District enterprising enough to export it. The British Cotton Growing Association at Khanewal (Multan District) were the pioneers in this trade.

Ak.

Wild animals were rare when the last edition of the Gazetteer appeared over thirty years ago; with the exception of such humbler species as the jackal, they may now be said to be almost non-existent. Many years ago, tigers were occasionally found prowling about the Sutlej and among the records of the Probynabad Stud Farm may be found a note of the most likely jungles in the neighbourhood for a tiger shoot. The Maharajah of Kapurthala and Mr. John Oliver are credited, in former editions of the Gazetteer, with their extermination. In 1924, a mysterious leopard appeared at Kamir, on the borders of the Montgomery

(c) *Wild animals.*

CHAP I. A. Physical Aspects.

and Pakpattan tahsils, and, after a pursuit in which two or three of the villagers were maimed, was clubbed to death; this was a solitary specimen, and its presence in a part so remote from the known haunts of its kind has not been explained. Hyenas and wolves are now hardly ever seen; jackals are fairly common, and foxes are seen in the rapidly contracting area of dry waste. Nilgai and blackbuck are unknown, and chinkara, which were once quite numerous in the Bar, are fast disappearing with the spread of cultivation. Hog-deer are occasionally seen along the banks of the rivers, and pig, though much diminished by the attentions of Mahtams and the action of villagers in defence of their crops, are still found in small numbers. Hares are fairly common.

Game.

To the sportsman the District offers little attraction. Duck and teal of most kinds are fairly plentiful on the rivers and in the *budhs* during the cold weather, but they are naturally in these conditions hard to come by. Geese are also to be found, penetrating to the fields of green wheat in the riverain, and *kunj* are also regular winter visitors. Grey partridge are common, but not very numerous except in the forest plantations; black partridge are found in the riverain, but not in large numbers. Sand-grouse of more than one kind visit the district in the cold weather, but the expansion of the cultivated area is driving them away; this applies even more to the *houbara or tilur*, which was in former times quite common. Quail are usually to be found in the spring and autumn.

Fish.

Crocodiles were formerly very common on the banks of the Sutlej, but the buildings of the weirs and the diminution of water in the river in the cold season has lessened their numbers. A few are also occasionally to be seen in the Ravi. Only the fish-eating variety is found, the snub-nosed not penetrating so far up the rivers. Fish of many kinds abound in the rivers, and are also caught in the canals, particularly in deep pools that are left standing during a closure. Their flavour is much what you would expect. There are no fishing towns. Fishermen, who are called *jhabels*, do not depend exclusively on their earnings from fishing. They live scattered about in the villages bordering on the rivers. Fish are rarely caught from the beds of the rivers, as the fishermen have not the means of carrying on operations successfully in deep and rapid streams. A fish called *tirkanda*, is, however, sometimes caught in the hot weather when the rivers are in flood. Most fish are caught in the *budhs* during the cold season. Fish go up these to spawn, and on the rivers falling, the fish in the *budhs* are shut up as in a lake. Fishermen make their own nets. Four kinds are in use. The meshes of the first three are about one inch square; those of the fourth much smaller. The nets are called on the Sutlej—(1) *hand*; this is a long net made of several breadths

joined together. A number of men drag this net, sweeping the whole width of a *budh* with it. (2) *Satwan;* this is a round net, about 7 to 10 feet in diameter. The edge all round is weighted with iron rings through which a cord passes. The fisherman holds this cord in his hand, and flings the net into the water, so that it opens, and the weighted edge sinking to the bottom prevents anything under the net from escaping. By pulling the string going through the rings, the net is closed like a bag, and anything inside is caught. (3) *Kudalli*; this is a cone covered with netting. Its size is proportioned to the size and strength of the person using it. It is generally about four feet high and the same in diameter at the bottom. The fisherman plunges this cone with the broad end downwards through the water to the bottom. If there are any fish inside, their motion in trying to escape tells him. If they are small, he inserts his hands under the net and seizes them; if large, he first spears them with an iron spit, about one foot long, called *sua*. (4) *Sambhi;* this consists of two sticks fastened together at an angle. The intermediate space is covered with fine netting. One man stands in the water holding the net below the surface. while another comes towards him beating the water. When he gets near, the man with the net lifts it out of the water, and the fish at that moment over the net are caught. This net is used only for catching very small fish. The principal kinds of fish found are the following,—

Batti,	Gogu,	Dungna,	Tirkanda,
Dambra,	Bhusan,	Jalli,	Patwi,
Singhari,	Machhana,	Parahi,	Pranda,
Mori,	Petrate,	Lesi,	Makhni,
Saul,	Khagga,	Nai machhi,	Durra,
Malhi,	Telia,	Gurdi.	

besides the *gangal or jhinga* (shrimp) and the *goj* (eel) Fishermen do not sell by weight, but barter so many of their fish for so much grain; they are not usually paid in cash. Fish oil, obtained by boiling down fish and skimming off the fat that rises to the top, is not made to any extent here. It is called *vaho*, and is used in some cases of cattle-disease. It is possible that some of the names given above apply to the same fish at different stages of its growth, and do not all represent different species.

Snakes are by no means rare, but are not so common as to be a constant danger. The cobra is the snake most usually met. Scorpions, centipedes, hornets, wasps, mosquitos and flies may close the list of unpleasant denizens of the district.

Snakes.

The wide extension of irrigation has had its effect on the climate of the district, as was to be expected. It has lessened the

(*f*) Climate and temperature where recorded.

CHAP. I. A. Physical Aspects.

frequency and severity of the duststorms which used to be the characteristic feature of the district at certain times of the year, but it has changed the keen dry air which formerly made it a resort for those suffering from diseases of the lungs to something resembling the air of Lahore and Amritsar, and it has brought and fostered the malarial mosquito. The heat of summer is still intense, and it is doubtful whether widespread irrigation has had much effect in reducing the temperature, though it has mitigated its effects by the growth of shade trees which have followed it. Statistics of mean temperature will be found in Volume B; generally it may be said that the hot season begins about the middle of March, and the heat becomes severe in mid-April; these are the months when dust-storms are most frequent. The heat moderates but little, except in the early mornings or immediately after rain or dust-storm, until early October, and in years where the rainfall at this time is in defect, the days remain unpleasantly hot even into November. Usually, however, the climate from November to February is ideal. The rains in the last few years have been very irregular. It might be expected that the extended growth of trees and other vegetation during the last few years would have had some effect in attracting an increased rainfall; this seems in fact to have been the case, but probably statistics will have to be collected over a longer period before this result can be definitely claimed.

Rainfall.

Statistics collected at the time of the Settlement of the Montgomery district by Mr. Kennedy and Mr. Fagan (1891—1898) show the average annual rainfall in the district for the 12 years 1886-87 to 1897-98 to have been as follows:—

Montgomery	10·17
Gugera	10·65
Dipalpur	10·37
Pakpattan	8·77

The Assessment Reports for the two Sutlej tahsils (Pakpattan 1921 and Dipalpur 1922), show the rainfall in Pakpattan to have averaged 10·61″ annually from 1898-99 to 1918-19, while rainfall in Dipalpur averaged 11.49″ annually over the same period. Figures recently collected for the Settlement of the Lower Bari Doab Colony show rainfall in the Okara tahsil to have averaged 10·94″ from 1915-16 to 1926-27 and in the Montgomery tahsil 9·71″ from 1918 to 1929. It appears to be the case as was stated by Mr. Fagan in his 1900 Settlement report that the east end of the district gets more rain than the west. It is remarkable, however, how little the general rainfall has increased in the last 50 years. In fact Montgomery tahsil—the most westerly tahsil

of the three—had less rain annually between 1918 and 1929 than it had between 1886 and 1897 in spite of the development of canal irrigation in the Lower Chenab Colony across the Ravi and more recently in the Montgomery tahsil itself. Rainfall is extremely variable. In the year 1908—1909 32″ fell in the Dipalpur tahsil, while in 1901-02 the rainfall totalled only 1·92″ there and 1·15″ in 1920-21 : 4/5th of the rain falls in the period June to September.

Cyclones, earthquakes and floods.

Cyclones and earthquakes are not usually among the amenities of the district, which is also but little liable to floods. Riverain villages of course suffer in years when the rivers are abnormally high, and occasionally ; damage on a small or large scale is done by breaches in the canals, the most noteworthy of these in recent years was perhaps that in which the bazaar at Renala Khurd was swept away in 1923. The area in the Pakpattan and Dipalpur tahsils immediately north of the Pakpattan Canal has also suffered in the period since that canal was opened, as the canal itself held up a mass of flood water, which had broken the protective embankments above the Suleimanke Headworks, from finding its way back to the river.

Section B.—History.

The previous Gazetteer did not trace the history of the district beyond the time of Alexander—the fourth century B. C. Now we are enabled to go 3,000 years further back. It was known as early as 1826 that ruins of historical interest existed at Harappa. Masson is supposed to have visited Harappa that year and Burnes five years later. General Cunningham visited Harappa in 1853 and 1856, and he wrote an account of the mounds there which was printed in Volume V of the reports of the Archæological Survey of India 1875. "The ruins of Harappa," he says, "are the most extensive of all the old sites along the banks of the Ravi. On the north-west and the south there is a continuous line of mounds about 3,500 ft. in length, but on the east side, which is only 2,000 feet in length, there is a complete gap of 800 feet, for which I am unable to account. The whole circuit of the ruins is therefore about 12,500 feet, or nearly 2½ miles. The highest mound is that to the north-west which is 60 feet above the fields. On the south-west and south the mounds range from 40 to 50 feet in height, and on the north side towards the old bed of the Ravi 25 feet, to 30 feet." Unfortunately before the archæologist was in a position to make expert investigations into the contents and history of these mounds, the bricks of which the old buildings were constructed proved an irresistible temptation to the gangs engaged in constructing the Lahore—Multan railway line. General Cunningham observes that

Harappa.

CHAP. I, B. History.

these bricks more than sufficed to furnish brick ballast for about a hundred miles of that line. With these bricks are also built the Police Station, Serai (now ruined) and most of the houses in Harrappa village as well as some of those in neighbouring villages.

The discovery at Harappa of the remarkable seal mentioned by General Cunningham, and later of a few more, now in the British Museum, suggested that at this site there existed the remains of a city of very great antiquity and of seemingly quite peculiar culture, as the legends on the Harappa seals are one and all totally unlike any other form of script known in India. In his annual report for 1920-21, Sir John Marshall, Director General of Archæology in India, shows how a beginning was at last made in the exploration of these remains. As he points out, the field is so large that to locate points of real value therein was a matter of extreme difficulty. Rai Bahadur Daya Ram Sahni made a start, however, in 1920-21 and the results, though meagre, were described by Sir John Marshall as encouraging. Most of the mounds were completely honeycombed with the diggings of the modern brick-hunters. The mounds which appeared to have suffered least from this cause were selected for the preliminary excavations. Some seals were discovered similar to that found by General Cunningham, all exhibiting the device of a bull, without the hump so universal in Indian cattle, and legends in the same inscrutable pictographic script. The other objects recovered, though not numerous, all pointed to a high antiquity. These finds established the fact that the upper strata at Harappa related to a period of greater antiquity than has up-to-date been associated with Indian historical investigations, and that there were several lower strata from which it was anticipated that much information could be obtained of the highest value to the archæologist.

Sir John Marshall gave some indication of the wide field of speculation and surmise opened up by the discoveries at Harappa and at the same time at Mohenjo-Daro in Sind, in the annual report of the Archæological Survey of India 1923-24. He says :—

> "In the field of exploration, it is natural this year to give the premier place to the remarkable discoveries made by the Department in Sind and the South-West Punjab ; for it is safe to say that no such epoch-making discoveries have ever fallen to the lot of an Archæologist in this country. Hitherto India has almost universally been regarded as one of the younger countries of the world. Apart from palæolithic and neolithic implements and such rude primi-

> tive remains as the Cyclopean walls of Rajagriha no monuments of note were known to exist of an earlier date than the 3rd century B. C., when Greece had already passed her zenith and when the mighty empires of Mesopotamia and Egypt had been all but forgotten. Now, at a single bound, we have taken back our knowledge of Indian civilization some 3,000 years earlier and have established the fact that in the 3rd millennium before Christ and even before that the peoples of the Punjab and Sind were living in well-built cities and were in possession of a relatively mature culture with a high standard of art and craftsmanship and a developed system of pictographic writing."

He goes on to say that the site at Harappa though manifestly that of a great city covering a vast area and containing many strata of successive buildings, will probably never prove so lucrative as that of Mohenjo-Daro, for the reason that it was further removed from the main centre of the Indus culture in Sind, and it cannot, therefore, be expected to have been so rich in articles of luxury. Sir John Marshall was not prepared at that time to issue any detailed memoirs on the subject of the excavations. He considered that further progress should be made first. He definitely stated, however, that there could then no longer be any doubt that the Punjab and Sind antiquities were closely connected and roughly contemporary with the Sumerian antiquities of Mesopotamia dating from the 3rd or 4th millennium before Christ.

Excavation work at Harappa was carried on in the next few years. Mr. Madho Sarup Vats succeeded R. B. Daya Ram Sahni as from 1926-1927 and has been in charge of the work since then. There is now a small museum on the site with a permanent custodian in charge who is prepared to take visitors round the site and give some account of the antiquities discovered. These consist mainly of seals (six or seven hundred have been found), vessels, figures and children's toys made of earthenware, and faience, some funerary urns, human and animal bones and a certain amount of jewellery. The objects in themselves, apart from their antiquity, have on the whole little interest to the layman. No doubt the successive cities at Harappa were abandoned and rebuilt as part of a gradual process, and it would be unreasonable to expect the inhabitants, as each site was abandoned, to have left numerous articles of value lying about. It is believed that the portions of the site that have already been excavated are fairly representative,

CHAP. I, B. History.

and although the area which still remains to be explored is very large, Mr. Madho Sarup Vats considers that future excavation, unless it penetrates to very early levels of which there is little hope in the near future, is likely in the main to result in no more than corroboration of the evidence already unearthed.

Architecturally the excavators have been handicapped, as previously stated, by the depredations of brick hunters, and there is little in what remains of the buildings to suggest anything in the way of beauty or grandeur. The most important architectural discovery appears to be that of a building whose purpose and character is still shrouded in mystery. This building, which as excavated up-to-date, measures 155 ft. × 134 ft., consists of two series of parallel walls opposite each other opening on to a central corridor 24 feet wide. It has been named the Corridor Hall. Excavation in this curious structure has uncovered very few portable objects of interest or importance which suggests that whatever purpose the building was intended to fulfil, it was not devoted to ordinary domestic uses.

But the connection definitely established by these discoveries between the Indus civilization and the Sumerian civilization in Mesopotamia is in itself of most absorbing interest. Dr. Langdon, Professor of Assyriology at Oxford, discusses the Sumerian kingdoms in Chapter X to XII of the first volume of the Cambridge Ancient History. He considers that the Sumerians probably descended into the valley of the two rivers in Mesopotamia from the highlands of Iran and Central Asia by the pass in the Zagros mountains known as the "Median Gate" near the source of the river Diyala. In his opinion the entry of the Sumerians into Mesopotamia and Egypt heralded the dawn of civilization in the ancient worlds, and with their decline and disappearance the most talented and humane of the earlier peoples became extinct. He considers them to have been without warlike ambitions, but with a genius for agriculture (witness the irrigation system of lower Mesopotamia dating from the 5th milleninum B. C.), and for religious speculation, in which their influence may be said to have permeated the religions of Babylonia and Assyria and to have survived until the last century before our era. In the annual report of the Archæological Survey of India 1923-24, Sir John Marshall indicated the possibility of India having been the cradle of this civilization. But eight years further work has led him to modify his views in some degree. He has now published a complete account of the excavations at Mohenjo-Daro in a three volume book entitled "Mohenjo-daro and the Indus Civilization" published by Arthur Probsthain, 41 Great Russell Street, London,

W. C. 1., in 1931. For detailed information the reader is referred to this work. In order to indicate here the general nature of the discoveries and the inferences drawn from them up-to-date permission has been obtained to reproduce the following extracts from the Preface to Volume I. Though Harappa is not directly made one of the subjects of this book and will be discussed in detail in a subsequent volume the remarks quoted are generally applicable to both sites :—

> "They (the discoveries at Mohenjo-daro and Harappa) exhibit the Indus peoples of the fourth and third millenia B. C., in possession of a highly developed culture in which no vestige of Indo-Aryan influence is to be found. Like the rest of Western Asia, the Indus country is still in the Chalcolithic Age that age in which arms and utensils of stone continue to be used side by side with those of copper or bronze. Their society is organized in cities : their wealth derived mainly from agriculture and trade, which appears to have extended far and wide in all directions. They cultivate wheat and barley as well as the date palm. They have domesticated the humped zebu, buffalo, and short-horned bull, besides the sheep, pig, dog, elephant and camel ; but the cat and probably the horse are unknown to them. For transport they have wheeled vehicles, to which oxen doubtless were yoked. They are skilful metal workers, with a plentiful supply of gold, silver and copper. Lead, too, and tin are in use, but the latter only as an alloy in the making of bronze. With spinning and weaving they are thoroughly conversant. Their weapons of war and of the chase are the bow and arrow, spear, axe, dagger and mace. The sword they have not yet evolved ; not is there any evidence of defensive body armour. Among their other implements, hatchets, sickles, saws, chisels and razors are made of both copper and bronze ; knives and celts sometimes of these metals, sometimes of chert or other hard stones. For the crushing of grain they have the muller and saddle-quern, but not the circular grindstone. Their domestic vessels are commonly of earthen ware turned on the wheel and not infrequently painted with encaustic designs ; more rarely they are of copper, bronze, or silver. The ornaments of the rich are made of the precious

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metals, or of copper, sometimes overlaid with gold, of faience, ivory, cornelian and other stones; for the poor, they are usually of shell or terra-cotta. Figurines and toys, for which there is a wide vogue, are of terra-cotta, and shell and faience are freely used, as they are in Sumer and the West generally, not only for personal ornaments but for inlay work and other purposes. With the invention of writing the Indus peoples are also familiar, and employ for this purpose a form of script which, though peculiar to India, is evidently analogous to other contemporary scripts of Western Asia and the Nearer East."

* * * * * *

"But it is in regard to the early civilization not of India alone, but of the whole Ancient Orient that these new discoveries seem likely to revolutionize existing ideas. The importance of the role played by palæolithic man in India has long been recognised, and from a typological comparison of palæolithic and neolithic artefacts the inference has been drawn that it was actually on Indian soil that the latter were first evolved from the former. Be this view correct or not, there can be no question that the north-west of India, with its vast, well-watered plains, with its abundance of game, its warm but variable climate—more propitious perhaps then than now—and with its network of rivers affording ready means of communication and intercourse, must have offered a specially favourable field for the advancement of early society, alike when man was in the hunting stage and later when he had turned himself to agriculture and the domestication of animals or was opening up commerce with distant lands. At present, our researches carry us back no further than the fourth millennium B. C., and have lifted but one corner of the veil that hides this remarkable civilization, but even at Mohenjo-Daro there are still several earlier cities lying, one below the other, deeper than the spade has yet penetracted, and though the permanent rise of the subsoil water precludes the hope of our ever being able to explore the earliest settlements on this site, it can hardly be doubted that the story already unfolded

will be carried still further back on other sites, of which there are a multitude waiting to be excavated in Sind and Baluchistan. One thing that stands out clear and unmistakable both at Mohenjo-Daro and Harappa, is that the civilization hitherto revealed at these two places is not an incipient civilization, but one already age-old and stereotyped on Indian soil, with many millennia of human endeavour behind it. Thus India must henceforth be recognised, along with Persia, Mesopotamia and Egypt, as one of the most important areas where the civilizing processes of society were initiated and developed. I do not mean to imply by this that India can claim to be regarded as the cradle of civilization ; nor do I think on the evidence at present available that that claim can be made on behalf of any one country in particular. In my view, the civilization of the Chalcolithic and succeeding Ages resulted from the combined efforts of many countries, each contributing a certain quota towards the common stock of knowledge. From the neolithic, if not from the palæolithic Age onwards the most populated regions were undoubtedly the great river valleys of South and South-west Asia and Northern Africa, where the cold was never intense, where food and water were ready to the hand of man, where pasturage was good, irrigation feasible, and communication easy along the courses of the natural waterways. In each of these river valleys on the banks of the Nile and the Euphrates as on those of the Karun, the Helmund or the Indus, mankind may be assumed to have had equal chances of development, and it is natural to suppose that progress in one direction or another was being made in all these regions simultaneously and doubtless in many others besides. If this view, which is surely the most rational one, be accepted, if we regard this wide-flung civilization of the Afrasian belt as focussed in various centres and developed by the mutual efforts of different peoples, we shall better understand how, despite its general homogeneity, it nevertheless comprised many widely differing branches, each of which, in its own sphere, was able to maintain its local and individual character."

The previous editions of the Gazetteer brought the history of the district down to 1898 and for that period it has seemed best

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to adopt almost word for word the account given in that edition. Here and there a verbal alteration has been made to avoid anachronism, but such alterations have been very few. When that account was written, the district included a large area north of the Ravi now in the Sheikhupura and Lyallpur districts. Consequently some passages in the following pages will be found not to be strictly relevant to the district of Montgomery as now constituted. But this is unavoidable, if the general structure of what is undoubtedly a careful and interesting historical survey is to be maintained.

Alexander's invasion.

The history of the district is chiefly that of certain wild pastoral tribes which appear to have occupied the Rachna Doab from time immemorial, maintaining a sturdy independence of the successive rulers of northern India, and ever noted for their lawless turbulence. Some account of them is given in the next chapter. Their history goes back, probably, as far as the time of Alexander. From the historians of his expedition, we learn that the northern part of the district was at that time held by a race whom they called Kathæans,* and the southern part by another race, the Malli, whose capital town was Multan. Both these tribes in turn severely tested the valour of the Macedonian troops. The history of the Malli is now relevant to the Multan district and need not be discussed here. General Cunningham supposes Harappa to have been the "another city of the Malli, into which a great body of the Indians had fled for safety," against which Perdikkas was sent with the cavalry. The similarity between the name Kathaioi, the people whose capital city, Sangla, was stormed by Alexander, and that of the present Ravi tribe, the Kathias, has often been noticed. Sangla, situated in the Rachna Doab, is at no great distance from the country now occupied by the Kathias: and it is not improbable that they are the descendants of the old Kathaioi, though they claim a very different origin. They say they came from Kathiawar. But the Kathiawar Rajas, on the other hand, trace their origin from the Punjab. The history of Alexander's campaign against the Kathaioi is given in the *Gazetteer* of the Jhang district.

Antiquities.

The towns of Pak Pattan, and Dipalpur, are places of great antiquity, and once were places of importance. An account of each is given in Part C (*b*) of this Chapter. The villages of Akbar and Satgarah, both of them in the neighbourhood of Gugera, the former six miles to the south-west, and the latter 13 miles to the east, are also old towns containing interesting remains. They have been examined and described by General Cunningham, who is

*Arrian, Lib. V., Caps. 22, 23, 24.

unable, however, to suggest any clue to their former history,* All seems to point to a time when Montgomery was a populous country, with towns large and flourishing, and resources at least equal to those of the more northern portions of the province. The antiquities of the district are fully described in the Archæological Survey Reports, Vol. V., pages 103 to 111; Volume XIV, pages 139 to 145; and at pages 208—219 and 244 to 248 of Cunningham's *Ancient Geography of* India. For nearly 1,600 years after the capture of Harappa, there is a great blank in the history of the district, for the accounts about Rasalu, son of Salvahan, are vague and unreliable. He is said to have lived much about Dhaular, a very old town in the Pak Pattan *tahsil*, and there is still an old mound in the jungle called after him. In the reign of Firoz, Shah Tughlak (1351—1388), Dipalpur was a favourite residence of the Emperor. He "erected a mosque outside the city and drew a canal from the Sutlej for the irrigation of its lands" (*Ancient Geography of India*, page 213).

Rasalu, son of Salvahan.

Firoz Shah Tughlak at Dipalpur.

In 1398, Tamerlane marched from Multan to Pak Pattan. 'No resistance was made, and the place was spared out of respect for the memory of Baba Farid Shakarganj, who had died and been buried there about 1264-65.† After the lapse of nearly a century-and-a-quarter, another conqueror, a descendant of Tamerlane, entered the district. This time the invasion came from the north. Daulat Khan

Tamerlane takes Pak Pattan.

*Ancient Geography, page 212.

†A legend of Pak Pattan relates that Ghazi Beg Tughlak was a poor village-boy living in the neighbourhood of Baba Farid. Thanks to the spiritual influence of the saint, this poor boy became governor of Multan and, finally, King of Delhi. He then visited Pak Pattan, and, to show his gratitude, had the Bisharat *nalla* dug by one of his officers, Bisharat Khan. It is an objection to this story that Ghazi Beg did not come to the throne till 1321, or at least 56 years after the death of the saint. Bisharat Khan may have opened the mouth of the *nalla*; but the channel is certainly not artificial. The legend continues that when the Bisharatwah was dug, the stream ran so deep and strong that it was necessary to have a ferry over it, where there is now a bridge between the town and *tahsil*. One evening, Baba Farid came down to the ferry and saw the sun shining on the rippling waves, people in bright attire bathing and drawing water, while the boats glided backwards and forwards. Enraptured with the sight, he exclaimed: *Ai kya pak pattan*? "Oh, what a beautiful ferry," and after that the old name of the town Ajudhan was given up, and Pak Pattan adopted. The truth of the story is doubtful. The name may have been changed to Pak Pattan on account of a ferry over the Bisharatwah, but the town was known as Ajudhan in Tamerlane's time. In the *Ain-i-Akbari* it is called simply *pattan* or "the ferry." *Pak* is probably an epithet applied to the town on account of its containing the tomb, and having been the residence of such a famous saint, much the same way as Mecca is called *sharif*. In fact, Pak Pattan means simply the holy *pattan*. It is difficult to see how it could mean "the ferry of the pure one," as has been stated. The comparison of a spiritual teacher, who carried his disciples across the river of existence into paradise, with a ferry man, has been made in respect of Pir Baka, another celebrated holy man of the district, who lived at Shergarh. Of him it is said—

Beri bahti shah darya vich,
Par asade lawan nun;
Pir Baka mallahi karda,
Bhar bhar par langhaida.

"A boat is floating in the mighty river to carry us over, Pir Baka is acting as boat man. He ships a boat-load and carries it across."

CHAP. I, B. History. Babar takes Dipalpur.

Lodhi was then governor of the Punjab under Ibrahim Khan Lodhi, the Afghan King of Dehli (1517—1526). He encouraged Babar, the ruler of Kabul, to attempt the conquest of India. It is probable that at that time the south-west portion of the district was subject to the Langah chiefs of Multan ; but the upper portion was held by the Viceroy of the Punjab. In 1524 Babar, having taken Lahore, marched on Dipalpur, and took it by storm. The country attached to Dipalpur was then made over to Sultan Ala-ud-Din Lodhi, who had been an unsuccessful competitor for the throne of Dehli. Babar had to fall back on Kabul owing to the defection of Daulat Khan, who drove Ala-ud-din out of the country. Next year Babar incited Shah Hassan, the ruler of Sindh, and Arghun Tatar, to attack Multan. After a siege of 15 months the place was taken. In 1526 Babar, having returned to India, defeated Ibrahim Khan Lodhi at the battle of Panipat, and became King of Dehli. Shortly after, the Arghuns were expelled from Multan, and Shah Hassan made over the country to Babar, who conferred it on his son Askari. Thus the whole of the district came into Babar's hands. On his death Humayun had to give it up to his brother, Mirza Kamran, who held it till the successful revolt of Sher Shah in 1540.

Sher Shah builds a fort of Shergarh.

Sher Shah spent some time at the commencement of his reign in the Punjab, and is said to have built a fort at the town of Shergarh to protect the Nakka country. But it is not known against whom the country was to be defended. On Humayun's return, one of his lieutenants, Abu Moali, defeated the Afghans in 1555 at Dipalpur. On Akbar's accession the district passed into his hands. One naturally turns to the *Ain-i-Akbari*, compiled in his reign, to obtain information concerning the district. The result is most unsatisfactory. Almost all that can be made out is this. The *suba* of Multan seems to have included the whole of the present district. Of the three *sarkars* into which the *suba* was divided, one was Dipalpur, containing 20 *mahals* or *parganas*. The names of only five of these can be identified, *viz.* :—

1. Pattan.
2. Dipalpur.
3. Kabula.
4. Satghara.
5. Faridabad.

In *sarkar* Multan appear the *parganas*—

1. Chukandi.
2. Shergarh.
3. Haveli Shahr.
4. Deg Ravi.
5. Jalalabad.

1, 2 and 4 of which were in this district, and 3 and 5 may have been. Of course nothing is known about the limits of the *parganas*. Six *parganas* of *sarkar* Dipalpur lay on the left side of the Sutlej. The Deg Ravi is the country about Kot Kamalia, and Jalalabad

may be the town, the abandoned site of which is still to be seen on the old Beas to the south of the Dipalpur and Gugera road. But native report gives that *theh* a different origin. It seems in the same *dastur* as Shergarh, near which it is actually situated. It was during Akbar's reign that the Khan-i-Khanan is said to have restored the Khanwah canal. This was Mirza Abdul Rahim, son of Bairam Khan. He held Multan in *jagir* about A. D. 1590. He is also said to have re-built Dipalpur, which had not recovered from the effects of the attack by Babar.

The Khan-i Khanan.

In Alamgir's reign (1658-1707) the old term for a cluster of *parganas*, *karori*, was changed to *chakla*. Dipalpur is said after that to have been called *chakla* Dipalpur. In the time of Alamgir the foundation of the Hans' power was laid. The Hans were simple *zamindars*, living a little to the north-west of Pak Pattan. Among them was a learned man Sheikh Kutb Hans, who appears to have been a teacher of some of the Dehli nobility. He obtained some influence in this way, and finally, in 1663 Alamgir conferred a *sanad* on him, granting him several villages in the *taluka* of Kutbábád. The deserted site of Kutbábád may still be seen on the bank of the old Sohag, nearly south of Malka Hans. The villages were considered worth Rs. 10,000 per annum. Owing to his ability and court influence, Sheikh Kutb became a powerful man, and as the Para, Sohag, and Dhaddar flowed through his lands, he rapidly became rich. At the downfall of the Moghal empire, his descendant made himself independent, as will be noticed further on. *Tappa* Hansan belonged to *pargana* Kabula. But Alamgir founded a new *pargana* and named it Alamgirpur, to which the *tappa* Hansan, with most of the Deg Ravi *pargana*, was attached. This connection with the Ravi may have been the main reason why the Hans ruler afterwards threatened the independence of the Kamalia Kharrals—a proceeding which ended in his downfall. Alamgirpur is supposed to have been situated on the old Beas, a little north of Kabir, on the Harappa and Pak Pattan road. The site is marked on the map as Shahjahanpur.

Chaklas; rise and fall of the Hans.

Pargana Alamgirpur founded.

It was in the time of Alamgir that the Kot Kamalia Kharrals rose to some importance. The fact of their chief still drawing considerable *taluqdari* allowances and occupying a position of some dignity, seems to show that they must have been powerful once. According to their own accounts, their leader was much superior to the princes of the royal family, though not quite as great a man as the emperor. But, from the facts incidentally ascertained, they appear to have had no power at all, and to have been at the mercy of all the neighbouring tribes. Saadat Yar Khan was the son of one of the Kharral chiefs, who held some post at the court of Delhi.

The Kamalia Kharrals.

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History. Saadat Yar Khan succeeds.

He followed the vocation of all noble families in those days, and robbed every one he could. The emperor was pacified by Saadat Yar Khan's father, until some presents from the King of Persia to him were appropriated by the Kharrals. Then Saadat Yar Khan was called to account, arrested and sent to Delhi. Here his witty excuses resulted in his obtaining honorary dresses, a *jagir* worth Rs. 1,09,000 per annum, and being sent with 12,000 men to punish some rebellious Afghans at Pind Dadan Khan. This rebellion seems to have been that which occurred in 1672, in which prince Sultan led the Imperial forces. He is probably the prince who insulted the Sials by proposing that Ghazi Khan, the eighth Sial chief, should betroth his daughter to Saadat Yar Khan.* The fact of this proposal being considered insulting, makes one suspect that Saadat Yar Khan's *jagir* cannot have been so large as it is said to be. He succeeded his father Mahabbat Khan, who was murdered at the instigation of a Multan Kureshi in 1706. He again went to Delhi, and was sent by Alamgir with prince Muiz-ud-din to put down the Lughari Biloches, who had revolted under one Rugha.†Just then Alamgir died, Muiz-ud-din went off post haste to Lahore, leaving Saadat Yar Khan to bring up the baggage behind. On the return of the latter, coming down the Ravi in boats, he got involved in a quarrel with the Upera Kharrals, and a great battle was fought at Danabad, in which the Uperas were totally defeated. It seems probable that there was a riot in the jungle, and that the Montgomery men came off victors.

Quarrels of the Ravi tribes.

After this the Kamalia or Lakhera Kharrals with their allies the Kathias, Baghelas, Wahniwals, and other lower Ravi tribes, appear to have been engaged in constant quarrels with the Kharrals of the upper Ravi, and desperate battles took place at Waliwala, Pindi Khai, and elsewhere. Sometimes one party succeeded in carrying off the stolen cattle, and sometimes the other succeeded in recovering them. In spite of his court influence, experience in war and valuable *jagir*, Saadat Yar Khan could not protect his country against Walidad Khan, the Sial chief of Jhang. The Sials held the country till the death of Walidad Khan in 1747. This chief effected great improvements. With the usual exaggeration of native stories, he is said to have set 125,000 *pakka* wells at work in the tract called Jhangar, and to have taken one rupee and a blanket annually from each as revenue. There is no doubt he greatly extended cultivation, sunk wells, dug water-courses, and put down

The Jhang Sials occupy Kamalia.

*The Punjab Chiefs, vol. I (Ed. 1909), pp. 229 *et seq.*

†This is probably the expedition mentioned by Elphinstone (*History of India*, page 588, Ed. 4). He considers the insurgents were Sikhs. But the Sikhs were not in force about Multan so early as 1707. The rebels seem to have been Afghans. The Kharral account is that given above.

robberies vigorously. Saadat Yar Khan seems to have died before Walidad Khan. On the death of the latter, the Kamalia Kharrals became their own masters again, till they were conquered by the Nakkai Sikhs.

Ahmad Shah's invasions; break up of the empire.

After the death of Alamgir in 1707, the Moghal power, already grievously shaken, hastened with accelerated pace to its overthrow. Internecine struggles for the throne indirectly favoured the rise of the ferocious and enthusiastic Sikhs at the same time that the Mahrattas and Afghans made themselves masters of the best provinces of the empire. In 1739 Nadir Shah took the emperor Muhammad Shah prisoner and sacked Delhi. In 1747 the first invasion of Ahmad Shah took place. He is said to have come back seven times; the last invasion took place in 1767. The complete manner in which the country was swept of everything valuable by the Afghans is forcibly expressed in the couplet:—

Khada pitta la-he-da.
Te rehnda Ahmad Shahi da.

Implying that what one eats and drinks is of profit to one, and anything that remains goes to Ahmad Shah. In 1758 the Mahrattas overran the country and took Multan and Lahore. Next year Ahmad Shah drove them out again. The next invaders were the Bhangi Sikhs.

Independent states formed.

Till the incursions of the Durrani monarch commenced, the present Montgomery district was subject to the governor of Lahore. After that various men of influence made themselves independent, and exercised all the privileges of independent rulers, as regards fighting with their neighbours and robbing and murdering those weaker than they. The manner in which the country was parcelled out among these separate states is roughly shown in a map attached to Mr. Purser's Settlement Report of the district. The following paragraph contains a brief account of each.

The Bahrwa Nakkais.

The Nakka country lies between the Ravi and Sutlej, in the south of the Lahore district. The word *nakka* means border edge. Hira Singh was a Sikh *zamindar* living at Bahrwal in the Nakka. He took possession of the country, and founded a *misl* or confederacy, which was known as the Nakkai *misl*. He seems to have joined the Bhangis in their plundering expedition under Hari Singh about 1760 (?), when they were beaten back from Multan. He had always an inclination to extend his territory to the south; and forming an alliance with the Hans, he attacked the Diwan of Pak Pattan, who was supported by the Wattus. A battle was fought at a place called Bhuman Shah or Kutbwala on the old Sohag. The Sikhs and Hans, who were probably in small numbers,

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were beaten, and many of them drowned in the river. Hira Singh was killed. He was succeeded by his nephew, Nar Singh, who was killed in 1768 at Kot Kamalia, fighting against the Kharrals. His son, Ran Singh, was the most important of the Nakkai chiefs. He extended the possessions of his *misl*, and held the *talukas* of Bucheke, Faridabad, and Jethpur. He also got possession of Saiyadwala, which had before been held by Kamr Singh, of the Gugera Nakkai family. On Ran Singh's death, Wazir Singh, brother of Kamr Singh, recovered Saiyadwala from Bhagwan Singh, the son of Ran Singh. After the marriage of Bhagwan Singh's sister to Ranjit Singh, the Nakkais seem to have turned their attention to Pak Pattan again, and finally conquered the country of the Hans. This they retained till Ranjit Singh seized all their possessions in 1810.

The Gugera Nakkais.

Kamr Singh, of the Gugera Nakkais, was a greater man in this part of the country even than Ran Singh. He occupied both sides of the Ravi, from Faridabad to the Multan border. When the Hans threatened Kamalia, or, as one account says, actually took it, the Kharrals called on Kamr Singh for help. He drove off the Hans and kept Kamalia for himself. He took away the *jagir* of the Kamalia chief, and gave him a *taluqdari* allowance, locally known as *athog*, of five *pais* in the *kharwar* of *nijkari* crops, and Re. 1 per *kanal* of *zabti* crops. He rebuilt Satghara, which had been sacked by the Sikhs about 1745, and abandoned by the inhabitants. He built a brick wall, still in good preservation, round the town. This was in 1775. He also constructed forts at Harappa and Kabir. He was an able ruler, and kept the Ravi tribes in good order. The Kathias, Kharrals, and other robber clans settled down to comparatively quiet lives. A great increase in cultivation took place in his time. In this respect, considering the difficulties under which he laboured, his rule will compare not unfavourably even with that of Sawan Mal. The country subject to him seemed to have been divided into two *parganas*, Satghara and Saiyadwala, and five *garhis*—Killianwala, Dhaulri, Kamalia, Chichawatni, and Harappa. He died about 1780 after having been engaged in constant warfare with the rival house of Bahrwala. It is said he was murdered by an Upera Kharral at Rahna Meharan near Saiyadwala. He was succeeded by Wazir Singh, his brother, who more than held his own against Bhagwan Singh. In 1783 Jai Singh, Kanhaia, seized his country. After two years the Kanhaia *misl* was shattered at Batala. Wazir Singh assisted in its overthrow and recovered his country. In 1790 he was murdered by Dal Singh, of Bahrwal, and was succeeded by his son, Mahar Singh. In 1798, when Shah Zaman invaded the Punjab, Muzaffar Khan, governor of Multan, attacked Kamalia and

expelled the Sikhs. In 1804 Ranjit Singh appropriated all the territory still held by Mahar Singh.*

The Hans.

The rise of the Hans has been already noticed at pages 33—34 of this chapter. About 1764 Muhammad Azim was chief of the Hans clan. He seized as much of the country round about Malka Hans as he could. When Jhanda Singh and Ganda Singh, the Bhangi *sardars*, invaded Multan in 1766, they seized upon the country of Muhammad Azim Hans. After they had come to terms with the Bahawalpur Khan they seem to have almost deserted the country, so that the Hans easily expelled the remaining troops. It must have been before or about this time that the battle in which Hira Singh Nakkai was killed occurred, as Abdus-Subhan, the Diwan of Pak Pattan, was murdered in 1767. About this time, too, Muhammad Azim, Hans, was treacherously taken prisoner by Kamr Singh Nakkai, and died in confinement. He was succeeded by his brother Muhammad Haiyat, who quarrelled with Ghulam Rasul, the successor of Abdus-Subhan. Getting the worst of the contest, he called in the Bahrwal Sikhs to assist him, promising them half his country. They came, took the land, and did not interfere with the Diwan, but they did interfere with cow-killing and the calling to prayers *(bang)*. So Muhammad Haiyat was not pleased and called on the Dogars, who were then numerous in the district and desperate characters, to help him. The Nakkais were expelled, and the Hans ruled again. Before this the Para, Sohag, and Dhaddar had dried up, and with the water the source of wealth and power of the Hans had gone; so when the Sikhs returned, after the betrothal of Mai Nakkaian to Ranjit Singh, Muhammad Haiyat could not resist them, and sought refuge with the Diwan of Pak Pattan, and the Nakkais occupied the country till Ranjit Singh took it from them.†

The *kachhi* occupied by Bahawalpur.

About the same time that the Hans shook off their allegiance, the ruler of Bahawalpur, Mubarik Khan, moved across the Sutlej and annexed the strip of land lying along the right bank of the river,

*The accounts of these petty states are derived from oral tradition. They are of doubtful authenticity. The only check on them is Mr. Griffin's history of the Punjab Chiefs, which has been constantly referred to for the purpose. The history of the Punjab Chiefs says, on Kamr Singh's death Kamalia fell into the hands of Ram Singh (son of Nar Singh), head of the rival Nakkai house. Tradition says Ram Singh was Wazir Singh's servant. Ram Singh's name does not occur in the pedigree table of the Pahrwal Nakkais given on page 288 of the Punjab Chiefs., Vol. I (Ed. 1909).

†This account of the Hans is far from satisfactory. Considering that the Bhangi invasion of Jhanda Singh and Ganda Singh occurred in 1766, and that Abdus-Subhan, fighting against whom Hira Singh was killed, died in 1767, it is impossible to reconcile the statements given above. It can only be supposed that Muhammad Azim lost his country during Hari Singh's invasion, and was captured before the Bhangis appeared for the second time, and that Muhammad Haiyat formed an alliance with the Nakkais against Abdus-Subhan as well as against Ghulam Rasul. The Dogars afterwards emigrated and went up through Chunian into Mamdot, where they retained their reputation for lawlessness.

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from about Pir Ghani southwards, called the *kachhi*, a word meaning simply lowland lying between a river and highland. When the Bhangis invaded Multan in 1766, Mubarik Khan joined the Afghans and assisted in the indecisive battle that was fought on the Sutlej. Peace being made, he retained the *kachhi*. In 1772 the Bhangis defeated the Afghans and Daudputras, but the latter kept the land to the north of the Sutlej. In 1779 Diwan Singh Bhangi was driven out of Multan. In 1810 Sadik Khan, of Bahawalpur, was obliged to assist Ranjit Singh against his old allies, the Afghans, at the siege of Multan. Next year, after the repulse of the Sikhs, the Afghans attacked Bahawalpur, but were defeated. About this time Ranjit Singh demanded tribute for the Bahawalpur territory north of the Sutlej. Sadiq Muhammad Khan sometimes refused payment altogether, and always resisted till he succeeded in gaining more favourable terms. The demand was successively raised till the Khan could no longer pay it. Ultimately, in 1831 General Ventura occupied the country on the part of the Lahore Cantonment.

The Diwans of Pak Pattan.

The Diwan of Pak Pattan is the successor of Baba Farid Shakarganj. The respect inspired by the memory of this saint was shown as early as the invasion of Tamerlane, when it procured the safety of the town. The succeeding Diwans had great influence over the wild clans of the country, and were much respected by the Imperial officials. They held a good deal of land on a sort of jagir tenure. They received the government share of all crops on which revenue was levied in kind. But indigo, cotton, tobacco, and sugarcane were *zabti* crops, and paid in cash. All revenue paid in cash was taken by the *kardars*. It was then the interest of the Diwan to induce the people to sow crops of which the revenue was paid by divisions of the produce, and to neglect those paying in cash. As, moreover, cash rents were collected, whether the crops matured or not, he was able to make a show of seeking the benefit of the people when he exhorted them to sow only such crops as would pay nothing if there was no outturn. As might be supposed, the Diwan, being a man of influence and having a brick fort at Pak Pattan, was determined to be independent if possible; and when the Hans and Daudputras seized on all the land they could, he appropriated a small tract of country in the west and south-west of the present Pak Pattan *tahsil* estimated to yield a revenue of Rs. 30,000. The Diwan then was Abdus-Subhan. He is said to have made himself independent in 1757. He entered into an alliance with Mubarik Khan, and joined in an attack on the Bikaner Raja. This resulted in his getting some land on the other side of Sutlej. He then fought the Nakkai Sikhs, and defeated them. His territory was then occupied by the Bhangis. In 1767 he was killed

by an Afghan retainer by mistake. This Afghan had a grudge against one of the Hujra Saiyads. The Saiyad came on a visit to the the Diwan, and the Afghan resolved to shoot him. He lay in ambush as the Saiyad and Diwan were riding past, and observed the Saiyad was first. When the cavalcade got close to him, he fired at the foremost man, who turned out to be the Diwan, as the Saiyad had fallen back. In this way Abdus-Subhan came to his death. After the expulsion of the Bhangis his successors recovered their territory till Ranjit Singh appropriated it in 1810 : but they had to pay tribute to the Sikhs who held the Hans' country.

Death of Abdus-Subhan.

The situation of the Wattus on the Sutlej is described in Part C (*m*) of this Chapter. Not only do they occupy a large tract of country on the right bank of the river, they also extend for some distance on the left bank, principally in the Sirsa district. There was a famous Wattu *chaudhri* called Lakha, who used to pay in the revenue of a considerable part of the Wattu country on both sides of the river. About the middle of the eighteenth he became independent. He held the villages about Atari and Haveli, and some 40 more on the other side of the Sutlej. He built an enclosure or *haveli* near the latter village, hence the name Haveli, though the present village does not stand on the same site as Haveli Lakha Wattu. This chief seems to have had to fight for his territory, and to have been able to retain only the Wattu villages. It does not appear when he died but he was succeeded by his grandson, Ahmad Yar Khan, who was present at the defeat of Hira Singh Nakkai. His triumph was short-lived, for very soon Fateh Singh Bhangi attacked him, over-ran the country, and, after defeating him at Khadwali, drove him across the Sutlej. One account says the leader of the Bhangis was Sardar Budh Singh. He improved the country greatly, and the Wattus, who had been ill-used before, were well off and as contented as they could be under the Bhangis. An occasional attempt was made to oust the latter, but ineffectually. It would seem as if the Bhangis treated Jahan Khan, successor of Ahmad Yar, with consideration, and did not entirely despoil him of his property. The territory of the Bhangis extended from Maruf in the east to Bhangianwala near Pak Pattan in the west. The Sutlej bounded it on the south, and it ran up nearly to the old Bias on the north. Atari fell to the lot of some *sardar* about whom nothing is known. The famine of 1783 A.D. occurred in Budh Singh's time. He is said to have sold all his property, and to have fed the people with grain bought from the proceeds. In 1807 Ranjit Singh took the country from the Bhangis, and made it over to Kahn Singh Nakkai.

The Wattus, Lakha and Ahmad Yar The Bhangis.

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There was an Afghan, belonging originally to Kasur, called Daud Khan. He lived near Shergarh, and seems to have been a freebooter. About the time of the Mahratta invasion he settled at Jalalabad on the old Beas, about 10 miles north-west of Dipalpur. He built a mud fort and collected a number of similar characters to himself, and plundered right and left. Thus he became a man of influence. At that time Dipalpur, which had brick wall and bastions, was held by one Hari Singh, apparently a *thanadar* of the Mahrattas. His position soon became difficult; for the people did not care to have him, and the Mahrattas were driven out by the Afghans. He therefore entered into an agreement with Daud Khan to make over the town to him on payment of Rs. 4,000. Daud Khan paid Rs. 2,000, and was admitted into the town. Hari Singh was very anxious to get the balance due; and Daud Khan was equally anxious to get back what he had paid. In the end, Hari Singh found it advisable to get away as fast as he could. Daud Khan then became ruler and oppressed the people of the Dipalpur *ilaka* most grievously. He died after 10 years, and was succeeded by his son, Jalal-ud-din Khan, after whom the mud fort had been called. He was a greater tyrant than his father. As he found persons of property who were worth fining absconded, he made them give sureties not to leave without permission. Hence it became a saying that one should be careful to take one's sureties with one when going off "*sane zaminan jana bhai, sane zaminan jana!*" He appears, however, to have kept a hold of the territory till the last decade of the century. Then the Gugera and Bahrwal Sikhs seized all his villages to the north and west, while the Kanganpur *sardars*, who occupied Maruf, took the remaining villages and built a fort under the very walls of Dipalpur, where the canal bridge now stands. Finally, peace was made on the basis of the *status quo*, which left Jalal-ud-din Khan simply Dipalpur, and when his cattle went out to graze, the neighbouring villages stole them. He appears to have died in 1804. His successor and son, Ghias-ud-din, was expelled in 1807 by Ranjit Singh, who made over the place to the Bahrwala *sardar*. Afterwards Ghias-ud-din took service with Ranjit Singh. His son, Mohi-ud-din, owned two villages —Ghias-ud-din and Mahtaka Nauabad—in the Dipalpur *tahsil*. He was not a man of any importance.

The Saiyeds of Hujra and Basirpur.

In the town of Hujra are the shrines of two saints, Miran Lal, ahawal Sher and his great-grandson, Shah Mukim. The incumbent was always a man of influence, and held some villages in *jagir*. When the Moghal empire broke up, the incumbent was Saiyad Sadr-ud-din. He made himself master of the *taluka* of Hujra which he and his successors seem to have held till 1807. The country about Basirpur was inhabited chiefly by Muhammadans,

Wattus, and Arains. When the Bhangis occupied this part of the Doab, Basirpur seems to have been made over to Karm Singh, Chahal. The Wattus preferred their old master, Lakha. Both they and the Arains were discontented, because Karm Singh paid scant attention to their old customs. They resolved to get rid of the Sikhs. The Arains wanted to call in the Saiyads of Hujra, the Wattus preferred their connections, the Afghans of Dipalpur. They finally arranged to send for both, and that the place should be given to those who came first. Now there was a fort at Basirpur and a garrison in it, and it was necessary to get rid of the latter. The Afghans and Saiyads were summoned one evening, and during the night a great noise of people crying for help was heard outside the fort at a little distance. The men in the fort went out to see what was the matter, when the *zamindars* set on them in the dark, and killed many of them. The rest fled. In the morning the Saiyads came up, and the fort was made over to them. Next the Dipalpur forces came up; but they were too late. The Saiyads after that held the Basirpur *taluka* till 1807. It does not appear when the Chahals were ejected; but it was probably about 1780, when the Bhangi *misl* was growing weak. Sadr-ud-din was succeeded by Saiyad Kutb Ali, and he by Sardar Ali Shah a cruel tyrant. He appears at first to have been kept in some sort of order by the Gugera Nakkais, but afterwards he gave loose rein to his bad disposition. After the conquest of Kasur in 1807, Ranjit Singh made over the Hujra and Basirpur territory to Bedi Sahib Singh in *jagir*. The end of Sardar Ali Shah was tragic. He went to Una, got involved in a quarrel with the Bedis, and was put to death by them. Sadr-ud-din seems to have been a good ruler, and to have encouraged agriculture, to have laid out gardens, and sunk 150 wells.

The Saiyads of Hujra and Basirpur.

The incumbent of the shrine of Daud Bandgi Shah at Shergarh had also some *jagir* villages during the Moghal empire. He set up as independent chief on the downfall of the empire, and held his three villages till Ranjit Singh took them away and made them over to Fateh Singh, Gandhi. Sardar Lal Singh resided at Shamkot, in the south of the Lahore district. When the Sikhs were seizing all the country round about, he made himself master of the *talukas* of Kanganpur in Lahore (which also extended a little way into this district) and of Maruf. Subsequently, when the Dipalpur Afghans grew weak, he seized on their villages to the south up to the gates of Dipalpur. In 1807 Ranjit Singh deprived him of his possessions, and made over the *talukas* of Maruf in *jagir* to Fatah-ud-din Khan, nephew of the chief of Kasur, which had just been conquered.

The Saiyads of Shergarh.

The *Sardar* of Shamkot.

Thus between 1804 and 1810 Ranjit Singh had taken possession of all the country except a small strip on the Sutlej held by the

The country under Ranjit Singh.

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Khan of Bahawalpur, who paid tribute for it. The old divisions were abolished, and the country parcelled out into *talukas*. Over each a *kardar* was appointed, who was very nearly independent. He exercised judicial and executive powers. He collected the revenue and settled disputes. The revenue collected in the shape of fines was not much less than the actual land revenue. Almost the whole of the Dipalpur *tahsil* was held by influential *sardars* in *jagir*, with the exception of Chendpur and a block of land south of Faridabad; the rest of the district was *khalsa*. Occasionally, a *taluka* would be given in *jagir* and almost immediately resumed. Thus Kanwar Khark Singh held Kamalia from 1814 to 1816. The *talukas* seem to have been farmed to the highest bidder. As might be expected from such a system, oppression flourished. There was little security either. The people had only two ways of protecting themselves,—the first was to go to Lahore and complain; the second to murder the *kardar*; neither was very satisfactory, as the result was only to introduce a still more rapacious party on the scene. The ruins of old forts are still numerous in the district. Wells used to be provided with little towers to which the cultivators might fly on the approach of danger. A couple of matchlocks were kept in them, and beneath, there was an enclosure for cattle. Thus cultivators carried on their work. Ranjit Singh had a *thana* at Kabula, and there was another belonging to Bahawalpur at Tibbi, four miles off, yet the country was so unsettled that people scarcely dared to cross between the two if they had anything worth stealing with them. About 1830 Diwan Sawan Mal, governor of Multan, obtained charge of a considerable portion of the district; almost all, in fact, except the Dipalpur *tahsil*. His rule was decidedly vigorous. At first, villages in which serious crimes took place were burnt as examples. The track law was strictly enforced. He had canals dug, and by light rents and a just administration caused large areas to be brought under cultivation. The tribes of the Ravi were, however, not to be weaned from evil ways in a hurry, and in 1843 they were out and plundered half the country. The Wattus on the Sutlej were very little better. In 1844 Sawan Mal was killed. Next came the first Sikh war. The Kharrals and Sials rose again, but were severely handled by Sadik Muhammad, the *kardar* of Mulraj. The result of the war was the establishment of the English residency at Lahore. A summary settlement was made; but otherwise no startling changes occurred. The second Sikh war ended with the introduction of British rule in 1849.

The country under Ranjit Singh.

The country under Diwan Sawan Mal.

Political divisions under the Sikh monarchy.

The state of things, towards the end of Ranjit Singh's reign, is shown in a map appended to Mr. Purser's Settlement Report, in which the approximate limits of the country subject to Sawan Mal

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Political divisions under the Sikh monarchy.

are marked. After Dipalpur *taluka* had been taken from the Nakkais, about 1810, it was given in *jagir*, to Kanwar Khark Singh, and in 1828 to Sardar Jawand Singh, Mokal. He held it till his death in 1840. Then his son, Bela Singh, succeeded. He was drowned in the Sutlej when the Sikhs were defeated at Sobraon. The *jagir* was then resumed. Hujra and Basirpur *talukas* were held in *jagir* by Bedi Sahib Singh. On his death, his son, Bishan Singh, succeeded. He was followed by his son, Atr Singh. Ranjit Singh and Bishan Singh died about the same time. A court intrigue ended in the resumption of Atr Singh's *jagirs*, while he himself was shortly after murdered by his uncle, Bikrama Singh. The *talukas* were farmed to Sawan Mal, and then to Fakir Chiragh-ud-din. In Maharajah Dalip Singh's reign the sons of Atr Singh, Babas Sampuran Singh and Khem Singh, recovered a considerable number of their villages in the Basirpur *taluka*. They then divided them, not being on good terms with each other. Their descendants are still in possession of extensive *jagirs*. *Taluka* Atari was held for some time by the Bahrwalias. Then Dal Singh (Nabarna) Kalianwala, and after him his son, Atr Singh, held it in *jagir*. It was resumed in 1851 on his death. It was for some time under Sawan Mal. *Taluka* Jethpur, consisting of 40 villages, was another *jagir* of the Kalianwala family. It was held by Chatar Singh, brother of Atr Singh. He was killed at Ferozeshah (Ferushahr), and the *jagir* was then resumed. A portion of the Dipalpur *tahsil* was at that time attached to the Chunian *ilaka*, which belonged to Kanwar Khark Singh. It was managed for him by Mangal Singh (Siranwali), who appears afterwards to have enjoyed himself. It was subsequently made over to Atr Singh (Nabarna), probably on the accession of Maharajah Sher Singh. *Taluka* Maruf had been given to Fatah-ud-din Kasuria by Ranjit Singh. It was held by him till 1845, when he was killed at the battle of Ferozeshah. The Kanganpur *tāluka* belonged to Lahore. It appears to have been held by the Bahrwal family, and then by Jawand Singh, Mokal. *Taluka* Shergarh belonged to Fateh Singh, Gandhi, who is said to have been a follower of Sardar Gyan Singh, Nakkai. So was Sardar Sada Singh, who held the *taluka* of Shadiwala, consisting of only two villages. It does not appear when these two *talukas* were resumed. Indeed, it seems hardly correct to give them such a grand title, as they were simply parts of *talukas* Hujra and Jethpur till granted in *jagir*. Haveli was held in *jagir* till the death of Khark Singh, first by a member of the Kalal family and then by Mahan Singh Datt. Chendpur (or Kot Tahir) was part of the *jagir* of Sardar Dal Singh.

British Rule.

On the occupation of the country in 1849, a district was constituted with its head-quarters at Pak Pattan. It included so much

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of the present district as lies between the Ravi and the Sutlej, the trans-Ravi portion belonging to the Jhang district. In 1852 this latter tract was attached to the district, and the head-quarters transferred to Gugera, near the south bank of the Ravi, and upon the old military road from Lahore to Multan, about 30 miles to the north of the present station of Montgomery. In 1855 twenty villages were transferred from the Lahore to the Gugera district. On the opening of the railway, Gugera was abandoned as a civil station, and the head-quarters of the district transferred to the village of Sahiwal which became the half-way station on the line between Lahore and Multan. This took place in 1864. Subsequently in 1865, by way of compliment to Sir R. Montgomery, the new station received the name of Montgomery. About the same time the interior arrangement of the district was re-cast. It has previously been divided into five *tahsils* having their head-quarters at Gugera, Saiyadwala, Hujra, Pak Pattan, and Harappa. Now, however, Saiyadwala and Harappa ceased to be *tahsil* stations, and the district was divided into four quarters, the *tahsil* of Gugera, in the north, of Hujra, in the east, of Pak Pattan in the south, and Montgomery in the west, the trans-Ravi or Saiyadwala *parganah* being included in the Gugera *tahsil*. Subsequently, in 1871, the head-quarters of the Hujra *tahsil* were removed to Dipalpur.

The Mutiny of 1857.

The more turbulent tribes of the district had, during generations of anarchy, become too much accustomed to robbery and violence to settle down with pleasure to a quiet humdrum life, the invariable concomitant of British rule. When the mutiny broke out in 1857, they thought the time had come to resume their old habits, and the district was the scene of the only popular rising which took place north of the Sutlej. Emissaries from Delhi appeared before the end of May to have crossed the river from the direction of Sirsa and Hissar, which districts were already in open rebellion, and to have commenced an agitation. The Kharrals are divided into many *gots* or sub-divisions. Among them are the Upera and Lakhera *gots*. The Upera Kharrals belong principally to Jhamra and Danabad, in the Gugera *tahsil*. The Lakhera Kharrals are found about Kamalia. There is little love lost between these kinsmen. The battle of Danabad, in which the Lakheras beat the Uperas, has been mentioned. The Kathias, who hold with the Lakheras, have always been engaged in quarrels with the Uperas. In 1857 Ahmad, a resident of Jhamra, was the leader of the Uperas; and Sarfraz Khan, of Kamalia, was the chief of the Lakheras. Ahmad was a man above the average—bold and crafty. In 1848 he had induced Dhara Singh, of the Gugera Nakkai, to hold Satghara against the English, and then betrayed him. It was this man who roused the tribes. All the

important Ravi tribes rose, but the Sutlej tribes, with the exception of the Joyas, kept generally quiet. News of the Meerut mutiny and massacre and of the disarmament of the native troops at Mian Mir reached Gugera *viâ* Lahore on the 13th May. The Deputy Commissioner, Captain Elphinstone, forthwith disarmed the detachment of the 49th N. I. stationed there as Treasury guard, and sent it back to Lahore ; their place was taken by sepoys of Captain Tronson's Police battalion, for whom were substituted at the Jail the retainers of Babas Khem Singh and Sampuran Singh who remained in active attendance on the authorities all through the disturbances. About the end of May news was received of the mutiny of the Hariana Light Infantry and the 14th Irregular Cavalry at Hansi, Hissar and Sirsa, and the accompanying massacres of Europeans. In reply to an appeal for assistance from Mr. Oliver at Fazilka a force of 226 men was despatched across the Sutlej under Lieutenant Pearse, who subsequently took part in the operations of the Hariana Field Force. June passed away without any overt act of rebellion taking place. By way of precaution arms licenses were withdrawn, and extra police and *sowars* recruited to replace those despatched to Fazilka. On the 8th July and subsequent days a slight disturbance occurred at Lakhoke in the Pakpattan tahsil. The Joyas of that place assisted by their clansmen across the Sutlej in Bahawalpur refused to pay balances of land revenue, and assumed a threatening attitude, but quickly dispersed on the arrival of reinforcement from Gugera. The first real precursor of the storm that was brewing occurred on the night of July 26th in the shape of an outbreak in the Gugera Jail. This appears to have been in all probability the work of Ahmad Khan, as he had managed with the connivance of the *darogah* to pay an unauthorized visit to the jail during June, when he no doubt conferred with the more turbulent of its inmates. Shortly after his visit a large quantity of tobacco, sweetmeats and other prohibited articles were discovered under the prisoner's cots. The *emeute* in the jail was promptly suppressed : 51 prisoners were killed and wounded. Apparently no satisfactory proof could be found against Ahmad Khan, who, however, had promptly fled from Gugera as soon as the jail outbreak occurred. He was brought back, and together with other chiefs of the predatory tribes on the Ravi and Sutlej required to enter into heavy recognizances not to leave the Sadr without special permission. August passed without any important occurrence. A local military levy was raised, and 200 of its recruits had been despatched to Peshawar on the 15th September. Two days subsequently the storm broke. At 11 P.M., on the night of the 16th September Sarfaraz Khan informed Captain Elphinstone that all the chiefs of

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the Ravi tribes who had been called into Kamalia had fled, evidently with the intention of rising in their villages. A force was at once despatched to protect Kamalia, and expresses were sent to inform the Commissioner at Multan and the tahsil officials at Harappa. Both messengers were stopped by the Murdanas of Muhammadpur. Mr. Berkley, Extra Assistant Commissioner, was despatched on the 17th with 20 *sowars* to capture Ahmad before he could cross the Ravi on his way to his village Jhamra. In this, however, he was unsuccessful, but an interview appears to have taken place at which Ahmad renounced his allegiance to the British, and gave himself out as a subject of the King of Delhi, from whom he had received orders to raise the whole country. Meanwhile the Government treasure and records were removed into the tahsil at Gugera, and the jail was vacated, the prisoners, being placed in a *serai* near the tahsil. Captain Elphinstone on the same day, the 17th, then joined Mr. Berkely with re-inforcements. The Ravi was crossed, and the rebels were put to flight on the first slight skirmish. Some 20 prisoners and 700 head of cattle were taken, and Jhamra itself was burnt. This effectively quelled the Kharrals of that part of the country, and Ahmad had in future to rely upon the support of the neighbouring Wattu tribe to the west of Jhamra. On the 18th Mr. Berkley was sent towards Kaure Shah in order to re-open communications with Multan, and to give needful assistance to the tahsil at Harappa. Meanwhile troops were moving down from Lahore. Lieutenant Chichester, with a detachment of the 1st Sikh Cavalry, reached Gugera on the 19th, and was sent across the Ravi on the 20th to scour the country westwards. On the same day in their rear Ahmad accompanied by a large body of Wattus crossed to the south bank of the Ravi with the intention of attacking the Sadr station. The re-inforcements from Lahore, under Colonel Paton, consisting of three horse artillery guns, one company of the 81st, one company of a Native regiment, and a party of mounted police accordingly hurried forward to Gugera, and messages were sent recalling Mr. Berkley and Lieutenant Chichester. Meanwhile the rebels had advanced close to the Sadr station; the troops were moved out to meet them, and after receiving a few rounds of grape and shrapnel they retreated slowly beyond Fattehpur into the jungles near the river. They do not appear to have been hotly pursued, and suffered but small loss. On the next day, the 21st, reliable information was received to the effect that Ahmad with a large body of Wattus had retreated into the jungle near Gashkori, some six miles south of Gugera. Captain Black was sent with a detachment of cavalry to destroy them. He was joined by Lieutenant Chichester. A sharp skirmish took place in which the cavalry

had to retreat. They were, however, rallied, and Ahmad together with Sarang, chief of the Begke Kharrals, was killed. Our losses were severe, nearly twenty of the *sowars* being killed. Meanwhile Mr. Berkley was at Kaure Shah with the object of re-opening communication with Harappa which had been interrupted by the Murdanas of Muhammadpur under their headman, Walidad. On the 21st, with 60 horsemen, he dispersed near the above place a large gathering of Fattiana, Tarana and Murdana Siyals, killing 14 of them. On the next day he marched towards Muhammadpur, taking a circuitous route towards the Ravi in order to disperse any bodies of insurgents which might again have assembled. He was suddenly attacked in a riverside jungle near Kaure Shah by a considerable body of them. In the confusion Mr. Berkley was cut off, and, after making a gallant resistance single-handed, was killed. More than 50 of his detachment were also killed. The remainder rallied, and returned to Nur Shah. On the afternoon of the 23rd Captain Elphinstone, accompanied by Captain Black and Lieutenant Chichester, started for that place. On the way he learnt of the sack of the Harappa tahsil, and that the whole country down to Tulamba in Multan was in open insurrection. Next day he was joined by Captain Paton from Gugera with the whole of his infantry and the three guns. On the 25th Harappa was reached, and then information was received that Captain Chamberlain who had marched with a party of cavalry from Multan, was surrounded by the rebels in the *serai* at Chichawatni who were about to attack him. On the 26th Colonel Paton's force advanced from Harappa: the insurgents were met with about two miles from that place. They were dispersed by artillery fire, and no very effective pursuit appears to have been made. The force then marched to Chichawatni, where it halted several days. It was reinforced on the 28th by fresh detachments from Lahore under Captains Snow and MacAndrew. On the 30th Colonel Paton's force returned towards Gugera after leaving garrisons at Chichawatni and Harappa. On the way an unsatisfactory skirmish with the rebels took place in which Captain Snow was wounded. At Gugera that force was joined by a party of the Lahore Light Horse. In the early part of October some ineffectual operations were carried out on the north side of the Ravi against the Fattianas, Murdanas, etc., who had collected in the dense Jalli jungles after being joined by the Bhainiwals and Baghelas, who had previously aided the Kathias, in thoroughly sacking Kamalia. Meanwhile the Kharrals submitted and the Wattus returned to their villages, but the tribes assembled at Jalli and the Kathias broke across the *bar* towards the Sutlej, and concentrated near Jamlera and Lakhoke, Joiya villages. There they were brought to action and defeated. By

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the 4th November the insurrection was over, and the force employed in its suppression broke up. The Joiyas, even now a turbulent tribe, had risen and murdered an English officer, Lieutenant Neville, who was travelling on the Sutlej. They also plundered Kabula. Their leader, Lukman, behaved in the most ludicrous manner, and looked heartily ashamed of himself when twitted by the people about his conduct.

Claims for compensation for property destroyed or plundered by the insurgents were admitted to the extent of Rs. 5,22,104 ; of this nearly three lakhs was on account of the sack of Kamalia alone. Against this. plundered property to the value of Rs. 1,18,000 was recovered and restored to the owners. The result of the insurrection was not such as to encourage similar attempts. The leaders were executed or transported, and many persons sentenced to other punishments. Over four lakhs of rupees were realized from the insurgent tribes by fine or by confiscation and sale of property, much of which consisted of cattle.

Mutiny worthies.

It is more pleasant to record the names of those who were conspicuous for their loyalty, and were rewarded accordingly. They were :—

(1) Babas Khem Singh and Sampuran Singh, Bedies, whose families are still prominent in the District. Baba Khem Singh's grandson Baba Harbans Singh is now President of the Montgomery Municipality and was till recently Vice-Chairman of the District Board. (*cf.* pages 107—108).

(2) Kanhaya Ram, Arora, whose son Lala Charan Das is now a Zaildar of Chichawatni and Vice-President of the Notified Area Committee in that place. This zaildar is held in much respect and has recently been awarded the title of Rai Sahib. His son Lala Sher Bahadur is a member of the District Board.

(3) Dhara Singh Nakai mentioned on page 44 above whose grandson Teja Singh is now lambardar of Gashkauri in the Okara Tahsil.

(4) Jiva Khan, Lambardar of Akbar. His family is now represented by Mian Chiragh Din, Zaildar of Akbar, who is Senior Vice-Chairman of the District Board, and whose brothers, Mian Nur Muhammad and Abdul Wahab, are also members of the District Board, while Mian Abdul Wahab is also a Zaildar. (*cf.* page 109).

(5) Sardar Shah whose son Bahadur Shah is now a Zaildar of Khunda in the Montgomery Tahsil.

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(6) Machhi Singh, Arora, of Kaliana, whose son Hukam Singh is still a Zaildar. His grandson Sardar Datar Singh is Junior Vice-Chairman of the District Board.

(7) Gulab Ali, Chishti of Tibbi. His son Pir Allayar, Zaildar and Divisional Darbari died in the year 1932. Pir Allahyar's son Pir Gulab Ali is a member of the District Board.

(8) Jamiyat Singh, Khatri, whose grandson Hukam Singh is Zaildar of Dipalpur.

(9) Murad Shah whose grandson Sher Shah is now a Lambardar and *Muafidar* of village Daula Bala. His family are co-sharers in the village with the descendants of Sardar Shah No. 5 above, but do not appear to be related to him.

It is satisfactory to find that the families who rendered conspicuous service to the Crown in 1857 are still taking their proper place in the public life of the District.

Retrospect.

From the above sketch of the history of the district it will be seen that except for the archæologist there is no prosperous past on which to look back with pleasure. From the earliest times the district has been inhabitated by robber tribes ; for centuries it has been a prey to anarchy and savage warfare ; it has been traversed by the most ferocious and sanguinary conquerors of whom we read in history. Nature itself has affected the district unfavourably ; tracts of country once irrigated from branches of the large rivers had to be abandoned when the water ceased to flow. Every inducement was in the past given to the people to adopt a restless and roving life. That they should have clung to their old habits is not surprising.

Immediately after the Mutiny, roads were made for military purposes and additional police were entertained. Gradually a more organized and generally more effective administration turned the inclinations of even the more-turbulent tribes towards peaceful pursuits. Even before the introduction of the large irrigation schemes which have transformed the district, a good deal of land was broken up, wells were sunk and a taste for agriculture developed.

Canal irrigation starts. Sohag Para Colony.

The development of the district on its present lines however may be said to date from 1886 when colonization of the Sohag Para Canal Colony area began. This, with the Sidhnai Canal Colony in the Multan district, was one of the first ventures of the Punjab Government into the field of colonization which was afterwards to prove so fruitful. For many reasons a long interval divided the

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completion of the Sohag Para scheme from the undertaking of the more important developments that were to follow, but it none the less pointed the way to progress : the scheme contained elements which have characterized all the colonization which has followed, the chief being the extension of irrigation to areas hitherto lying waste as well as to existing settlements, and the introduction in large numbers of peasant colonists, whose standard of farming was high, from other districts of the province. The original scheme involved the formation of 54 new estates, to which 9 more were added on extensions opened 8 years later. The immigrant colonists were largely Jat Sikhs and Kambohs from Lahore and Amritsar districts, but there was a large element of Kambohs already in the district who joined in the development. The gross area ultimately commanded by the Sohag Para system was 242,241 acres of which 86,315 acres was Crown waste. The area has now been merged in the Sutlej Valley irrigation system, which has superseded the old Lower Sutlej Inundation Canals. The irrigation from the old canals was in the Kharif season only, as there was no control at their heads and they depended for their supplies solely on the seasonal river floods.

Inundation Canals.

An intermediate episode was the irrigation of certain villages and a considerable area of crown waste in the Pakpattan Tahsil by means of inundation canals locally designed, excavated by local labour, and managed by the Deputy Commissioner or the District Board. Payment for the labour of excavation was given in the form of temporary leases of the area of crown waste to which water was brought and this system attracted and settled on the land the numerous Mahtams or Ra-Sikhs, who now hold colony grants between Arifwala and Kabula. The chief of these inundation canals bore the names and commemorated the efforts of two Deputy Commissioners of the district, Messrs. Kitchin and Irving : they have now been superseded by channels of the Sutlej Valley system.

Lower Bari Doab Canal.

The next and by far the most important development was the construction of the Lower Bari Doab Canal as part of the great Triple Project in the years 1906 to 1913.

Triple Canal Project.

A full account of the construction of this canal is given in the completion report of the Triple Canal Project which was published in 1919. The original idea of irrigating the Lower Bari Doab with water taken not from the rivers Sutlej, Beas or Ravi, but from other Punjab rivers north of the Ravi, emanated from Sir James Wilson who was then Settlement Commissioner. In a note dated 22nd October 1901 which he presented to the Indian Irrigation Commission, Mr. Wilson drew attention to the possibility

History. Triple Canal Project.

of using the surplus winter flow of the rivers Jhelum and Chenab for the irrigation of the Lower Bari Doab. Colonel S. Jacob, C.I.E., late Chief Engineer, Punjab, prepared a memorandum expressing the same idea in May 1902. It devolved on Sir James Benton, C.I.E., then Chief Engineer, to carry out an investigation into these proposals. The enquiry showed that there was surplus water in the Jhelum to irrigate an area larger than could be commanded by the Lower Bari Doab Scheme. Also that by taking out a canal from the river Chenab well above Khanki it would be possible to command the upper section of the Rechna Doab above the Chenab Colony Canal before crossing the Ravi to feed the canal on the alignment proposed for the Lower Bari Doab Canal. The complete Triple Canal Project consists of—

(*a*) the Upper Jhelum Canal taking out from the Jhelum river at Mangla in Kashmir territory and conveying water to the Chenab at a point immediately above Khanki, the off-take of the Lower Chenab Canal;

(*b*) the Upper Chenab Canal taking out of the Chenab river at Merala near Sialkot;

(*c*) the Lower Bari Doab Canal constructed in continuation of the Upper Chenab Canal and crossing the river Ravi at Balloki about 45 miles from Lahore.

The waters in the river Jhelum are thus made available for use in the Lower Chenab Canal thereby permitting the withdrawal of a certain portion of the supply of the river Chenab for use on the Upper Chenab and Lower Bari Doab Canals.

In the early days of annexation it was believed that there was sufficient water in the Ravi to irrigate the entire Doab right down to Multan. This supposition was found to be incorrect and the Upper Bari Doab Canal had to be cut short leaving the lower portion of the Doab unprovided for. From 1854 onwards various schemes were propounded for withdrawing water from the Beas or Sutlej for the irrigation of this area but were dropped owing mainly (1) to the short winter supply in the Ravi, and (2) to the fact that if waters of the Sutlej were used for irrigating the Bari Doab westward the upland along the east bank of the river all the way to Rajputana would for ever be deprived of its only source of possible supply. The Triple Canal Scheme outlined above solved this problem.

Balloki Headworks.

The Ravi Tahsils of the Montgomery District and the Khanewal Tahsil of the Multan District are irrigated by the Lower Bari Doab Canal taking off at Balloki. Balloki is in the Lahore District,

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but some account of the Headworks will be of interest here. They are described as follows in the completion report :—

"The Headworks of this canal are in the form of a level crossing where the supply from the Upper Chenab is dropped into the river on the right bank, crosses it at bed level and is taken off on the left bank at Balloki. The group of works consists of an inlet, a barrage, a regulator and training works."

"The barrage consists of a low weir 1,646·5 feet extreme length divided into 35 bays each 40 feet clear by piers 7·25 feet wide. In this locality where fine sand forms the river bed the floor is specially wide to reduce the danger from blowing up. The flank walls and piers are 22·34 feet high and are surmounted by steel trestles, which carry the operating platform. The gates are 12·5 feet high, counterbalanced on the Stoney principle and the machinery is geared to lift the gates at short notice and lower them according to the requirements of regulation. A roadway crosses the barrage, on the downstream side of the gates."

"The regulator has 15 bays each 20·0 feet clear divided by piers 3·8 feet wide. There is a permanent sill 6·41 feet high and a further temporary sill of 2·5 feet height obtained by a rising gate 2·75 feet high, making it possible to exclude heavy silt from the canal channel. The gates are in two parts, the upper falling and the lower rising to shut the vents. There is a roadway over the regulator and upstream of this is the platform carrying the operating machinery, which has been geared to close the vents quickly and open at leisure."

"The training works consist of a number of bunds and groynes and are intended to bring the stream true to the barrage and convey it to a safe distance downstream."

Construction.

Although the full development of this canal was not possible until the Upper Jhelum and Upper Chenab Canals were complete and water in the winter season for the Rabi crops had been made available thereby, it was considered advisable to push on with its construction, as Kharif irrigation alone would be of considerable benefit to the Bet land bordering the Bar. Work on the Main Canal started in December 1906. Some delay arose by reason of

investigations into the best site for the Ravi crossing and into the nature of the work to be constructed for that crossing. Further the great and unexpected rise in prices that took place in about 1909 together with the expenses incurred in importing labour for construction work and the decision to substitute a level crossing at the Ravi for a syphon, necessitated the preparation of a revised estimate. This estimate was sanctioned on 17th February 1911. In the spring of 1913 the canal was considered in a fit state to be opened for Kharif irrigation in settled tracts, and on the 12th April of that year the canal was opened by the Hon'ble Sir Louis Dane, Lieutenant-Governor of the Punjab, at Balloki. There was still much work to be done in the way of completing distributaries and water-courses and in getting things generally in order for colonization. In 1915 the completion of the Upper Jhelum Canal assured to the Lower Bari Doab Canal a satisfactory winter water supply.

Lower Bari Doab Canal Colony.

The first Colonization Officer was appointed in 1912 and allotments began in the following year. Nearly 600,000 acres had been allotted by 1920, progress having been retarded by the fact that the military reward grantees for whom large areas had been set aside did not begin to arrive till that year. The total area of crown waste which the canal was designed to serve, including the Khanewal Tahsil in the Multan District, was about 1½ million acres. The colonization scheme contemplated the distribution of the Crown waste area in the colony as follows. The indigenous population, immigrant peasant settlers and auction purchasers combined were to absorb 67 per cent. of the available area. The colonization scheme included comprehensive arrangements for horse-breeding under the supervision of the Army Remount Department of which an account is given in Chapter II, part A, Section (*g*). Of the immigrant peasants some were selected because they would be likely to be good horse-breeders; others, from the agricultural tribes of the Central Punjab, to form a leaven to counteract the pastoral tendencies of the indigenous inhabitant and to improve by their example the poor husbandry of the horse-breeders; and others, the military grantees, for their conspicuous service in the army. The remaining 33 per cent. of the colony was to be devoted to various special objects as follows:—

(*i*) To depressed classes, 2 per cent.

(*ii*) Non-peasant grants to landed gentry and for services rendered to Government, 7½ per cent.

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(*iii*) Grants on service conditions, 10 per cent.

(*iv*) Grants for special objects, such as irrigated forests, horse-runs, cattle-farms and the like, 13½ per cent.

As has been pointed out in the Colony Manual an outcome of this scheme is that 29 per cent. of the land in the colony is held by persons who need not reside there unless they wish, whose only interest in the colony is the amount of money that can be got out of it. As the Manual observes "the best Punjab type of agricultural community, which it is Government's aim to reproduce in the new colonies, does not include the absentee landlord."

Colonization Officers.

A list of Colonization Officers from 1912 to 1923 when the post was abolished is given below :—

Serial No.	Name.	From.	To.
1	E. A. Joseph, Esquire, I.C.S. ..	23-11-1912	31-7-1915
2	R. D. Thomson, Esquire, I.C.S.	1-8-1915	12-4-1915
3	E. A. Joseph, Esquire, I.C.S. ..	13-4-1915	1-5-1917
4	R. D. Thomson, Esquire, I.C.S...	2-5-1917	30-7-1918
5	Chaudhri Mohammad Din, P.C.S.	31-7-1918	30-8-1918
6	J. G. Beazley, Esquire, I.C.S. ..	31-8-1918	9-11-1918
7	Chaudhri Mohammad Din, P.C.S.	10-11-1918	18-12-1918
8	J. G. Beazley, Esquire, I.C.S. ..	19-12-1918	14-1-1920
9	F. H. Puckle, Esquire, I.C.S. ..	15-1-1920	14-3-1922
10	F. B. Wace, Esquire, I.C.S. ..	15-3-1922	20-11-1922
11	F. H. Puckle, Esquire, I. C.S. ..	21-11-1922	25-10-1923
12	F. B. Wace, Esquire, I.C.S. ..	26-10-1923	28-11-1923

Sutlej Valley Project.

The final stage was reached with the undertaking of the Sutlej Valley Project on which work actually began in October 1922. A brief history of this scheme was given by Mr. E. R. Foy, C.I.E., Chief Engineer, on the occasion of the opening of the Suleimanke Headworks on the 12th April 1926 :—

"In 1854 while the Bari Doab Canal Project was under preparation, Lieutenant Anderson, R.E., proposed a scheme for the construction of a Weir and a Bridge across the Sutlej near Ferozepore. This, however, was not adopted on the score of expense. In 1866 Colonel Strachey, R.E., proposed a scheme for taking out a canal from the right bank of the Sutlej, a short

distance below Harike where the Sutlej and Beas meet, and this scheme was submitted in 1872 as the Lower Bari Doab Project by Colonel Gulliver, R.E. In 1873 the Government of India decided that owing to the high cost of the scheme it would be better to begin with Inundation Canals so designed as eventually to fit in with a Weir and Dam on the Sutlej later on."

"Prior, however, to this, in 1868 the Sirhind Canal, taking out from the Sutlej at Rupar, was started but no serious effects caused by withdrawal of the supplies in the Sirhind Canal were felt till 1887. About this time, however, Punjab Irrigation Officers were beginning to get interested in more important schemes further north which eventually resulted in the Chenab Canal—the first of our big and successful Colony Canals—and they were not able to attend to less promising schemes elsewhere."

"In 1897 Colonel Ottley, R.E., brought forward the Montgomery Canal Project. It was again proposed to locate the Weir at Harike and practically all the perennial irrigation was to be in the Montgomery Bar. Sir Thomas Higham, Inspector-General of Irrigation, favourably considered this scheme; but it was laid down that full provision ought to be made in the final Project to meet the legitimate claims of the Bahawalpur State and in consequence new surveys were instituted in 1900. The final Project was submitted in October 1901, but before orders on it were received the Indian Irrigation Commission had been convened, and they recommended the postponement of the construction of the Montgomery Canal, eventually deciding that the waters of the Sutlej and Beas should not be utilised on the west where the land could get water from the surpluses in the Jhelum, but that they should be reserved for the desert land on the left bank, *i.e.*, to the south and east. The result of these recommendations by the Irrigation Commission was the splendid Triple Canal Project, of which the last link was completed in 1915, bringing water from the north to the Montgomery Bar thereby still leaving free the Sutlej and Beas supplies."

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"Acting on the recommendations of the Irrigation Commission, Sir John Benton, when Chief Engineer, in July 1905, recommended a scheme of three Weirs. This was a very comprehensive Project, but its details were reviewed by Mr. Kennedy, Chief Engineer, and Mr. Preston, Inspector-General of Irrigation, and eventually the Government of India approved of an alternative proposed by Mr. Kennedy having a Weir at Harike and a second Weir much lower down near the borders of Multan District. In this scheme it was proposed to include irrigation in the desert tracts of Bahawalpur and Bikaner with full provision for safeguarding the existing Khadir Canals of the former State. Further investigation was ordered by the Government of India."

"In 1906 Mr. F. C. Glass was appointed to take charge of detailed surveys in Bahawalpur and Bikaner States and in the Nili Bar tract of British territory, and from the excellent maps prepared by him many alternative schemes were drawn up by Messrs. Woods and Stoddard up to the year 1913."

"Unfortunately none of the various proposals suggested since 1902 were acceptable to the State of Bahawalpur; a period of controversy intervened, and for a time it was not possible to gain the agreement of the Council of Regency, which, owing, to the minority of His Highness the Nawab, was then in office. In 1919, however, under the able guidance of Mr. H. W. M. Ives, C.I.E., Chief Engineer, fresh proposals were submitted and thrashed out in committee by Punjab Officers, with Sir T. R. J. Ward, C.I.E., Inspector-General of Irrigation, on one side, and the Council, with the technical advisers of the State, Sir John Benton, C.I.E., and Mr. Davis, on the other, and it is a subject of congratulation to all concerned that in September 1920 after some weeks of close scrutiny by the Council and Colonel A. J. O'Brien, C.I.E., Political Agent, of the details of the Project prepared by Mr. H. W. Nicholson under Mr. Ives' guidance, the objections were removed and the two great States of Bahawalpur and Bikaner with the British Government were able to give a joint acceptance to the Project."

Suleimanke Headworks.

The Suleimanke Headworks was the second unit of the Sutlej Valley system counting the upstream weir at Ferozepore as the

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Suleimanke Headworks.

first. The other weirs were downstream at Islam and Panjnad. It was taken in hand first because the canals which were to get their supplies from it would open up most of the desert lands from the sale of which the Punjab Government and the State of Bahawalpur expected to get those funds which were necessary to finance the Project. Owing mainly to the economic depression which supervened from 1930 onwards, these expectations have not as yet been fulfilled. The Headworks at Suleimanke consists of a barrage or weir having at either end under-sluices each consisting of 8 bays of 30 feet, while between them there is a raised crest divided into 24 bays each of 60 feet. The weir is provided with a combined road and railway bridge downstream of the sluice gates. On the British side the Pakpattan Canal is fed through a regulator of 8 bays with a discharge of 5,981 cusecs. This is a perennial canal with one large non-perennial branch irrigating the southern point of the Pakpattan Tahsil and passing on into the Mailsi Tahsil.

Ferozepore Headworks.

The other unit of the Sutlej Valley system with which the Montgomery District is concerned, is the Headworks at Ferozepore which was opened by His Excellency the Viceroy, Lord Irwin, in October 1927. This headwork is the furthest upstream of the four headworks of the Sutlej Valley Project. The weir across the river is intended to head up water for use in three canals—the Dipalpur Canal on the right bank and the Eastern and Gang Canals on the left. The Dipalpur Canal was designed to replace and absorb the Upper Sutlej Inundation Canals in the Montgomery District, substituting non-perennial channels getting a controlled supply from the weir. It was hoped that they would open in April instead of in May or June and continue to flow well into October instead of frequently having a diminished supply in September. The annual irrigation of the Dipalpur Canal was expected to cover an area of 600,000 acres.

The weir at Ferozepore consists of 29 spans of 60 feet each. The total length of the weir between abutments is 1,956 feet and the gates are designed to hold up a depth of 15 feet of water above the crest of the weir. Actual work on this weir started in the autumn of 1924. This weir also carries a railway bridge and a road bridge.

Colonization in Sutlej Tahsils.

The development in the Dipalpur Tahsil, therefore, consisted in the main of the remodelling (with considerable extensions) of existing irrigation; the crown waste remaining vacant was distributed to local peasants who had previously made their living out of these areas or whose holdings in the neighbourhood were seriously congested. In the Pakpattan Tahsil the irrigation supplied, as indicated above, is partly perennial and partly non-

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perennial. The area of single harvest irrigation is partly on the tail of the Dipalpur channels in the north-east of the tahsil and partly on the Khadir branch of the Pakpattan Canal which skirts the Sutlej riverain on the south; the crown waste in these areas also was distributed mainly to local tribes, who have had thus to abandon their former nomadic existence for the more settled and confined life of the peasant farmer. The principal elements in the perennial area are military grantees of all castes, progressive but somewhat quarrelsome, and the former temporary lessees on the Kitchin and Irving Canals; the colonization is grouped round Arifwala which is the market town of the area and the head-quarters of a colony sub-tahsil. Colonization operations in the Sutlej Valley area began in 1924 and are still (1933) in progress although the great bulk of the area in the Pakpattan Tahsil has by now been colonized, except where the quality of the soil or difficulties of irrigation have hindered progress. The colony in these tahsils is known as the Nili Bar Colony after the local name of the river Sutlej.

It will be seen, therefore, that development by means of canal irrigation has extended to the whole area of the district, and the effect has been completely to change its character. Where formerly there was a nomadic race, of markedly distinct characteristics, finding their living over a wide and sparsely-populated waste, and owning fealty to powerful tribal chiefs and local Pirs, there is now a loosely-cemented congeries of immigrants from nearly all the districts of the Province, diligently seeking their own profit and owning loyalty to no one who does not seem likely to bring them nearer to that goal. The original inhabitants themselves are fast losing many of their characteristics (and those the most likeable) in their changed conditions, and the former tribal leaders are becoming merely querulous seekers after additional *marabbas*. The following quotation from an (unpublished) Annual Colony Report for the Sutlej Valley area pictures one aspect of the change :—

> "The year has been one of real progress. The open spaces of the desert have everywhere been portioned out in meticulous rectangles; jungle trees have been felled, and the wandering camel-tracks of the waste have given place to the durable macadam of public roads, running for miles without a curve and without a gradient. The goat-herd's pipe and the quavering love-song of the camelman are mute, and in their place we hear the Klaxon of the motor-lorry and the folding harmonium of the peripatetic preacher.

The reed encampments of the nomads, their *jhoks* and *rahnas*, open to sun and wind and clean as a dancing-floor, have been replaced by the midden-infested mud-houses of the Central Punjab. The nomad himself, once free of the Bar and of his neighbour's cattle, has been pegged out, Prometheus-like, on his 25 killas, while the vultures of civilization bury their ravenous beaks in his vitals."

Colonization Officers, Pakpattan.

A list of officers appointed to hold charge of colonization operations in the Sutlej Valley area from 1924 to the present date is given below :—

Serial No.	Name.	From.	To.
1	F. B. Wace, Esquire, I.C.S. ..	13-11-1924	10-3-1928
2	J. A. Mackeown, Esquire, I.C.S...	11-3-1928	17-11-1928
3	F. B. Wace, Esquire, I.C.S. ..	18-11-1928	8-3-1931
4	H. D. Bhanot, Esquire, I.C.S. ..	9-3-1931	to date.

District Boundaries.

As was noted in Section (*b*) of Part A of this Chapter the boundaries of the District have been subjected to considerable variations in the past. The changes of head-quarters and Tahsil divisions in the first twenty years of British rule have already been noticed in this Part, while the present arrangements in this respect are shown in Section (*b*) of Part A. After the revision of Tahsils in 1865, several villages on each side of the Ravi were transferred from Gugera to the Montgomery Tahsil, 19 villages and a large area of waste land were transferred from Tahsil Pakpattan to Tahsil Dipalpur and other villages from the same Tahsil to Bahawalpur by river action. Since 1902 all the villages previously in the Montgomery District north of the Ravi have been transferred to the Lyallpur District. Twenty-eight villages from the Montgomery Tahsil and 40 villages from the Gugera (now Okara Tahsil) were so transferred between 1902 and 1905. From 1906 to 1912, 3 villages were transferred from Montgomery Tahsil to Lyallpur District and 15 from the Gugera Tahsil. In 1913, 137 villages from the Gugera Tahsil and 3 from the Montgomery Tahsil were transferred to the Lyallpur District. One village came back from Lyallpur to Montgomery in 1911 and two in 1915. In 1926 two villages were transferred from Montgomery Tahsil to Lyallpur District. Finally in 1930 the remaining block of

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land north of the Ravi in the neighbourhood of Kamalia was transferred from Montgomery Tahsil to the Toba Tek Singh Tahsil of Lyallpur District. In the early days of the colonization of the Lower Bari Doab Colony 51 villages were transferred from the Montgomery Tahsil to Okara Tahsil and 71 villages from the Kabirwala and Mailsi Tahsils of the Multan District were transferred to the Montgomery Tahsil. In 1905, 7 villages from the Ferozepore District were transferred to the Dipalpur Tahsil. Four villages were transferred from Gugera Tahsil to Lahore District in 1906, 3 in 1912 and 2 in 1913. Out of these 3 were re-transferred from Lahore District to the Okara Tahsil in 1922. Three villages in the Dipalpur Tahsil were transferred to the Okara Tahsil in 1921.

Deputy Commissioners.

The following table shows the officers who held charge of the District since 1873. No similar information is forthcoming for the preceding years:—

Serial No.	Name.	From	To
1	Mr. T. W. Smyth ..	..	4-11-1873
2	Lieutenant-Colonel F. M. Birch ..	5-11-1873	3-5-1875
3	Mr. F. E. Moore	4-5-1875	19-6-1875
4	Lieutenant-Colonel F. M. Birch ..	20-6-1875	25-2-1876
5	Mr. M. Macauliffe	26-2-1876	29-7-1876
6	Mr. A. H. Benton	30-7-1876	1-10-1876
7	Mr. M. Macauliffe	2-10-1876	26-6-1877
8	Mr. G. L. Smith	27-6-1877	30-7-1877
9	Mr. M. Macauliffe	31-7-1877	16-5-1878
10	Lieutenant-Colonel H. V. Riddell	17-5-1878	23-12-1878
11	Mr. A. R. Bulman ..	24-12-1878	24-1-1879
12	Lieutenant-Colonel H. V. Riddell	25-1-1879	3-2-1879
13	Mr. A. R. Bulman	4-2-1879	29-3-1879
14	Lieutenant-Colonel H. V. Riddell	30-3-1879	27-3-1881
15	Mr. H. W. Steel	28-3-1881	11-5-1881
16	Lieutenant-Colonel H. V. Riddell	12-5-1881	14-3-1882
17	Major R. Bartholomew ..	15-3-1882	30-4-1882
18	Major H. J. Lawrence ..	1-5-1882	21-8-1882
19	Mr. G. L. Smith	22-8-1882	13-11-1882
20	Mr. G. Knox	14-11-1882	16-3-1883
21	Major C. McNeile ..	17-3-1883	12-8-1883
22	Mr. J. G. Silcock	13-8-1883	12-11-1883
23	Major C. McNeile	13-11-1883	3-3-1884
24	Mr. T. O. Wilkinson ..	4-3-1884	6-8-1884
25	Mr. C. E. Gladstone	7-8-1884	25-6-1885
26	Mr. T. Troward	26-6-1885	17-4-1886
27	Mr. J. G. M. Rennie	18-4-1886	29-4-1886

Serial No.	Name.	From.	To.
28	Mr. T. Troward	30-4-1886	19-4-1887
29	Mr. A. H. Diack	20-4-1887	8-9-1887
30	Mr. T. Troward	9-9-1887	8-2-1888
31	Mr. T. J. Kennedy	9-2-1888	31-1-1889
32	Colonel C. Beadon	1-2-1889	6-3-1889
33	Mr. T. J. Kennedy	7-3-1889	5-5-1890
34	Sardar Muhammad Afzal Khan	6-5-1890	10-10-1890
35	Mr. T. J. Kennedy	11-10-1890	30-3-1891
36	Mr. H. Scott-Smith	31-3-1891	24-11-1891
37	Mr. J. M. Douie	25-11-1891	23-2-1892
38	Mr. R. M. Dane	24-2-1892	21-3-1892
39	Mr. H. Scott-Smith	22-3-1892	27-8-1892
40	Mr. A. I. Harrison	28-8-1892	9-11-1892
41	Mr. T. J. Kennedy	10-11-1892	13-4-1893
42	Mr. A. I. Harrison	14-4-1893	13-7-1893
43	Mr. T. J. Kennedy	14-7-1893	1-12-1893
44	Captain C. P. Egerton ..	2-12-1893	9-12-1893
45	Mr. T. J. Kennedy	10-12-1893	14-5-1894
46	Mr. P. J. Fagan	15-5-1894	21-10-1894
47	Mr. W. C. Renouf	22-10-1894	10-4-1895
48	Mr. P. J. Fagan	11-4-1895	10-5-1895
49	Diwan Narindra Nath ..	11-5-1895	11-2-1897
50	Khan Abdul Ghafur Khan of Zaida	12-2-1897	18-11-1898
51	Mr. A. J. W. Kitchin ..	19-11-1898	28-2-1901
52	Mr. J. P. Thompson ..	1-3-1901	30-9-1901
53	Mr. C. W. Loaton	1-10-1901	22-1-1902
54	Captain C. H. Buck	23-1-1902	31-7-1902
55	Lala Harnam Das	1-8-1902	31-8-1902
56	Captain C. H. Buck	1-9-1902	10-4-1905
57	Mr. Miles Irving	11-4-1905	15-6-1906
58	Mr. D. J. Boyd	16-6-1906	20-7-1906
59	Lala Ganga Ram	21-7-1906	4-8-1906
60	Mr. Miles Irving	5-8-1906	8-8-1906
61	Captain C. H. Buck	9-8-1906	3-9-1907
62	Mr. E. H. Wakefield ..	4-9-1907	8-10-1907
63	Captain C. H. Buck	9-10-1907	7-3-1908
64	Captain F. C. Nicholas ..	8-3-1908	9-9-1908
65	Sheikh Nasir-ud-Din ..	10-9-1908	26-9-1908
66	Captain F. C. Nicholas ..	27-9-1908	31-10-1908
67	Mr. A. Langley	1-11-1908	2-3-1909
68	Mr. Miles Irving	3-3-1909	12-7-1911
69	Mr. C. F. Strickland ..	13-7-1911	2-10-1911
70	Mr. Miles Irving	3-10-1911	27-3-1913
71	Mr. E. A. Joseph	28-3-1913	20-5-1913
72	Pt. H. K. Kaul, R. B., C.I.E. ..	21-5-1913	11-12-1913

CHAP. I, B. History. Deputy Commissioners.

Serial No.	Name.	From	To
73	Mr. E. A. Joseph	12-12-1913	20-12-1913
74	Major J. C. C. Angelo ..	21-12-1913	23-3-1914
75	Mr. R. D. Thompson ..	24-3-1914	20-4-1914
76	Pt. H. K. Kaul, R. B., C.I.E. ..	21-4-1914	17-5-1915
77	Lala Tilok Chand, R. B., I.S.O...	18-5-1915	29-6-1915
78	Pt. H. K. Kaul, R. B., C.I.E. ..	30-6-1915	23-3-1916
79	Mr. J. R. S. Parsons ..	24-3-1916	24-4-1916
80	Mr. F. A. Ferguson	25-4-1916	30-7-1916
81	Mr. J. R. S. Parsons ..	31-7-1916	1-9-1916
82	Pt. H. K. Kaul, R. B., C.I.E. ..	2-9-1916	4-11-1916
83	Khan Bahadur Shaikh Rahim Bakhsh.	5-11-1916	1-4-1917
84	Mr. Q. Q. Henriques ..	2-4-1917	29-8-1917
85	Khan Bahadur Sheikh Rahim Bakhsh.	30-8-1917	6-10-1917
86	Mr. Q. Q. Henriques ..	7-10-1917	5-7-1918
87	Mr. R. D. Thompson ..	6-7-1918	30-7-1918
88	Lala Ghanshyam Dass ..	31-7-1918	1-8-1918
89	Mr. Q. Q. Henriques ..	2-8-1918	2-12-1919
90	Mr. J. D. Penny	3-12-1919	20-2-1920
91	M. Muhammad Hayat Khan ..	21-2-1920	31-3-1920
92	Lala Labhu Ram, R. S. ..	1-4-1920	16-12-1920
93	Lieutenant-Colonel G. B. Sanford	17-12-1920	16-2-1921
94	Khan Bahadur Chaudhri Sultan Ahmad.	17-2-1921	4-11-1921
95	Mr. A. W. J. Talbot ..	5-11-1921	8-5-1922
96	Khan Sahib Malik Zaman Mehdi Khan.	9-5-1922	23-11-1923
97	Mr. F. B. Wac	24-11-1923	13-11-1924
98	Mr. A. V. Askwith	13-11-1924	3-10-1925
99	Mr. R. B. Beckett	4-10-1925	20-5-1926
100	Mr. W. G. Bradford ..	20-5-1926	31-5-1926
101	Mr. S. K. Nawabzada ..	1-6-1926	1-8-1926
102	Mr. W. G. Bradford	2-8-1926	27-3-1928
103	Mr. Ram Chandra, M.B.E. ..	28-3-1928	2-4-1928
104	Pandit Siri Kishan	3-4-1928	13-5-1928
105	Mr. J. E. Keough	14-5-1928	30-11-1928
106	Pandit Siri Kishan	1-12-1928	9-1-1929
107	Mr. S. Partab	9-1-1929	23-7-1929
108	Mr. F. C. Bourne	24-7-1929	10-9-1929
109	Mr. S. Partab	11-9-1929	15-8-1931
110	Mr. H. D. Bhanot	15-8-1931	28-9-1931
111	Mr. S. Partab	29-9-1931	14-4-1932
112	Mr. W. F. G. LeBailly ..	15-4-1932	to date.

Section C—Population.

CHAP. I, C. Population.

(a) Density.

For the purposes of the 1931 Census the whole of the Montgomery District was included in the main Natural Division called the North-West Dry Area. It was admitted that canal irrigation had in this District revolutionized economic conditions; so much so that in point of fertility the District was now more than a match for those in the Indo-Gangetic Plain. The result of this Census is shown in the following table :—

	Number of		Number of occupied houses.	Population 1931.			Number of persons per square mile in 1931.
	Towns.	Villages.		Persons.	Males.	Females.	
Montgomery District	4*	1,958	187,596	999,772	552,456	447,316	224
Tahsil Montgomery..	2	508	51,684	322,095	181,205	140,890	222
Okara ..	1	375	42,574	220,208	121,588	98,620	306
Dipalpur ..	..	488	45,959	220,456	119,003	101,353	231
Pakpattan ..	1	587	47,379	237,013	130,660	106,353	177

*Montgomery, Chichawatni, Okara and Pakpattan.

It will be seen that the density of population per square mile is greatest in the Okara Tahsil, the reason being that this Tahsil has been most closely colonized, there being very little land therein so bad as to be not worth allotment. The average density for the District is 224 persons per square mile, slightly below the average density for the entire British territory in the Punjab, 238 persons per square mile; while it is slightly above the average density for the Punjab including Indian States, 208 persons per square mile. If European countries be compared, the density of population in Montgomery District is less than half the density of population in the United Kingdom and corresponds roughly to that of Poland. It will be seen that there are approximately 5 persons per occupied house in the District as a whole, about 6 in the Montgomery Tahsil where the urban population is larger, and less than 5 in the Dipalpur Tahsil.

(b) Towns and villages.

Both the towns and the villages of the district fall into two main categories, the old unplanned, pre-Colony types, and those built in the course of colonization, which all have to conform to plans laid down by the colonization authorities. Some of the villages in the Sohag Para chaks may perhaps be said to fall midway between these two categories.

CHAP. I, C.

Population. (b) Towns and villages.

There are only two towns (worthy the name) of the old type in the whole District, Pakpattan and Dipalpur; Montgomery itself, partaking as it does of the worst features of both types, is a little hard to classify. Such places as Gugera, Hujra, Basirpur, and Qabula are little more than large villages. The towns of the newer type are Okara, Chichawatni (the new mandi town has entirely displaced the old village), and Arifwala.

Pakpattan.

Pakpattan is a town of considerable antiquity and interest. It lies in north latitude 30·21 degrees and east longitude 73·25 degrees, and its population in 1931 was 11,311. The town itself is situated on an eminence of 40 to 60 feet in height, at a distance of about eight miles from the right bank of the Sutlej. The country round is fairly well-wooded. There is no wall round the town, and extensive suburbs stretch from its foot for some distance. The town is traversed by six main streets running from north to south and from east to west, these are in many places narrow, crooked and steep, but have mostly been paved in the past. The arrangements for drainage are rudimentary and the suburbs at the foot of the town receive and retain all the waste water from the houses and streets above. Water is obtained from wells dug within and without the town, or, during the flow season, from the channels of the canal. The principal building of antiquarian interest is the shrine of Baba Sheikh Farid-ud-Din Sahib Shakar Ganj, with a few cloisters around it (see below). Public buildings in the immediate neighbourhood of the town are the High School, Primary School, Hospital (which sadly needs new and more commodious buildings), Veterinary Hospital, Tahsil and Thana, Sub-Divisional Officer's Court, and Civil and Public Works Department Rest-house. In the year 1910, the Sutlej Valley Line of the Southern Punjab Railway was laid, passing through Pakpattan, which became the principal station between the junctions of Kasur and Lodhran and was at first the head-quarters of a Railway Division. The railway station lies at a distance of about $\frac{3}{4}$ miles to the north of the town, and the Railway bungalows and Rest-house stand between the city and the railway. In anticipation of a considerable increase in trade as a result of the coming of the railway, a mandi was designed and built close to the station, but owing mainly to the fact that the railway line was torn up and sent to Mesopotamia during the war the mandi never prospered as such, but, being outside the municipal octroi limits, has been occupied almost entirely by retail shops, to the great detriment of shops inside the city and of the municipal finances.

In the course of the last few years, Pakpattan has spread still further to the north. Plans were at one time formed for the establishment here of the head-quarters of a new District and of two

Irrigation Circles, and an extensive site was selected between the railway and the Pakpattan Canal. These plans were later greatly curtailed, but the head-quarters of the Nili Bar Colony moved here from Montgomery in 1927, and of two Irrigation Divisions (the Khadir Division of the Pakpattan Canal Circle and the Sohag Division of the Dipalpur Canal Circle) three years later. The houses and offices of all these have been built on a portion of the site originally selected for the larger Civil Station, in which also are the Irrigation Rest-house, Sub-Judge's Court and the Police Post. A large Government serai, intended for the use of persons having business at the Colony Office, has also been built close by. Adjoining the Montgomery road, between the canal and the railway, are the houses and Church of the American United Presbyterian Mission.

Pakpattan, anciently Ajudhan, is recognized by General Cunningham as one of the towns of the people variously mentioned by Alexander's historains and other classical writers as Ohydrakæ, Sydrakæ, Sudrakæ, Surakousæ, and Hydarkæ,* whose country extended up the Sutlej, to the north of that of the Malli, a people in conjunction with whom they are always mentioned :—

"The place has always been one of some importance. It was for centuries the principal ferry of the Sutlej. Here met the two great western roads from Dera Ghazi Khan and Dera Ismail Khan—the first *viâ* Mankhera, Shorkot and Harappa, the second *viâ* Multan. At this point the great conquerors Mahmud and Taimur, and the great traveller Ibn Batuta, crossed the Sutlej. The fort is said to have been captured by Sabuktagin in A.H. 367, or A.D. 977-78, during his plundering expedition in the Punjab ; and again by Ibrahim Ghaznavi, in A. H. 472, or A. D. 1079-80. On the invasion of Taimur, the mass of the people fled to Bhatner, and the few people that remained were spared by that ruthless barbarian out of respect for the famous saint, Farid-ud-Din Shakar Ganj whose shrine is at Ajudhan."

It is to this Farid-ud-Din, familiarly and better known as Baba Farid, that the name of Pakpattan, or "ferry of the pure one," is ascribed. See footnote to page 31, Chapter I-B. He is one of the most famous saints of northern India, and to him is attributed the conversion of the whole southern Punjab to Muhammadanism. It is said that in his progress through the Punjab the saint was opposed at Ajudhan by a Hindu Jogi, Birnath, whom, however, he conquered and subsequently converted under the Muhammadan title of Pir Kamal. The town thenceforth became his principal residence. "By continual fasting, his body is said to have become so pure that whatever he put into his mouth to allay the

*See Gazetteer of the Multan District.

CHAP. I, C. Population. Pakpattan.

cravings of hunger, even earth and stones, was immediately changed into sugar, whence his name of Shakar-Ganj, or sugar-store.* This miraculous power is recorded in a well-known Persian couplet :—

" Sang dar dast o guhar gardad,"
" Zahar dar kam o shakar gardad."

which may be freely rendered :—

" Stones in his hands are changed to money (jewels),
And poison in his mouth to honey (sugar)."

From another memorial couplet, we learn that he died in A. H. 664, or A. D. 1265-66, when he was ninety-five lunar years of age. But as the old name of Ajudhan is the only one noted by Ibn Batuta in 1334, and by Taimur's historian in A. D. 1397, it seems probable that the present name of Pakpattan is of comparatively recent date. It is perhaps not older than the reign of Akbar, when the saint's descendant, Mir-ud-Din, revived the former reputation of the family by the success of his prayers for an heir to the throne.† The sanctity of the town and of its shrine is acknowledged far beyond the boundaries of the Punjab, even in Afghanistan and Central Asia, and pilgrims are constantly flocking to it. The principal festival is at Muharram, when crowds that have been estimated at between fifty and sixty thousand, are collected at the shrine. The festival lasts from the first to the fifth day of the Muharram. On the afternoon and night of the last and great day, takes place the characteristic ceremony of the festival. There is a narrow opening in a wall adjoining the shrine, 5 feet by 2½ in size, called " the gate of paradise ;" and whosoever during the prescribed hours can force his way through this passage is assured hereafter a free entrance into paradise. Special arrangements are made by the District Authorities for the control of the crowd of pilgrims and for their orderly passage through the gate. The stream flows on ceaselessly all night until sunrise the next morning, the local athletes making a point of going through several times. Women are not allowed to pass through. The lineal descendants of the saint are still represented at the shrine, of which they are the managers and guardians. They enjoy a reputation for the utmost sanctity, and receive the honorific appellation of Diwan. The present head of the family is twenty-fifth in descent from Baba Farid, if we exclude the temporary incumbencies entailed by the litigation described below.

*Another version of the story is that the saint, when hungry, used to tie a wooden cake (*chapatti*) or a bunch of wooden dates to his stomach, and that this composed his sole nourishment for thirty years. The truth of the story is vouched for by the preservation of the identical cake and dates to this very day. They are kept at his shrine at Pakpattan, and are objects of reverence and worship to the faithful.

†General Cunningham, Anc. Geog., i., p. 218.

He enjoys a handsome revenue grant *jagir* from the British Government, in addition to the revenues of the shrine itself, which are considerable. A list of the lineal representation of Baba Farid is given below. Baba Farid himself arrived at Pakpattan in H. 584 and died in H. 664. His successors were—

	Name.	Date of succession.		Name.	Date of succession.
1.	Badr-ud-din ..	H.664	16.	Muhammad Din ..	H. 1019
2.	Ala-ud-din ..	668	17.	Muhammad Ashraf	1057
3.	Muaf-ud-din ..	722	18.	Muhammad Saiyad	1090
4.	Fazl-ud-din ..	738	19.	Muhammad Yusaf	1120
5.	Manohar ..	755	20.	Muhammad ..	1135
6.	Nur-ud-din ..	805	21.	Muhammad Ghulam Rasul.	1179
7.	Bahawaldin ..	823			
8.	Muhammad ..	855	22.	Muhammad Yar ..	1223
9.	Ahmad ..	879	23.	Sharf-ud-din ...	1243
10.	Ataullah ..	901	24.	Allah Jowaya ..	1261
11.	Muhammad ..	918	25.	Abdurrahman ..	1300
12.	Ibrahim ..	940	26.	Said Muhammad ..	1304
13.	Taj-ud-din ..	982	27.	Abdurrahman ..	1307
14.	Faizulla ..	1008	28.	Fateh Muhammad ..	1307
15.	Ibrahim ..	1010	29.	Said Muhammad. ..	1311

The last five changes followed the course of litigation, which began in 1898, after the death of Diwan Allah Jowaya. Abdurrahman, the uncle of the deceased, succeeded to the *gaddi*, but Said Muhammad, the deceased's daughter's son, sued for it and obtained a decree under which he was installed four years later. An appeal was preferred by Pir Abdurrahman in the Chief Court, in which he succeeded and was accordingly reinstalled. Said Muhammad made a further appeal to the Privy Council, but before any decision was made, Abdurrahman died and was succeeded by his son Fateh Muhammad. Said Muhammad's appeal to the Privy Council was accepted and Fateh Muhammad had to vacate the *gaddi*, which was taken by Said Muhammad, the present incumbent or Sajjada Nashin (as he is called) of the shrine.

The principal elements in the population are Khatris, Aroras, and Brahmans and of Mussalmans, Arains, Qureshis, Chishtis and Sayyids. There is no trade or commerce worth mentioning. There is a mandi of sorts founded in the second decade of this century, but it is not flourishing at present. The principal industries are concerned with the making of wood work toys and lacquered articles and the weaving of Lungis and bed sheets.

Local self-government is entrusted to a municipal committee of the II class with 9 members, all nominated. Compulsory

CHAP. I, C. Population. Dipalpur.

education is enforced in the town and the municipal committee maintains a flourishing primary school.

Dipalpur is a small place of some 5,000 inhabitants, situated about 17 miles from Okara railway station, 12 miles from Basirpur railway station, and 20 miles north of the river Sutlej. In 1870 the *tahsil* headquarters were transferred from Hujra to Dipalpur, where there was no *tahsil*. Before the extension of the railway the place used to be frequented by traders from Dera Ismail Khan and other places towards the frontier, on account of the main road from Okara to Fazilka passing through that place. The town itself is an unpretentious collection of *kacha* and *pakka* native houses surrounded by an old wall with three gates, one *Thattiyari* towards the east, *Multani* towards the west, and the third, being newly opened, is called *Shumali Darwaza*, towards the north, The important buildings in the town are the temple of Lalu-jas-raj where an annual fair is held in the month of Magh ; an old *masjid*, built at the time of Khan Khanan, Wazir of Shah Jahan, Emperor of Delhi ; and a tomb of Imam Shah, where also an annual fair is held. It has two *bazars* well paved, the main street of one passing from east to west, and of the other from the middle of the first *bazar* towards the north. There is no grain market in the town. The other buildings are a *tahsil* and *thana*, police *chauki*, municipal committee house, post office, school-house, *lambarkhana*, dispensary Veterinary Hospital and *sarai*. There is also an encamping-ground with a good well on it. The land around the town is irrigated by the channels of the Khanwah Division of the Dipalpur Canal. Formerly the place was a small agricultural village, but the transfer of the headquarters of the *tahsil* here from Hujra, greatly increased the importance of the place, besides adding much to the public convenience. Its importance, however, has, under modern conditions, greatly declined. Its decay has been assisted, first by the colonization of the Lower Bari Doab Colony, and the establishment of a new tahsil headquarters at Okara instead of Gugera, and, later, by the laying of the Sutlej Valley Railway about 12 miles to the south, coupled with the starting of a mandi at Basirpur ; as communications both with Basirpur and Okara have been of the worst, Dipalpur has been left high and dry between them. The improved agricultural condition which it is hoped that the Sutlej Valley Canal Project will bring to the surrounding area may lead to some revival, and when the projected Lyallpúr-Chananwala railway is built, Dipalpur will be accessible by rail. There is now a metalled road from Dipalpur to Okara.

There has been for some years a more or less self-appointed panchayat, which collected a small cess from the inhabitants to

defray the costs of elementary sanitation and lighting of the town. In 1925 Dipalpur was declared a Small Town under the Small Towns Act. It was divided into 5 wards as shown in Punjab Government Notification No. 20971, dated the 30th September 1925. Each ward was to return one member, the voting strength being 494 Muslims and 396 Hindus and others. The election duty took place and 3 Muslims and 2 non-Muslims were elected. The President of the Committee was to be the Tahsildar. The townspeople objected so strongly to the constitution of the small town committee that in 1926 the original notification was cancelled and the committee abolished. The town has now reverted to its former happy state of torpid squalor.

Dipalpur is a very old city indeed. It is said to have been founded by one Sri Chand, after whom it was called Srinagar. Sri Chand had no children. His priest, Chandar Mani, stood on one leg for 5 months and 27 days; after which the goddess Devi gave him her two sons, Bhim and Lalujas Raj. He brought them to Dipalpur, and two of Sri Chand's wives adopted them. One day on the way to the temple they indulged in a game of tip-cat. The cat struck one of Sri Chand's wives, who expressed in vigorous language her opinion that they ought to be swallowed up by the earth. Almost immediately Bhim disappeared in the ground, and Lalujas Raj went after him. Chandar Mani had just time to catch him by the lock of hair at the back of his head (*choti*) before he vanished. He then directed that every Khatri of the Khanna sub-division should offer up his *choti* in that place before marriage, and so should other tribes when making vows. He then disappeared. This legend, and the old name of the town, may have some bearing on the question of who were the Oxudrakæ (Ancient Geography of India, page 214). But it is incredible that the Kathias should ever be allies of the Khatris. The present name of the town is said to be derived from Dipa, one of Raja Salvahan's sons, who re-founded the town. Risalu, another son, lived at Dhaular. The love adventures of his queen Kokilan and Raja Hodi are still sung by Mirasis. There are, however, several other stories concerning the name Dipalpur. According to General Cunningham.* "the foundation of the place is attributed to Raja Deva Pala, whose date is unknown." Another tradition, however, given by the Deputy Commissioner of the district, is to the effect that the town was founded by one Bija Chand, a Khatri; that it was originally called Sripur, after the son of the founder, Sri Chand, and that subsequently a Raja, by name Har Singh, surrounded it with a wall and changed its name to Dipalpur.

*Ancient Geog. I, p. 213-14.

CHAP. I, C. Population.

This tradition also mentions no date. The antiquity of the town, however, is clearly established. General Cunningham remarks that "the interior surface on which the houses are now built is on a level with the terreplein of the ramparts. The old coins, also, which are found there in great numbers, show that Dipalpur was in existence as early as the time of the Indo-Scythians." Being thus persuaded of the ancient origin of the town, General Cunningham is "inclined to identify it with the Daidala of Ptolemy, which was on the Sutlej, to the south of Labokla and Amakatis, or Lahore and Ambakapi.* In the 14th century the emperor Firoz Tughlak frequently visited the town, his hunting excursions extending in this direction from the neighbourhood of Sirsa and Hissar.† He is said to have erected a large mosque outside the city, and drawn a canal from the Sutlej for the irrigation of its lands. It is repeatedly mentioned by the early Muhammadan historians, and must have retained some of its importance in the time of the emperor Babar, who says, speaking of the garden he laid out at Kabul, "in the year in which I defeated Bihar Khan and conquered the countries of Lahore and Dipalpur."

At the time of Taimur's invasion the town was second only to Multan in size and importance, and was popularly said to possess 84 towers, 84 mosques and 84 wells. At present it is nearly deserted, there being only one inhabited street running between the two gates. In shape, it is a square of nearly 1,600 feet, with a projection 500 feet square at the south-east quarter. To the south-west there is a high ruined mound, connected with the town by a bridge of three arches which is still standing; and from its high and commanding position, General Cunningham is inclined to believe that popular tradition is right in affirming this mound to be the remains of a citadel. To the south and east there are also long mounds of ruins, which are doubtless the remains of suburbs. The existing ruins, including the citadel and suburbs, occupy a space $\frac{3}{4}$ mile in length by $\frac{1}{2}$ mile in breadth, or $2\frac{1}{2}$ miles in circuit. But in its flourishing days the town must have been much larger, as the fields to the east are strewn with brick right up to the banks of the Khanwah canal, near which was situated the mosque built by Firoz Shah, Tughlak. This extension of the town beyond the walls may also be inferred from the fact that the people of Dipalpur, on Timur's invasion, sought refuge in Bhatner, which they would not have done had their own city

*Ancient Geography, i. p. 214. As to Ambakapi, see Gazetteer of Gujranwala district. In an earlier publication (Arch. Rep. i., p. 140) General Cunningham suggests the identity of Daidala with Delhi.

†See Gazetteer of the Hissar district.

been defensible.* The complete decay of the town in modern times is probably to be attributed to the drying up of the old Beas. It is said that many of the inhabitants migrated, after the failure of the river, to Hyderabad in the Deccan, and large numbers of Khatris in Sind and Kach assert Dipalpur to be their original home.

The most noticeable feature in the modern town is the shrine of Baba Lalu-jas-raj, a saint much venerated by Khatris of the three highest classes—Khanna, Kapur and Marotra. The male children of these classes throughout the greater part of the province are taken to this shrine in or about their tenth year for the purpose of dedication to the saint. The ceremony consists in shaving the child's head, after which the lock on the top of the head (*choti*) is considered sacred, and may never afterwards be shaved or cut. Other classes besides those mentioned resort to the shrine for the same purpose, but only in fulfilment, generally, of a special vow, the saint being by no means universally venerated. The sacred days upon which the ceremony can be performed are the Sundays in the month of Magh. The attendance in the course of the month averages 11,000. The town is the chief seat of the Khatris. It has a very bad reputation as regards the honourableness of its inhabitants. The following verse expresses this :—

Shor Shoron, te kur Lahoron, jhagra Chinioton,
Peo putr te chughli kare, Dipalpur te koton,

Which implies that Shorkot is the place for uproars, Lahore for falsehood, Chiniot for quarrelling, and the town of Dipalpur is the place where the father tells tales on his son.

Dipalpur is the headquarters of a Sub-Divisional Officer of the Canal Department and of an Inspector, Co-operative Societies. It contains a hospital, a high school, two small girl schools and a veterinary hospital. It is probable that the Panchayat at present in charge of local affairs will be superseded before long by a regular small town or municipal committee.

Montgomery.

The following remarks about Montgomery quoted from the last edition of the Gazetteer show what that town was like before colonization :—

> " The town was founded in 1865 by Mr. Blyth, then Deputy Commissioner of Gugera district ; the headquarters of the district being transferred to it from Gugera in order to be on the line of rail and for the more easy provision of medical and spiritual privileges

*General Cunninhamg's Anc. Geog., i., p. 213.

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Population.

to its European inhabitants. The spot where it stands was then occupied by the small village of Sahiwal, and is about 27 miles south of Gugera. It received its present name by way of a somewhat dubious compliment to Sir Robert Montgomery, then Lieutenant-Governor of the Punjab. The town lies in the midst of a sterile plain unbroken by vegetation and covered with saline efflorescence, and the surrounding scenery, desolate beyond description, harmonises well with the rows of empty shops and houses which an intelligent people has declined to inhabit. The town itself is a collection of *kacha* native houses without a wall; and the four sides of the town are open towards the jungle or *bar*. It has two bazars (Blyth Ganj and Ford Ganj); the streets are wide, but except one not paved "....." In the words of the Imperial Gazetteer the situation of the station is almost unequalled for dust, heat and general dreariness "....." The town has little or no trade, and is in fact nothing but the headquarters of the district staff."

Since those words were written the "sterile plain unbroken by vegetation" has been changed into a prosperous expanse of fields and homesteads. The old town still occupies its original site but would probably not now be recognizable to the writer of the above extract.

The Railway Station and Mandi and the factory area are all on the south of the main line of the Lower Bari Doab Canal. The canal is crossed by two bridges. The road over one leads direct from the Railway Station to the old town, *vid* the Pakpattan bazaar and the Dipalpur bazaar. If the road be followed past the Railway Station to the south the traveller will eventually find himself in Pakpattan. Following on to the north crossing the Dipalpur bazaar one comes into the original residential area which is now fully populated, and though the roads are largely *kacha* and badly drained, the area on the whole is considerably more open and cleaner than the above account would lead one to expect. In case of heavy rain at present the unmetalled link roads in this area become very marshy, but a drainage scheme has been sanctioned and work on it has actually begun. North of the old town lies what is known as the Indian Civil Station where bungalow sites have been sold to prominent residents in the locality and where many of them have erected very respectable houses, surrounded in some cases by well-kept gardens. West of the old town and

the Indian Civil Station lies the Civil Station proper with the District Courts, High School, Hospital and Rest-house. Adjoining the old town on this side lies the Partab Bagh, a park which was originated by Mr. Partab then Deputy Commissioner, Montgomery, and opened by His Excellency the Governor in November 1929. This park was intended mainly to enable women and children resident in Montgomery to take the air in clean and pleasant surroundings and in reasonable privacy. The expenses connected with the laying out of this park were met by private subscriptions and it is controlled by a local committee assisted by a grant-in-aid from the municipality. The Secretary of the Committee is Mr. Rajindro Lal Sahni, Municipal Commissioner, who was Mr. Partab's right-hand man in the original prosecution of the scheme. Included in the park are the premises of two Ladies Clubs each fitted with a badminton court. It is hoped that this park will be a real addition to the amenities of Montgomery. The second bridge over the Canal brings the Arafwala road into the Civil Station, *viâ* the Church and the District Courts. The Church is surrounded by a large oval of grass on which are situated a cricket ground, a football ground and tennis courts. West of the Church are the Police Lines, the Aerodrome and the Central Jail—which is a large institution devoted to the incarceration of long-term prisoners. To the north of the Civil Station lie the residences and offices of the Army Remount Department, the Montgomery Club and the Cattle Fair ground and Race course.

In the cold weather the monthly race meetings provide amusement to a large number of people. These races are organized by the Army Remount Department in the interests of horse-breeding. It is a sound plan for fillies before they are absorbed in the establishment of mares maintained under the Ghoripal scheme for breeding purposes, to be tried out on the race course. The races each year are thus restricted to three-year old fillies, who in the following year are to enter on their career as brood mares.

The Montgomery Cattle Fair takes place every year in February or March and is attended by cultivators and stock-breeders from all over the District.

The town has always had an excellent reputation as a health centre. The old residents say that this was due to the fact that no noxious bacteria were able to survive owing to continuous dust storms. There are less dust storms now than there used to be by reason of the introduction of canal irrigation. But Montgomery is still considered to be a very healthy station.

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Population.

The population residing within municipal limits was recorded as 2,416 souls in 1868. By 1891 the number had risen to 5,159. By the 1931 census it is now 26,164.

Okara.

The town of Okara is situated on the Lahore-Multan Railway line about 25 miles east of Montgomery. It is now the headquarters of what used to be the Gugera Tahsil. Before colonization started, though there was no actual mandi at Okara, produce destined for other mandis in the neighbourhood used to pass through the town and sites there were bought and sold for very fair prices. The sites now occupied by the factories were all in private hands before colonization started. The Mandi and the residential area are north of the railway line. The area originally occupied for residential purposes has now been more or less abandoned. The Tahsil, Veterinary Hospital, Police Station and the District Board Rest-house are all to the north-east corner of the town. To the west of them lie the high school, the public gardens, the Civil Hospital and the Municipal Office. Between these institutions and the Railway Station lies the town proper. This is divided up by broad metalled roads into six blocks consisting of residential and shop sites. The link roads within these are unmetalled and liable to flooding when rain falls. It is hoped that the local committee will be able to afford a proper drainage scheme before long. Both to the west and to the east of the town proper are situated a number of orchards planted on Government land leased out to prominent residents in the locality for that purpose. It is hoped that in time these orchards will not only prove a source of profit to the lessees, but will also serve to beautify the neighbourhood of the town. The public garden which is maintained by the Committee near the High School and Civil Hospital is a credit to Okara and it is hoped that the park for the use of women and children which is being laid out not far from the railway station in a vacant portion of one of the residential blocks, will in due course prove as popular as it ought to be. Adjoining the railway to the west are the Grain Mandi and the Lakkar Mandi. Beyond them to the north of the railway station as well as to the south-east lie the factory sites. These factories are mostly concerned with the ginning and pressing of cotton.

Okara is supposed to have got its name from the *Ukan* (Tamarisk) tree. There was nothing on the site originally but a few thatched huts situated on the south of the present railway line. When the railway was built, the residential quarter, such as it was, was removed to the north of the railway line, but this was demolished in 1915 when on the arrival of the Lower Bari Doab Canal the present town was founded. The Mandi was opened

in that year and a number of sites were put up for auction. Auctions have taken place on six occasions since, the last one being held in 1931. There are still a fair number of shops and residential sites remaining to be sold. Drainage and waterworks schemes are under consideration by the Notified Area Committee to whom matters of local self-government have been entrusted. Apart from the land which has been utilised for the construction of the town proper with its hospital, schools, parks and so on, the Committee has a considerable area of crown land at its disposal for agricultural purposes. The income from the lease of this land is of great assistance to the committee's finances.

The population of the town in 1921 was returned as 4,975. In 1931 the figure advanced to 10,712. About 3/5 of the population is Hindu and about 30 per cent. Musalman and 15 per cent. Sikh. No industry of note is carried on in the town. The residents are occupied principally with the wheat and cotton trade.

Chichawatni.

Before the Lower Bari Doab Canal began to run the area at present occupied by the Chichawatni Mandi and connected dwelling places was waste land in possession of Government. There was a railway station called Chichawatni Road near which there were a few *kacha* shops and a District Board Dak Bungalow. The real village of Chichawatni was about 3 miles north of the railway line on the banks of the Ravi. This village owed such importance as it had to the fact that it lay on the old main road from Ferozepur to Jhang.

When colonization started, the site of the present Mandi was selected to the south-west of the old railway station and the first auction took place in 1916. The Mandi stands between the Tumanwala Minor and the railway line. The town is built to the south of the Distributary. The old railway station was abandoned and a new railway station built near the Mandi. Further auctions of sites were held in 1918, 1919, 1920, 1926 and 1933. There are still a certain number of sites available for sale in due course.

The population of the town numbers 4,387. The residents are mostly shop-keepers or dealers in agricultural produce and their assistants. There are 3 factories in the town for the ginning and pressing of cotton. Local affairs are in the hands of the Notified Area Committee of which the Revenue Assistant for the District is President, the Sub-Assistant Surgeon and Naib-Tahsildar are *ex-officio* members, and there are 3 nominated non-official members as well. The income of this committee is based mainly on terminal-tax realized through the railway department on goods imported by train and octroi levied on goods imported otherwise.

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The Committee have sunk wells in several places, while the main bazaar roads have been metalled and the connecting unmetalled roads are kept more or less in good order. The Committee maintains a hospital, two primary schools for girls and a boys high school. The District Board has opened a veterinary hospital. There is further a female hospital built and maintained by the American Presbyterian Mission. At this hospital midwifery is taught. The Committee have constructed a vegetable market, meat market, slaughter house and *Jhatka Khana*. On the whole therefore the needs of the residents are adequately supplied.

The Police Station lies to the north-east of the town across the railway line, while to the west of it lies the Public Works Department Rest-house on the site previously occupied by the old District Board Rest-house. The Canal Rest-house, the offices of the Canal Sub-Divisional Officer, the Local Forest Officer and the Superintendent, Criminal Tribes, are all located near the main line of the canal to the north to the Committee area.

A start has been made with the construction of a public park in a plot of land adjoining and to the south of the Distributary.

Arifwala.

Arifwala is the youngest of the colony market towns in the district. Before the coming of the Sutlej Valley Project Chah Arifwala was a well and 50 acre patch of cultivation in the Bar, lying on the Kamir Tibbi Road, which was then one of the only trails running north and south across the Bar. On the relaying of the Sutlej Valley Railway on its new alignment, Arifwala was selected as the site of one of the new mandis, and as it is the centre of a fertile, well-irrigated tract, and is moreover excellently served by the new system of roads, its progress has been rapid. The first sale of town sites was held early in 1926, and the first shops in the bazaar and mandi were formally opened in April 1927. Its population at the 1931 census was 3,201, and it contains a Dispensary, Anglo-Vernacular Middle School, Veterinary Hospital, Police Station, Public Serai and combined Public Works Department and Civil Rest-house. The town is laid out on lines similar to other colony mandis, but there has been more effort to provide such amenities as public gardens and open spaces.

Various sites in the new town were sold every year from 1925-26 to 1931-32. The town plan provides in all 587 sites including mandi shops, bazaar shops, combined shops and residences, residences, flour mills, wood market shops, and godowns and offices. Out of these 273 have been sold so far. Four sites have been reserved for cotton ginning factories of which two were sold in 1925-26 and one in 1929-30. These factory sites cover

10 acres each and the price paid for them works out on the average at Rs. 3,208 per acre. The average price realised for the other miscellaneous sites works at about Rs. 200 per marla.

The town has developed and is developing somewhat rapidly. There is as yet no special industry there. The population consists mainly of retail and whole-sale traders. The retail shops supply the ordinary necessities of life to the residents in the neighbourhood, while the wholesale shops deal in cotton, grain and pulses. The Notified Area Committee has provided slaughter-houses, meat and vegetable markets, and a Town Hall. It remains for Government to carry out drainage and water works schemes. The Committee maintains two excellent public parks, while a new park for women only is being made.

Other places of historical interest.

As indicated above there are no towns worthy of the name in the District beyond those already described. But there are some large villages of considerable historical interest.

For instance, Hujra (Dipalpur Tahsil) though its population is only a little over 3,000 was the headquraters of a Tahsil in the time of Maharaja Ranjit Singh and is said to have been founded by Hazrat Shah Mukim, the great great grandson of Hazrat Miran Bahawal Shah Kalandar said to have migrated to the banks of the Beas from Gilan in the time of Akbar. It is said that Hazrat Miran Bahawal Shah built himself a mosque and a Hujra (enclosure) and that Hazrat Shah Mukim having been born in this Hujra gave the name of Hujra Shah Mukim to the town he founded. The tombs of Hazrat Miran Bahawal Shah Kalandar, Hazrat Shah Mukim and Hazrat Sheikh Muhammad Barri are the principal show places in Hujra. There is a Canal Rest-house, a police station, a middle school and a dispensary. The endowments and Jagir enjoyed by the descendants of Hazrat Shah Mukim from the days of the Moghul Emperors are said to have been taken over by Bedi Sahib Singh who occupied Hujra in Maharaja Ranjit Singh's time. Most of the Syeds were then killed. After annexation to the British Government Madad Ali Shah, a descendant of Hazrat Shah Mukim, established himself as Sajada Nashin and his grandson Imdad Ali Shah holds that position at present. He holds a Jagir of several villages together with a cash Jagir of Rs. 700. A fair is held at this place annually when a number of pilgrims are entertained by the Sajada Nashin.

Kabula (Pakpattan Tahsil) is a place of no importance economically or politically, but its foundation dates from the time of Ghias-ud-din Tughlak when this potentate visited Pakpattan to pay homage to the shrine of Baba Farid. The Hindu tribe

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(Khakhris) who were there in occupation were turned out and Dhudhis, who claimed to be descended from the Suraj Bansi Rajas and had been converted to Islam, were settled in their place. Subsequently in Akbar's time the Dhudhis were turned out by reason of their thieving propensities and the place was made over to a family of Qazis. Pilgrimages are made to the tomb of Shah Mohsan Kamal in Ramzan every year and in Jeth to the tomb of Buland Shah. There is a Hindu Mela at Kabula also in Baisakh.

Basirpur (Dipalpur Tahsil) where there is now a railway station on the Kasur-Lodhran line, in the time of the Moghul Emperors belonged to Arains. The original owners are said to have been turned out by their Qazi, also an Arain, who represented to the Emperor that the owners were not paying their land revenue, which he had in fact himself misappropriated. The Qazi's descendants are in possession still. Baba Sahib Singh Bedi was awarded a Jagir of 3 lakhs by Maharaja Ranjit Singh in 1842 which included land in the neighbourhood of Basirpur. His son built a fort in this place and the Bedi's descendants still live there. There is now a Mandi at Basirpur and a vernacular middle school. It is hoped that a hospital will be constructed shortly. Fairs are held on the 25th and 26th of Sawan at the mausolea of Mulla Farid the Qazi who turned out the original Arain owners and of Hamun Sachiar. The population is about 3,000. The principal occupation in the village is tanning.

Malka Hans (Pakpattan Tahsil) has a population of about 3,000 persons and lies 10 miles north-west of Pakpattan near the main road connecting Pakpattan with Montgomery. It is said to have been founded by Malik Muhammad, *alias* Malka, a member of the Hans tribe about 650 years ago. He and his family appear to have been of some importance in this neighbourhood until Sikh times. There is now a lower middle school, a dispensary and a police station in the place. The only buildings of historical interest are the Waras Shah mosque built by the Hans in Hijri 740 (1340 A. D.) and the Parnami temple which was built by Mahant Darbara Singh about 200 years ago. A *Mela* in this temple is held in Chet every year.

Haveli (Dipalpur Tahsil) has a population according to the 1931 Census of 3,240. It is said to have been originally founded in the time of the Mogul Emperor Muhammad Shah by a Wattu Lakkha Khan. His descendants crossed over to Bahawalpur in Sikh times, but regained in some degree at least their former position after annexation by the British. But Sikhs, Hindus and Arains have now a share in the proprietorship. The village is famous for the manufacture of *Huqqas* and cotton bed sheets.

Most of the weavers live in Haveli Mandi, a new site near the railway station. Another Mandi is being built and there are already some 150 shops in the village. There is a dispensary and a District Board high school.

Villages.

The characteristic village of the district is now the Colony type, but as this is largely a modern development of existing types, it will be best to give first the description of the older villages, from the last edition of the Gazetteer. Three types are described the Kamboh type, the Jat type, and the Arain type; all these are, of course, still to be found in the older parts of the district.

In the Kamboh type, the houses are solidly built of mud and have flat roofs. There is a small yard in front of the house, with mud walls; the houses are close together, and the whole village has a compact look. In the Jat type of village the houses are sometimes built of mud, and sometimes made of plaited switches; sometimes they have a mud roof, but generally they are thatched. If not built in a square, the houses are sprawling all over the village site. There are no walled yards but there are huge enclosures for keeping cattle about each house. These enclosures are very simple as a rule. A few forked branches with the forks sticking up are planted in the ground, and horizontal branches are placed on these, their ends resting in the forks. The Arain type of village partakes of the characters of the other two, modified to some extent. Sometimes the Kamboh characteristics predominate, sometimes the Jat features are more marked. There are no walls round the villages nor ditches, as in Hindustan, nor thorn hedges. But the houses are built with their fronts facing inwards; and their backs form as it were an outer wall. There are generally some trees about the village; and occasionally the fields are fenced along the roads leading out of the *abadi*. So altogether stealing cattle out of a village is not so simple as might be thought.

Colony villages, both in the Lower Bari Doab and the Nili Bar, retain some of the features of the old type of village, but are all on regular rectangular lines, and are designed to give greater facilities for sanitation and fresh air. Detailed plans and measurements are to be found in the Colony Manual and in the headquarter offices of the colonies; here it will be sufficient to describe the main features which are to be found in nearly all the types. The villages are rectangular in shape, with an open central *chauk*, in the centre of which is the village well; round this *chauk* are the shops and the 'public' buildings such as the Mosque, *Gurdwara* or Temple (according to the religion of the villagers, mixed villages being rare), and guest-houses. Broad streets radiate from the central *chauk*, usually only four in number, and the *ahatas*, or house-building

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sites, are ranged along these streets, of standard shape and dimensions. Inside these *ahatas*, the colonist has to build a house 'to the satisfaction of the Collector,' but otherwise to suit his own taste and pocket; he also puts up sheds for his cattle, and sometimes also huts for his tenants. Smaller *ahatas* are allotted to the village menials in a separate street, and in large villages there is a considerable separate *mohalla*, with even a separate well. Round the village there is (or should be) a wide strip of open uncultivated *charagah*, in which are disposed, at suitable intervals, tanks for cattle and for the villagers, and spaces designed, but seldom used, for the deposit and storage of manure and sweepings. The compound walls and houses in these villages are generally built by the Pathan labourers who come flooding into the colonies during the cold weather, or else by Ods who can find no work on the canals.

The nomad encampments which used to be found scattered about the Bar areas, known as *rahnas* or (if the herds tended by the owners were camels) *jhoks*, have by now practically all disappeared with the spread of colonization. Some of the *abadis* of the chaks allotted to camel-owning locals have been modelled on the usual form of *jhok*, with the houses all built round a large enclosure for the animals.

As the colonists in the colony villages come from nearly every district of the province and bring with them, as far as possible, the customs and furniture characteristic of their home districts, it would be impossible to give in this gazetteer a description of village life which would be generally applicable. The description which follows is taken from the earlier editions of the gazetteer, and, if we make allowances for the developments of the last thirty years, is still true of most of the old villages.

On coming to a village, the traveller will sometimes see in the outskirts a number of little children amusing themselves with a *chachingal*, which is a horizontal bar, moving round a vertical post about two feet high. Here the infant villager practises walking. More common is a piece of wood, a portion of the trunk of a tree, about two feet long and eighteen inches in diameter, with a bit hollowed out on one side, so as to form a handle by which the block may be grasped. This is the *budgar* or dumb-bell, with which the athletes of the hamlet amuse themselves in the evening. Further on, at the first houses, he is stopped by a rude gate (*phalha*) made of thorns fastened to a couple of cross-bars: while this is being removed, we may observe a cord passing across the road with a square piece of wood not unlike a prisoner's ticket, covered with hieroglyphics, suspended in the middle. This is a charm (*tawiz*) to keep

off cattle-disease. A holy *fakir* gets some small sum annually in bullion for providing these charms. They are the Hindustani *tuna*, and are in great request in times of murrain. If the village is of a good size, there will probably be a flour mill (*kharas*) worked by one bullock, or if there is much custom, by a pair. Near the wall of each house is a small earthen oven, on the top of which a pot of milk preparatory to churning will be simmering. The pot and the oven are called *dudh karhni*. Several other earthen pots are hung upon a stick with branches called *nihni*. Several earthen cylinders or oblong receptacles for grain (*bharola*), five or six feet high, will be ranged in the front yard. A baby will be sprawling in a cradle (*pingha*) swung to a bar under a shed; and the women of the family will be spinning thread close by. In the lane may be seen a raised platform (*munna*), on which the master of the house takes his ease on hot nights, if his roof is thatched, or he too lazy to go to the top if it is flat. A little further on, a fire is crackling in the public oven of the village (*machhi*); and a crowd of women with dishes containing dough stand round chattering till their turn comes to get their cakes baked. A couple of huge cylinders, 12 or 15 feet high, in shape like a conical shot, are seen near the house of the village Karar. These are made of thick bands of *kana*, fastened together by pegs and plastered with mud. These are called *palla*, and contain the grain given to the money-lender in repayment, with compound interest, of some sums he had advanced. The autocrat himself will be sitting on the ground, working a cotton-gin (*belna*) with the utmost vigour, while near him several bedsteads (*charpais*) are standing in the sun covered with cotton drying. Going out of the village, one sees a plain mud building with three pinnacles on the roof, a platform in front strewed with grass and surrounded by a mud enclosure. Several water-pots stand on the edge of the platform. Often there is an oven for heating water. This is the *masit* or mosque. If the proprietors of the village belong to a pious tribe, half-a-dozen little boys will, in the forenoon, be seen sitting on the platform in company with their preceptor, swinging themselves backwards and forwards and repeating the *Koran* at the top of their voices. The book itself lies before them on a stand. If we go all through the village we probably come across a few weavers at work; a carpenter is making the cog-wheels of a well; there are no carts; but several nags of sorts, by the vigorous use of their lungs, insist on being noticed. At certain seasons of the year there will be a pen of young lambs at the *machhi's* house. At other times the roofs will be red with pepper pods drying in the sun. The stacks of dried dung-cakes used for fuel must not be forgotten; nor the village dogs. There is not much else to see in an ordinary village and some of the

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things mentioned here will not be found in most. There are no tanks and no large trees such as are found on the other side of Sutlej. But, in return, there are no pigs and no peacocks.

(c) Growth of Population.

In the last 50 years the population of the district has increased from 348,312 to nearly one million. The principal increase has taken place naturally enough since 1911 ; the period in which the canal colonies came into being. It must also be remembered as explained in Chapter I, Part B above, that the district has been steadily decreasing in size since the 1901 census. Figures for the total population in the last four censuses are as follows :—

1931	..	..	.. 999,772
1921	..	..	.. 685,690
1911	..	..	.. 481,965
1901	..	..	.. 429,674

In the period from 1921 to 1930 the cultivated area increased by nearly 3 lakhs acres. During the same period while 314,000 persons were added to the population of the district the excess of births over deaths was only 138,000.

(d) Migration.

The balance between the excess of births over deaths in the last 10 years and the net increase in population can be accounted for almost entirely by immigration. The Census Report of 1931 includes in Part III a table VI-A [an Appendix to Imperial Table VI (Birth place)] which shows the birth place, age and occupation of selected castes of the emigrants to the principal Punjab Canal Colonies, of which the Lower Bari Doab Colony and Nili Bar Colony relate to the four tahsils of the district. The table shows that 28,000 persons are now recorded in the Lower Chenab Colony as emigrants from the Montgomery District. These no doubt include a large number of persons from the area across the Ravi which is no longer counted as part of the district. At the same time immigration to the Lower Chenab Colony has been going on for 40 years so that presumably among these emigrants only those now aged 40 or over can be counted as original emigrants from the district. Out of the total of 28,000 emigrants the table shows 3,745 males and 2,585 females as aged 40 or over. Out of the 28,000, 48 per cent. are Arains, Baloch and Muslim Jats and Rajputs, and 15 per cent. are Muslim *Kumhars*, *Mochis* and *Mussallis*.

Immigrants into the Lower Bari Doab Colony (which includes the Khanewal Tahsil in the Multan District) number 170,000. The main districts of origin in order of importance are Jullundur, Lyallpur, Lahore, Jhang, Amritsar, Hoshiarpur, Ferozepore and Gurdaspur. Further permanent immigration into the Lower Bari Doab Colony is not now likely to occur on any important scale.

The Nili Bar Colony on the other hand, which also includes considerable areas outside the district, is still in process of development. Up to the time of the 1931 Census 61,000 immigrants into this colony were reported, of whom the most important districts of origin were Lahore, Amritsar and Jullundur.

Apart from the movements of a more or less permanent nature to and from canal colonies, there is a certain amount of casual movement among the tenant population. When the Nili Bar Colony started, numbers of tenants migrated from the Lower Bari Doab Colony to the new colony, of whom many have subsequently returned. At present there is a distinct movement of tenants out of the district to Bahawalpur and Sind.

The following passage from the 1931 Census Report is as applicable to the Montgomery District as it is to the rest of the Punjab :—

> *"Migration has no attraction for the agricultural population except when it is calculated to relieve the pressure on resources by holding out a better agricultural prospect and its attendant profits in the form of the lease, occupancy or ownership of colony land. A considerable portion of the population consists of artisans and menials, but even they are supported indirectly by agriculture, and they also do not find any better substitute for their work to entice them away from their homes."

(c) Age statistics.

Age statistics are very thoroughly discussed in the 1931 Census Report. The following table shows how the age distribution in Montgomery District compares with the rest of the Punjab and with England and Wales and France. In each case the distribution is shown in numbers per 1,000 of both sexes of all ages :—

Age period.	Punjab, 1931.		Montgomery District, 1931.		England and Wales, 1921.		France, 1921.	
	Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
0—10 ..	153	138	164	152	91	89	70	70
10—40 ..	283	231	286	221	235	262	222	243
40—60 ..	82	63	75	56	109	119	122	131
60 and over ..	29	21	26	20	42	53	61	76

*Census of India, 1931, Volume XVII, Punjab, Part I, Chapter III, page 119.

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It will be seen that in comparison with the rest of the Punjab the population of Montgomery District is inclined to youth rather than age, while the district shares with the rest of the Punjab a poor expectation of life compared with England and Wales and France. Comparing males and females within the district; if we take 100 males and 100 females, there will be four more females than males in the age period from birth to 10 years old, two more males in the age period from 20 to 40 and two more males in the age period from 50 onwards. On the whole the age distribution of males and females for the district is very much alike.

(*f*) Vital statistics.

The following account of the system of registering vital statistics in the British Districts of the Punjab is taken from Appendix I of the 1931 Census Report, Part I :—

> "In the rural circles, births and deaths are reported by village chaukidars (watchmen) who are provided with two books, one for births and the other for deaths, in which entries are made, in the chaukidars' report, by a resident of the village who can read and write, and the lambardars (village headmen) of each village are responsible that these entries are duly made. The chaukidars take their books with them to the Thana (police station) at their fortnightly visits and from these books and from oral enquiries made from chaukidars, the Police Muharrirs compile the fuller registers which they maintain. Fortnightly returns are submitted, through the Superintendent of Police, to the Civil Surgeon. The Civil Surgeon forwards fortnightly, monthly and annual returns, compiled from the Police returns, to the Director of Public Health, Punjab. From the returns so received, monthly and annual returns are prepared in the office of the Director of Public Health Punjab. The Police Muharrirs receive a small monthly allowance in all cases in which the work is done satisfactorily. In Municipal towns, when a birth or death occurs in any household, the head of the household makes a report within three days of the occurrence or causes a report to be made orally or upon a form provided, by the Committee. If for any reason he is unable to do so, the report is made by an adult member of his family, or failing any such, by an adult male servant, or in the case of births, by the midwife employed in the accouchement. If a birth or death occurs in a household

in which there is no grown up male member, the report is made by the sweeper of the mohalla (street or lane). The mohalladar (a responsible resident of the mohalla) and the sweeper are jointly and severally responsible that there is no omission. In most Municipalities, rules or bye-laws have been adopted under the Municipal Act, regarding the proper registration of births and deaths. In towns where no special bye-laws for the registration of vital statistics have been prescribed by the Municipal Committee, but where the watch and ward is done by the Municipal Police the constable of each beat reports all deaths occurring in it. The police are assisted by the sweepers of the mohallas, who supply the information regarding births. Birth and death registers are kept at Municipal Registry Offices, and weekly returns compiled from the registers are forwarded to Civil Surgeons for incorporation in the district weekly returns. A weekly return showing the births and deaths registered in all Municipal towns with a population of ten thousand and upwards each, and a monthly return showing the births and deaths registered in all districts, are published in the *Punjab Government Gazette.*"

"The accuracy of the registers maintained by the Police and Municipalities is tested by the Director of Public Health, Punjab, and Assistant Directors of Public Health and District Medical Officers of Health, Civil Surgeons, Superintendents and Assistant Superintendents of Police, Tahsildars, Naib-Tahsildars, Kanungos, Superintendents of Vaccination and Vaccinators. All omissions of births and deaths are supplied in the registers after verification by the Civil Surgeons, and the District Officers are asked to punish the defaulters."

Recent years in Montgomery have shown an annual birth rate of about 34 per thousand of the population; the sex distribution at birth being approximately 100 males to 93 females. This may be compared with a provincial birth rate of 42 per thousand.

The death rate in the year 1932—18.21 per 1,000—was the lowest on record. The death rate for the previous year was 20.6 which is probably normal. The recorded deaths in these two years show approximately 100 males to 82 females.

CHAP. I, C. Population. (g) Diseases.

The following table shows the recorded deaths in the district caused by plague, cholera, small-pox and fever and the total deaths recorded from 1918 to 1932 :—

Year.	Plague deaths.	Cholera deaths.	Small-pox deaths.	Fever deaths.	Total deaths.
1918	2,881	17	62	39,100	44,440
1919	834	4	1,331	11,275	16,002
1920	243	8	1,975	9,875	14,442
1921	55	15	12	9,669	11,867
1922	35	..	52	8,617	10,872
1923	397	2	107	14,542	17,753
1924	4,622	207	261	16,918	25,126
1925	117	8	324	12,803	16,138
1926	1,808	..	2,712	13,497	21,704
1927	35	502	895	11,469	15,927
1928	..	109	437	13,127	17,081
1929	..	31	281	16,297	20,066
1930	..	2	243	18,477	22,531
1931	..	18	105	16,728	20,655
1932	..	5	244	14,503	18,209

It will be seen that the district was seriously affected with plague in the years 1918, 1924 and 1926. The District Board maintains a regular staff consisting of 4 mates and 16 coolies who are engaged in rat destruction as a preventive measure against plague in selected areas between July and February. These areas include villages from which reports of rat mortality have been received during the plague season and villages adjacent thereto, and such other villages as have a reputation for plague in the past, or for infestation by rats.

The worst visitation of cholera recorded in the table is that of 1927. But this disease has as yet not been particularly serious in the district.

The district is reported to be somewhat notorious for small-pox and as will appear from the table there were serious visitations

in 1919, 1920 and 1926. As noted in another section of the Gazetteer, vaccination is steadily gaining ground and it is hoped that this disease, which is after all avoidable, will become less common.

Until the advent of the canals there was very little malaria in the district and there is not very much now, but since canal irrigation started it is believed to be somewhat on the increase.

It is the duty of patwaris to report all cases of cholera or plague occurring in their circles immediately on printed post cards to the office of the District Medical Officer of Health. Village officials are also required to report cases of vomiting and diarrhœa suggestive of cholera to the Medical Officer in charge of the nearest dispensary, whose duty it is to visit the village at once, make enquiries and start preventive measures, reporting his action to the District Medical Officer of Health by telegram or special messenger.

(A) Infant mortality and birth customs.

During the last 10 years while the rate for infant mortality in the province has averaged 188.61 per thousand, the average for the district works out at 170 per thousand. Maternity and child welfare work is carried out by the district branch of St. John's Ambulance Association with a grant-in-aid from the District Board and the Punjab Red Cross Society. The Notified Area Committee, Okara, also contributes. The lady doctor in charge of the American Presbyterian Mission Hospital in Montgomery trains midwives, both at Montgomery and Chichawatni, being assisted by a grant from the District Board and from the Notified Area Committee, Chichawatni, the Municipal Committee, Montgomery, and the district branch of St. John's Ambulance Association. A regular health centre for maternity and child welfare was set up in Montgomery in 1929 with a properly qualified health visitor in charge. About 40 village midwives have been trained by the Health Visitor in the last four years. The Health Visitor moved from Montgomery to Okara in April 1933. Midwives at Montgomery are now trained by the lady doctor at the Mission Hospital. There is a Health Visitor also at Chichawatni.

Birth customs are believed to be similar in this district to those prevailing in rest of the province, the central features being that a woman is considered to be untouchable at the time of her confinement and that fresh air at that time is considered to be extremely harmful. The result of these two superstitions is in all cases unfortunate and in many cases disastrous. It is to be hoped that success will attend the devoted efforts of those interesting themselves in maternity and child welfare in the district and that many of the avoidable causes of discomfort and danger to mother and child will be generally removed in time.

CHAP. I, C. Population. (i) Sex Statistics.

The following statement extracted from the 1931 Census Report shows by Tahsils the number of females per thousand males in the district :—

Montgomery Tahsil	778
Okara	811
Dipalpur	853
Pakpattan	814

For the district as a whole the number of females to 1,000 males in the 1931 Census was 810. For the previous Censuses it was as follows :—

1921	811
1911	824
1901	849
1891	850
1881	825

Sex proportion in the Province is fully discussed in Chapter 5 of Part I, of the Census Report. Montgomery District does not bear any peculiar characteristics in this respect.

(k) Customs.

A Riwaj-i-Am (Customary Law) for the Sutlej Tahsils was drawn up during the Settlement of 1921-22 and published in 1925. For the Ravi Tahsils there is no relevant Riwaj-i-Am at present existing, but the customary law of the whole district as it was before the recent influx of colonists is probably more or less correctly represented in the Volume for the Sutlej Tahsils quoted above. At present it can hardly be said that there is any distinctive customary law for the district at all, except in so far as the original inhabitants have retained their original customs. Colonists from other districts have brought their own customs with them. At the same time since these colonists come mostly from the more advanced districts it is to be expected that they will exercise a progressive and modifying influence among the old inhabitants of the district. Even before colonization started, as appears from the old Gazetteer, the ceremonies connected with births, marriages, and deaths were much the same as in other districts and did not demand any particular description.

Table VII published in Volume 2, of the 1931 Census Report gives details by districts for age, sex and civil condition. The total figures for Montgomery District are as follows :—

POPULATION.		UNMARRIED.		MARRIED.		WIDOWED.	
Males.	Females.	Males.	Females.	Males.	Females.	Males.	Females.
552,456	447,316	324,506	221,441	190,324	189,716	37,626	36,159

Mussallis, though not placed with the depressed classes in this Census, may be mentioned here as they are supposed to be Chuhras converted to Islam. They number 24,233 males and 21,825 females. In villages they are mostly engaged in their traditional occupation of sweeping or in field labour. But in the towns they are permitted to undertake miscellaneous occupations working as weavers, cooks, water-carriers, dyers, etc., which would be denied to Hindu Chuhras.

Mussallis.

Colonists, Ravi tahsils.

It will be of interest to consider somewhat more closely the effect of colonization on the tribal composition of the people. It has already been shown in part B of Chapter I, in what manner the colonization scheme in the Ravi Tahsils contemplated the distribution of the crown waste area. There are five main items :—

	Per cent.
(1) Indigenous population, immigrant peasant settlers and auction purchasers	67
(2) Depressed Classes	2
(3) Landed-gentry and reward grants ..	7½
(4) Service grants	10
(5) Grants for special objects	13½

The last three items need not be considered here, while as regards item No. 1, the tribal divisions and the characteristics of the indigenous population have already been discussed above. The two most important classes of immigrant peasant settlers are the Central Punjabis selected by reason of their proved agricultural efficiency, and the military grantees selected for their conspicuous service in the army, more particularly, during the Great War. Among the Central Punjabis, are Arains from Jullundur and Lahore divisions, Muslim Jats and Gujars from Gurdaspur and Hoshiarpur, Jat Sikhs from Lahore and Jullundur Division and Saini Sikhs from the Doaba. This class of colonist has been uniformly satisfactory. They reside permanently on their grants and make the best possible use of their expert knowledge of agriculture. They come for the most part from congested districts and to them the greater space and freedom in the colony provides a grateful contrast to the small holdings and intensive cultivation of their homes.

As is natural the military grantees include representatives of nearly all the important agricultural tribes in the Punjab. In fact it would have been small loss to the colony if there had been more selection and the classes of military men obviously unsuited to agricultural life in the Montgomery district had been rewarded in some other way. Such are the Muslim Rajputs from Jammu and the Murree hills, the Hindu Jats from Hariana and the Hindu

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Jats and Rajputs (Dogras) of the sub-montane area. None of these classes has taken kindly to the heat and dust of the Montgomery district. Most of them are absentees in so far as they can evade the vigilance of the officers in charge of colony work, and it is probable that as soon as they can acquire proprietary rights many of them will sell their grants and retire permanently to their homes. Perhaps the most successful military class in the colony has been the Jat Sikh but others have also done well. Indeed if the classes indicated above be excluded, the military grantee generally is a distinct asset to the colony. Their villages are generally comparatively well looked after, and they are as a class prosperous and contented. It remains to be seen how the next generation will fare. At present their domestic budgets are much assisted by their military pensions. At the same time their sons are commonly being fitted by education and training more to the desk than to the plough.

Auction purchasers are now restricted mostly to those who purchased land in the early days of the colony, and these were generally of the capitalist class including a fair proportion of Aroras and Khatris. The lands auctioned from 1925 onwards went more to purchasers of the peasant class, but these have nearly all been resumed by reason of failure to pay instalments and re-allotted to the purchasers on peasant grantee terms.

The allotments to depressed classes include some small more or less experimental allotments to Ods, who had deserved well of Government by strenuous excavation work done for the Canal Department, and some more extensive grants on instalment purchase terms to Christians selected by various Missionary Societies. These classes have not been conspicuously successful as colonists so far.

Finally it has been the aim of each new colony estate as far as possible to reproduce a community similar to that which the colonists had left in their old homes, and in pursuance of this policy, in peasant estates, one rectangle was normally set aside for distribution among village artisans and menials, who otherwise would not have been attracted to the colony. Each such estate has now its complement of carpenters, potters, blacksmiths, cobblers and so on.

Colonists, Sutlej tahsils.

The great majority of the immigrant colonists in that part of the Nili Bar Colony comprised in the Sutlej Tahsils of the district were also military grantees. The same classes are represented as in the Lower Bari Doab, with, unfortunately, an even wider divagation into classes (such as clerks in Army Headquarters)

which are not likely to contribute much to an agricultural economy. The bulk are, however, of good agricultural stock and have once more proved their capacity for colonizing land which does not present too great difficulties in quality or irrigation. There are homogeneous groups of Jat Sikhs, Mazhabi Sikhs, Muhammadans from the Rawalpindi Division, Jats and Ahirs from the South East Punjab and Dogras from the low hills, named in their order of merit as colonists. as well as smaller groups of classes less frequently recruited in the army. The earlier auctions of land in this colony also attracted a considerable number of small buyers—self-cultivating peasants, mostly Jat Sikhs—who owned or cultivated small areas of land in the other colonies ; these formed most promising material, but the onset of the economic depression caused a large proportion of them to default in their payments, with the result that confiscations took place and many left the colony. CHAP. I, C. Population.

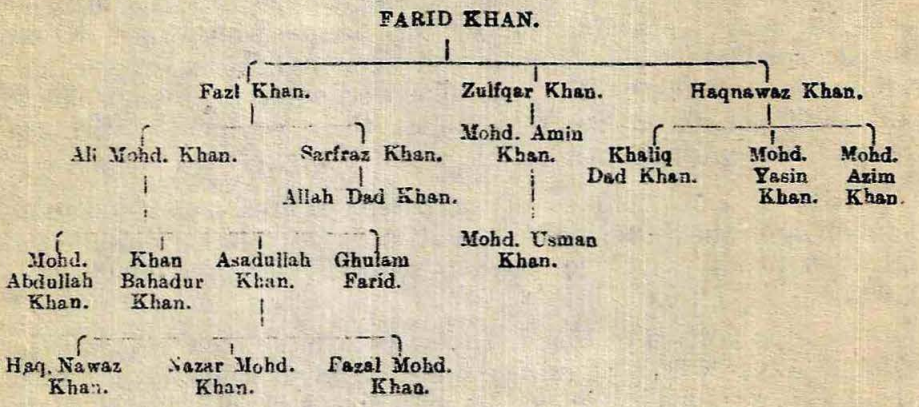
Most of the remainder of the perennial area, and all the non-perennial, on the Sutlej Valley Canals in these Tahsils, was allotted on different conditions to colonists who already lived in the district.

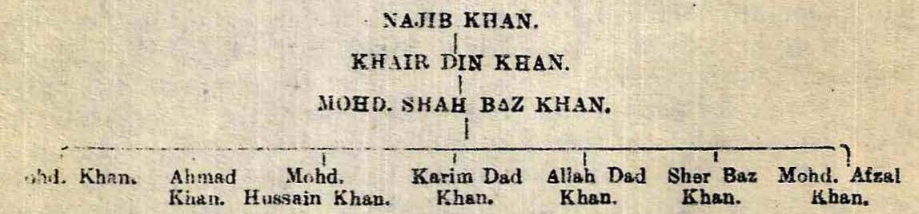
A large portion of this district was formerly held in jagir by various servants and favourites of the Sikh Government. Some of these were resumed at annexation, others lapsed by the death of the holders. In 1854 the proportion between Jagir and Khalsa estates had fallen from 60 to 12 per cent. The largest estates of this class were held by Sir Baba Khem Singh Bedi, K.C.I.E., and his brother Baba Sampuran Singh Bedi. The Bedis are looked upon as the lineal descendants and representatives of the first Sikh Guru Baba Nanak, and are therefore held in much veneration among a large class of Sikhs. The jagir of Sir Baba Khem Singh was situated in four villages in Dipalpur Tahsil and on his death descended to his eldest son Sir Baba Gur Bakhsh Singh, Bedi, of Kallar in the Rawalpindi district. The jagir which originally was granted to Baba Sampuran Singh was situated in 22 villages also in Dipalpur Tahsil. He left three sons, Dewa Singh, Parduman Singh and Uttam Singh, of whom Uttam Singh died without male issue. The jagir is now held by Babas Jagtar Singh and Avtar Singh, grandsons of Dewa Singh, and Baba Gurdit Singh, son of Parduman Singh. Babas Jagat Singh and Avtar Singh hold one-half share and one-sixth share respectively, while Baba Gurdit Singh holds one-third. The Descent of Jagirs Act governs succession to these estates. The Bedi family has purchased other considerable areas in the district including colony estates in the Montgomery Tahsil. The family is one of those recorded as having shown conspicuous loyalty in the Mutiny. Baba Harbans Singh, Jagirs.

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Bedi, has already been mentioned on page 48. Baba Hardit Singh of Chak Bedi in the Pakpattan Tahsil, another of the sons of Baba Sir Khem Singh Bedi, K.C.I.E., and Baba Jaswant Singh, Bedi, of Nanakpur, in the same tahsil, one of his grandsons through Baba Hara Singh, are both Divisional Darbaris.

Another important estate was assigned in 1851 to a Pathan family in the Dipalpur Tahsil. The original assignees were Farid Khan and Najib Khan. Pedigree tables showing the descendants of each of these assignees are shown below :—





The descendants of Farid Khan hold four villages. The descendants of Fazal Khan hold Faridpur—Sohag and Nawan Kot; the respective Lambardars being Khan Bahadur Khan and Allah Dad Khan. Mohammad Usman Khan holds Faridpur Jagir of which he is the Lambardar, while the sons of Haq Nawaz Khan hold Kariwala, the Lambardar being Khaliq Dad Khan. The great grandsons of Najib Khan hold Vaindla village, the Lambardar being Mohammad Khan. Mohammad Usman Khan, great grandson of Farid Khan is a Zaildar and a Provincial Darbari and Karim Dad Khan great grandson of Najib Khan is a Divisional Darbari. Succession to these assignments is not governed by the Descent of Jagirs Act.

Darbaris.

A leading Provincial Darbari is Dewan Said Mohammad, son of Fateh Mohammad Chishti, *Sajada Nashin* of the Baba Farid

Shakar Ganj shrine at Pakptattan (*cf.* pages 65—67). Other Provincial Darbaris are :—

(1) Mehr Nur Samand, son of Mehr Fazal, Kathia of Muradke Kathia, Tahsil Montgomery.

(2) Khan Sahib Mian Nur Ahmad Maneke, M.L.C., son of Ghulam Muhammad Khan Wattu of Pir Ghani, in the Pakpattan Tahsil.

(3) Mian Khan Mohammad Khan Lakhoka, Zaildar of Bahli Dilawar, in Pakpattan Tahsil, son of Mian Amir Bakhsh Joya.

(4) Khan Bahadur Raja Fazal Dad Khan, Risaldar-Major Bahadur, son of Raja Nur Khan, of Kot Fazal Dad Khan, in the Montgomery Tahsil. This gentleman is not an old resident of the district. He served in the old 12th Cavalry now amalgamated with Probyn's Horse and is a Cattle Farm grantee in the Lower Bari Doab Colony.

There are two other Cattle Farm grantees among the Divisional Darbaris, Chaudhri Mahla Singh, son of Chaudhri Bahadur Chand, Arora, who resides between Gugera and Okara, and Chaudhri Dost Muhammad Khan, son of Chaudhri Jahangir Khan Wattu, of the Dipalpur Tahsil, whose cattle farm is situated in the Khanewal Tahsil of Multan District.

Other Divisional Darbaris are :—

(1) Malik Muhammad Fazil, son of Malik Machhia, Langrial, of Kamand in the Montgomery Tahsil.

(2) Pir Mohammad Hussain, son of Syed Nadir Shah of Sher Garh, in the Dipalpur Tahsil.

(3) Mian Chiragh Din, son of Mian Hussain Bakhsh, Arain, of Burj Jiwe Khan, in the Okara Tahsil. His family is one of those recorded as having shown conspicuous loyalty in the Mutiny (*cf.* page 48).

(4) Chaudhri Bashir Ahmad Khan, son of Chaudhri Mahbub Alam Khan, Janjuah, of Chak No. 81/5-L., in the Montgomery Tahsil. This gentleman is Provincial Secretary of the Red Cross Society.

(5) Sardar Nur Mohammad Khan, son of Khan Bahadur Abdur Rahman Khan, Mokal, of Chak No. 89/9-L., in the Montgomery Tahsil.

Landed gentry grantees.

In addition to the above, there are numerous members of leading families in the Province who hold landed gentry grants in the Lower Bari Doab Colony, but these need not be detailed here,

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since they do not reside normally in the district and belong more properly to their districts of origin.

(n) Non-Christians religions.

Distribution of every ten thousand of population by religion was found in the 1931 census to be as follows :—

Muslims	6,977
Sikhs	1,482
Hindus	1,044
Depressed Classes	324
Christians	173

The figures also show that there are in the district 38 Jains, 7 Zorastrians and 2 Buddhists. In this census a new religious heading was authorised. Any member of the depressed classes who wished was permitted to return Ad Dharam as his religion at the time of the census. These persons did not desire as previously to be recorded as Hindus, but preferred to ascribe themselves to some more aboriginal belief. Ad Dharam literally means ancient religion. In the above table the heading "Depressed Classes" includes all Ad Dharmis and also such Hindu castes as Bawaria, Chamar, Chuhra, Dagi and Koli, Dumna, Megh, Od, Ramdasia and Sansi.

In the previous Gazetteer the censuses of 1881 and 1891 were compared and the comparison seemed to show that the Hindu population of the district was in point of numbers somewhat rapidly overhauling the Muslims. The numbers distributed per ten thousand of the population are as follows :—

	1881	1891
Muslims	7,748	7,245
Hindus	1,969	2,132
Sikhs	280	321
Christians	2	2

The figures in the present census show the results of colonization. The reduction in the Hindu percentage is also in part due to the recording of various classes of persons previously entered as Hindus under the general heading "Depressed Classes." The Christian percentage has gone up by reason of the introduction of a considerable number of Christian grantees on special instalment purchase terms into the Lower Bari Doab Colony. The Sikh percentage has been increased mainly from outside the district. In particular a large number of the military grantees in both colonies are Sikhs. The whole district is still predominantly Muslim.

There is nothing particular to record under the heading "superstition." The old superstitions of the jungle must every-

where give way to the advance of colonial development, better communications and the extension of learning.

(o) Ecclesiastical administration and Christian Missions.

As far as the Church of England is concerned there is a Church at Montgomery which is visited from time to time by the Chaplain from Multan. There is also a Church at Okara where the Christian community is augmented by a number of Christian tenants who work on the Military Farms near that place. The Church Missionary Society has a settlement at Bethlehem (2 G. D.) on the eastern boundary of the Okara Tahsil.

The Roman Catholic Order of Capuchins maintains a priest permanently at Montgomery. There are a certain number of Roman Catholic converts among tenants in the Okara Tahsil and till recently an estate in that Tahsil was held by the Roman Catholic Bishop of Lahore and cultivated under his direction by Christian sub-tenants. These sub-tenants, however, became so unmanageable that the Bishop gave the land back to Government.

An American Presbyterian Mission is represented at Montgomery and they have made themselves more or less responsible for a considerable number of Christian grantees holding land in the Okara and Montgomery Tahsils. They also work at Pakpattan and Arifwala. They have a mission hospital in Montgomery which the devoted services of Dr. Alexander and her staff have rendered extremely popular in the neighbourhood.

Two colony estates in the neighbourhood of Kassowal in the Montgomery Tahsil have been made over with a view to the reclamation of criminal tribesmen to the Salvation Army. The local headquarters of the Salvation Army are at Lahore, but a member of their body resides permanently in this colony estate with the criminal tribesmen.

(p) Occupation.

Table X in Part 2 of the 1931 Census Report gives complete details of the occupations or means of livelihood in the district. The total earners each with a principal occupation in the district number 269,015 males and 13,606 females out of a total population of 999,772. There are four main headings under which occupations are grouped in the Census :—

(A) Production of raw material ;

(B) Preparation and supply of material substances ;

(C) Public administration and liberal arts ; and

(D) Miscellaneous.

Group A absorbs 170,346 males and 3,948 females out of the total earners. 160,000 of these are engaged in cultivation

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either as owners, tenants or agricultural labourers and 8,000 in stock raising.

Under B—preparation and supply of material substances, the earners total 61,782 males and 6,077 females. The principal occupations are weaving, working in hides and skins, working in wood or metal or as blacksmiths, pottery, food industries, shoe making, tailoring and hair dressing, road and rail transport and trade mostly in food stuffs.

The heading C—public administration and liberal arts, supplies 10,597 male earners and 378 female. The earners are distributed roughly half and half between public administration and professions and liberal arts, *viz.*, religions teaching, the law, medicine, etc.

D.—Miscellaneous employs 26,290 males and 3,203 females. The principal occupations are domestic service and casual labour.

Apart from the large majority of earners who are definitely employed in cultivation, much of the industry and most of the trade depends on or is in the service of agriculture. The previous Gazetteer lays stress on the important part taken by women in the agricultural community. As will be seen from the figures quoted above the numbers of women who are entered in the census as earners is very small, but if the picture painted in the following passages from the previous Gazetteer is still true to life—and it probably is—woman take a much more important part in the daily life of the farmer than is commonly understood :—

> "Women are everywhere hardworked, the drudgery of their domestic occupations leaving them scarcely any leisure for rest or amusement. They must be up before it is light, to churn the milk of the night before, and then sweep the house, throw away the rubbish, and make cakes of the cow-dung. Water has then to be fetched. When this is over, it is time to commence cooking the morning meal, which, when ready, has to be taken to the men working in the fields. If after this their services are not required to watch the crops and frighten away the birds, they are expected to spin cotton or wool to be made into clothing for the family,—indeed the two occupations are often combined. Again, early in the afternoon preparations have to be made for the evening meal, the vegetables or *dal* are placed on the fire, and a second trip made to the village well for water. By the time they return, it is time to knead the flour,

make it into cakes, and cook it for their husbands, sons, and brothers; these lords of creation will assist in tying up and milking the cows. This done, the milk is put over a slow fire to warm, and the family sits down to dinner; and so the days pass with little variation from year to year."

(g) Food.

The following remarks regarding the food normally consumed in the district from the previous edition of the Gazetteer shows what conditions were before colonization started :—

"As a rule, the people have their food cooked at home during the cold weather, and at the public oven of the *machhi* during the hot season. The *machhani* gets a portion of whatever she bakes, for the cook is generally a female. This wage is called *bhara*. The staple food consists of wheaten cakes. In the cold weather, jowar, china or kangni generally takes the place of wheat, but if a zamindar has wheat, he eats it. Bajra and maize are also eaten to a small extent. China is boiled and used like rice; kangni is made into large thick cakes which are palatable enough when hot, but very dry when cold. Jowar is also used in the shape of cakes. With these cakes *dal* (the split grain) of gram, mash, or mung, or vegetables, are eaten. In the hot weather especially, vegetables, chiefly pumpkins of sorts, are used. In the cold weather, turnips, carrots and *sag* (greens) take the place of pumpkins. Besides, all zamindars drink large quantities of milk or butter-milk, generally the latter. Meals are taken twice a day, about 10 A.M. and after sunset. The food is almost always cold. If any food remains over from the evening meal it is eaten in the morning with some butter milk. Parched gram is occasionally eaten in the afternoon, between the two meals. Butter or ghi (clarified butter) is commonly used with the cakes; salt, spices, and *gur* (molasses) are also articles of diet in common use."

The principal feature differentiating pre-colony days from the present is the loss of grazing grounds and a consequent reduction in the number of cattle kept. The old nomad in the Bar had a constant and plentiful milk supply. At the same time he was able to obtain meat more cheaply than his successors can. He did not need to slaughter for food any of his cattle, sheep or goats that were hale and hearty. But from time to time some diseased

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or injured beasts were cut up and eaten ; or a feast might be supplied by an unusually successful theft. Also, while wandering in the jungle, he had free access to *piluns* and other jungle fruits which were quite an important part of his diet.

It is still the case in all walks of life that there are two principal meals of the day, one taken between 10 and 12 in the morning, and the other taken after sunset. An early morning meal is taken before sunrise consisting commonly of *chapatis* left over from the previous evening (*basi roti*). This meal may be called *chhahwela*. The first principal meal is known as *rotiwela*. In the afternoon at about 4 or 5 P.M. a meal may be taken consisting commonly of parched gram. It is known as the *pechhain* or *laude-wela* There does not appear to be any particular name for the final meal which may be called *Rat ki roti* or *Sote di roti*. If it is available, *lassi* (butter-milk) is drunk with the morning meals and milk at night. But nowadays tea is becoming more common in the early morning and in the evening. The rural population still prefers flour made from *makki* or *bajra* as a change in the winter, but generally speaking much more wheat flour is consumed than used to be the case. Well-to-do Mussalmans probably eat meat every day in the towns and urban Hindus are believed to eat more meat now than they did. But the population generally still looks on meat as an occasional luxury. The staple article of food is still the *chapati* generally made of wheat flour to which are added compounds of *dal* and various kinds of vegetable as a relish. The vegetables now grown include turnips and potatoes. Vegetables generally are a more important item in diet than formerly. A certain amount of rice is eaten in the winter. The Sikhs appear to have a rather more generous diet than the other classes and they commonly consume with their evening meal a compound of flour, ghee and sugar known as *halwa*.

(r) Dress.

In old pre-colony days men normally contented themselves with wearing a bit of cloth round the head known as *patka* or *safa* and a loin cloth, *Manjhli* or *Tahmat*. A *kurta* or shirt might be worn when the weather was cold, but it was more general for the shoulders to be wrapped in a shawl or a *dopatta* which was also used to cover up the face as a protection against duststorms. Women covered their head with a piece of cloth called *bochhan* and the upper part of their body with a *kurti*, the principal garment being a voluminous petticoat known as *ghaghra*. These garments were then mostly made of home-spun cotton cloth. The men's *patka* or *safa* might be made of cloth of European manufacture. This simple form of dress is still to be found in the more rural parts of the district, but near the towns and where fashion has

been affected by immigration, considerable changes have occurred, Bright printed cloth of Japanese manufacture is now very popular for women's dress, while on ceremonial occasions men use elaborate loin cloths of foreign origin. The male head covering is now generally known as the *pagri* and is more voluminous and of better material. The use of *saris* by educated women is now almost universal and much of the money which used to be spent on ornaments now goes on *saris* of silk and brocade. *Salwars* (trousers) are commonly substituted, for the old petticoat. Men in the towns are approximating more and more to the European style of dress, shorts and stockings and European or American shoes are very common among the younger generation. In every town there is an element in the population who dress and live so far as they can in entirely European style, while a mixture of European and Indian costumes among the less affluent is very frequently adopted. In the rural areas the military grantee has done much to popularize European coats and shoes.

Gold and silver ornaments are less common in the district now than they were some years ago. A considerable number of them have had to be sold to save the family from bankruptcy in the late years of economic depression. In any case they were never a very important feature in the district. Normally they were limited in the case of women to silver or gold earrings (*balian*), silver bangles (*churian*) on the wrist and silver anklets (*karian*). Unmarried girls used often to wear earrings (*bunde*) which sometimes consisted of 5 or 6 little silver balls hung from each ear. Men sometimes wore a small gold article something in the nature of a locket tied round the upper arm. A silver necklet (*hassi*) was sometimes worn by boys or girls. These were the types of ornament which the ordinary villager affected. There was an obligation to give such ornaments to girls on their marriage. It has been suggested that these presents were partly due to the fact that women had no share in the landed property of the family and were therefore entitled to be treated generously in gold and silver on their marriage.

The use of ornaments in general among the poorer classes of the population appears to be going out. Among the more well-to-do, as indicated above, it is often considered better value to present expensive *saris* to the bride rather than more or less useless jewellery. The use of these ornaments in the past appears to have been dictated largely by fashion. If fashion now swings round and they come to be considered unnecessary, it will be all to the good. In the case of marriages it is said that well-to-do people nowdays not uncommonly give cash instead of ornaments

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which seems to be of very much more practical assistance to the bride in setting up house.

(e) Dwellings.

In pre-colony days human habitations are stated to have been of five kinds, (1) *pakhi*: this means primarily a screen commonly used by wandering tribes, and by people grazing cattle in the bar; (2) *chhan*: this is a shed with thatched roof and thatched sides; (3) *jhuga*: a shed with thatched roof and sides made of plaited *kana* or switches; (4) *khudi*: a house with mud walls and thatched roof; (5) *kotha*: this is a house with walls and a flat mud roof. The walls were usually built of large cubes of sun-dried mud called *dhiman*. These are still made by watering a piece of ground and ploughing it. It is then watered again and ploughed, and levelled while under water. The cubes are cut with a sickle, and when dry are dug out with a *kahi*. Walls built of these blocks are plastered with mud. Examples of all these varieties are still to be found, types (2), (3) and (4) being usual in the riverain where the possibility of flooding induces a natural disinclination to put up any thing at all permanent. Elsewhere, and particularly in the colony villages, there is an increasing tendency towards better houses—in material, size and general planning and ventilation. *Pakka* and *kacha-pakka* buildings are commonly put up by the more well-to-do zamindars, and by wealthy money lenders and shopkeepers in all villages, some inclining to the bungalow type with a garden. *Pankhas* and wire-gauze windows are further evidence of a better and more hygienic standard of living. Household furniture too, though still elementary in most rural dwellings, shows the influence of European standards.

(f) Funeral customs.

The disposal of dead in this district is carried out on the same lines as elsewhere in the Punjab. Hindu and Sikh corpses are burnt and Muslim corpses are buried. Cremation grounds and burial grounds are set aside as required out of the crown waste in colony estates. There are no funeral ceremonies peculiar to this district.

(g) Amusements and festivals.

The following passage appears in the previous edition of the Gazetteer:—"The amusements of the people to an ordinary observer seem few and dull. Little boys may be seen beating a ball about with a stick and their elders pitching the *budgar* or dumb-bell. On occasions of extraordinary festivity such as fairs, they are completely satisfied with incessant tomtoming, riding about two on a horse or three on a camel and swinging in a merry-go-round now and then."

The spread of education has to some extent altered the situation. Wherever there is a school of any size, hockey and volley ball are played, while the Boys Scout movement provides the

youth of the district with profitable occupation and amusement. It is still the case that the villagers as a whole have small means of amusing themselves. On special occasions quite considerable crowds will collect to see wrestling or tug of war or tent pegging. But the actual participants in the games are not so easy to find. Tug of war is particularly popular in Sikh villages and was probably introduced by the military colonist. The best indigenous game is *Kabadi* or *Kaudi*. The rules of *Kabadi* have been codified recently in the Sialkot district and, if the game is played according to the rules, it is a remarkably good one for a young and active man. But except on special occasions or under the impulse conveyed by some officer on tour, games are not very much practised in the rural areas. After the day's work is over the cultivator is satisfied with sitting down in the village and discussing things in general with his friends over a pipe of tobacco. Newspapers are now finding their way into the villages, more particularly where there are post offices: and those who cannot read have the news imparted to them by some one who can. The general introduction of radio sets in villages has been mooted, the idea being that there should be a transmission station for each district. This is an ambitious scheme, but wireless will have to come into the villager's life sometime and it will make an extraordinary difference to him when it does.

The town dweller.

In the towns, of course, things have changed very greatly since the last Gazetteer was written. Games of all sorts can be found in Montgomery and Okara. There are games tournaments in both these places from time to time, controlled more or less by the District Sports Association and the District Olympic Association. While for the more sedentary there are clubs and private houses where those who desire can take part in a friendly game of cards. Bridge is becoming a very popular game in the towns.

Religious and other fairs.

Fairs of a religious or semi-religious nature are recorded as taking place in no less than 219 places in the district; but of course many of these are of purely local interest. The more important religious fairs are as follows:—

Name of fair.	Where held.	Dates.	Estimated attendance.
	TAHSIL MONTGOMERY.		
Hazrat Mohd. Panah Sahib	120/9-L., Kamir ..	17th Chet (30th March)	4,000
Mian Khaira Sahib ..	98/12-L. Mian Khaira ..	11th, 12th Sawan ..	3,500
Doburji	Hasham Chakar Bab near 121/7, E. R.	5th or 6th Chet ..	3,000
Hazrat Jatti Shah Sahib ..	60/12-L. ..	6th and 7th Sawan ..	3,000
Nanaksar	103/7-R. ..	1st Chet ..	3,000

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Apart from these religious fairs the Montgomery cattle fair takes place in the first week of March and the attendance is calculated to be about 15,000 souls.

Name of fair.	Where held.	Dates.	Estimated attendance.
	TAHSIL OKARA:		
Mohammad Ghaus ..	11/1-R. ..	1st Thursday of every lunar month.	1,000
Sheikhu	Sheikhu ..	21st Chet ..	5,000
Pir Sher Mohammad ..	Fatehpur ..	14th Chet. ..	8,000
	TAHSIL DIPALPUR.		
Bisakhi	Bhuman Shah ..	1st Bisakh ..	2,000
Mela Lalu Jas Raj ..	Dipalpur ..	Every Sunday in Magh	5,000
Hazrat Daud Sahib Gilani Kirmani.	Shergarh ..	1st to 8th Chet ..	5,000
	TAHSIL PAKPATTAN.		
Bahishti Baba Farid Ganj..	Pakpattan ..	5-6 Muharram ..	50,000
Urs Badar Din ..	Do. ..	5-6 Jamadi-us-sani ..	8,000
Dera Guru Nanak ..	1/K. B. ..	1st Katak ..	6,000
Pir Ghulam Qadir ..	Pir Ghulam Qadir ..	18th Chet ..	4,000

(v) Names and titles.

The only title which appears to be more or less peculiar to this part of the world is that of Mehr which is adopted by the leaders among the riverain tribes, especially the Kathias. Otherwise the same names and titles are in use as elsewhere in the province. Qureshis, Sayyids, Chishtis and Khaggas are often known as Pir. Among the Hindus the term Pandit is reserved for the Brahmins, the agricultural Hindu of standing will probably be called a Chaudhri, while the trading class is referred to as Lala. The Sikh likes to be called Sardar, but the Arora Sikh or a Sikh connected with some religious institution is generally called Bhai. Mussalman titles are Khan, Sheikh and Mian.

CHAPTER II.—ECONOMIC.

Section A.—Agriculture including Irrigation.

For general figures regarding cultivation, irrigation, rainfall, staple crops, live stock, etc., the reader is referred to the statistical tables published in Volume B of the Gazetteer. In the following sections agricultural conditions and methods are discussed in a general way and statistics are avoided as far as possible.

(a) General conditions.

The following agricultural calendar and remarks on weather are quoted from the previous Gazetteer :—

Agricultural calendar.

The months of the year are known by the following names—

Chetr, middle of March to middle of April.

Visakh, middle of April to middle of May.

Jeth, middle of May to middle of June.

Har, middle of June to middle of July.

Sanwan, middle of July to middle of August.

Bhadron, middle of August to middle of September.

Assu, middle of September to middle of October.

Katik, middle of October to middle of November.

Maghar, middle of November to middle of December.

Poh, middle of December to middle of January.

Magh, middle of January to middle of February.

Phagan, middle of February to middle of March.

The agricultural year commences on the day of the first full moon in Chetr. That day and the eight following days (*naurata*) are lucky days.

The weather.

CHETR.—*Rain.* Two or three moderate showers are good, as the outturn is then better and the grain large, and there is less danger of the diseases *kunghi* and *tela*. *Wasse Phagan te Chetr, an na mewe ghar, na mewe khetr.* " If it rains in Phagan and Chetr, neither the house nor the field will contain the grain."

Wind—The wind should always be moderate. If strong the grain is light and the ground dries up, and if the crop has been watered, the plants shake about, and the roots become exposed. The wind should be from the east to bring up rain. After rain, from the west to ripen the crops. *Sunshine* and *heat* should be moderate.

CHAP. II, A. Agriculture including Irrigation. Agricultural calendar. The weather

VISAKH.—*Rain* is most injurious. It injures the grain and rots the straw. *Wind*—Should be hot and of average strength, coming from the west. This dries the grain and straw, and facilitates threshing and winnowing; *sunshine* and *heat* should be strong. In this month the spring harvest ripens and is cut.

JETH.—In this month the harvest operations are completed and the crops housed. Weather should be as in Visakh. The hotter the *wind* and *sun* the better.

HAR.—Up to the middle of Har the weather should be as in Jeth, for some crops may still be in the fields. After the middle, there should be heavy and repeated *showers*. These are favourable for preparing the land for next harvest, and for the production of grass. The rains commence in this month. The *wind* should be from the east, the rainy quarter. Strong *sunshine* and *heat* are bad, as crops artificially irrigated are injured by the water getting heated.

SANWAN.—Weather should be as in the latter half of Har.

BHADRON.—In this month the crops commence to flower; *rain* is much wanted. The *wind* should be sometimes from the east to bring on rain, and sometimes from the west to assist the maturing of the crops. The *sunshine* and *heat* ought to be moderate.

ASSU.—Heavy *rain* is injurious to the flowering crops; but a few light showers at the beginning of the month are of benefit to the *rabi* harvest and injure the *kharif* crops little. *Wind* as before up to the middle of the month, then west. *Sunshine* and *heat* should be moderate. The month is thus described:—

Assu mah nirale;
Dihan dhupan; ratin pale.

"Assu dewy month, sunshine by day, chills at night."

KATIK.—There should be no *rain*, as rain stops the *rabi* sowing and spoils the ripe autumn crops. However, it never does rain in Katik. The *wind* should be from the west, and not strong, as otherwise irrigated lands of the *rabi* harvest dry up. *Heat* and *sunshine* should be moderate.

MAGHAR.—The weather should be as in Katik. Frosts at night retard the growth of the crops.

POH.—It should *rain* in Poh, according to the saying—

Wase Pohin mahin,
Kaun akhe meri jami nahin?

"If it rains in Poh and Magh, who will say my (crop) has not come up?" The less *wind* the better, as the weather is cold, and cattle suffer from the wind, especially from the north and west winds.

MAGH.—There should be *rain* in this month. Gentle westerly *breezes* are good for the crops, as they bring them on and keep off *kunghi* and *tela*. The north wind is injurious, as it is cold and dries up the crops. The east wind, too, is hurtful according to some, but not so according to others.

PHAGAN.—The weather in this month should be of the same kind as in Chetr. This is the end of the cold weather.

Pala gaya singalian charhde Phagan Mah,
Turian bhi jhulian sattian charhde Phagan Mah:

"The cold weather went for horned cattle at the commencement of Phagan; horses, too, cast off their coverings at the commencement of Phagan."

The winds and their effects.

The winds are the north-wind or *pahar*; the east-wind or *pura*; the south-wind or *dakkhan*; and the west-wind, called *dhawi* by the people, because it keeps off rain and so floors or knocks down (*dhaona*), the farmer. But *mahajans* call it *soni* or the golden, according to village etymology, but the word may come from *suna* empty, or *sona* to sleep. The effect of the winds is thus expressed:—

Dakkhan mele, pura wasawe;
Dhawi wasdean nun wanjawe.

"The south-wind collects (the clouds), the east-wind causes them to rain, the west wind disperses them when raining." One may have too much of the east-wind though; for "if the east-wind always were to blow, that were also exceedingly bad:" *Nit ghule pura, oh bhi bure se bura.*

Winter and summer rains compared.

The winter rains are so important that one is tempted to put them on an equality with the ordinary summer rains. When the winter rains are good, the *rabi* crops flourish, and the maximum outturn is obtained with a minimum of labour spent in irrigation. But the summer rains besides greatly aiding the preparation of the land for the *rabi* sowings, produce abundant grass, and on this account should be held the more important of the two.

These remarks are still generally applicable. "Heavy and repeated showers" in the second half of Har are certainly advantageous, but they are most uncommon. Summer rains do not generally begin until the second half of July, that is to say in the

CHAP. II, A. Agriculture including Irrigation. Winter and summer rains compared,

month of Sanwan. Rain can generally be relied on in Bhadron. The winter rains are not so important now as they were by reason of the introduction of canal irrigation. Nor can it now be said to be a feature of plentiful summer rain that it produces abundant grass since most of the area on which grass used to grow is now canal irrigated. But a good fall of rain in Poh or Magh will enormously benefit the wheat crop. In Magh there is generally a prolonged closure of the canals (4 or 5 weeks) for purposes of silt clearing and other annual maintenance works, so that without rain crops are sometimes liable to damage through drought. Plentiful rains in Bhadron will generally result in extended sowings of Toria and will assist the farmer in his ploughings for wheat.

Soils.

The soils of the District are, as usually in the plains, of three kinds, clay, loam and sand. By loam is meant a mixture of clay and sand. If there is too much clay the soil is generally called *Pakki*. *Sikand* the term employed for this soil in the previous Gazetteer is not commonly met with in the Ravi Tahsils. This clayey soil is that in which rice is grown, partly because it is the only soil which when thoroughly saturated will support the bullocks when ploughing it up. But the main reason is probably that cotton cannot be grown if the soil is too clayey. Owing to its non-absorbent qualities this soil requires more water than the lighter soils. The second soil in the series from clay to sand is *Rohi*, a term which is used more in the Okara Tahsil than elsewhere. This is the richest soil in the District. It is to be found generally in the areas occupied in pre-colony days by the homesteads of the nomad graziers of the Bar. These areas were no-doubt selected by them by reason of their fertility, while that fertility was increased by the presence of the Jangli residents and their cattle thereon. *Gasra* or *Maira* is the standard soil in the District, light loam in which clay and sand are mixed in moderate proportions. This soil is mild and of a soft brown colour when irrigated. It is excellent soil for all crops except rice and is much liked by the people on account of the little labour and irrigation it requires to produce a good outturn. *Pakki* soil is common in estates irrigated from the Khanwah canal in Dipalpur and in parts of the canal irrigated tracts in the Pakpattan Tahsil and generally in low-lying areas which receive local drainage. There are scattered plots of *Pakki* soil also in the neighbourhood of the Sukhrawa irrigated by the Gugera Branch in the Okara Tahsil. When a soil is excessively mixed with sand it is called *Retli* or *Hauli* which simply means light. There are tracts of almost pure sand along the Beas Dhaya in the Montgomery Tahsil where the Bar begins to slope down to the Khushk Beas and this land is practically useless for any purpose. Soil impregnated

with soda and other salts, provided the salts are not present in sufficient quantities seriously to affect outturns, is known as *Kallarathi*. The majority of colony estates in the Bar have a certain number of *Kallarathi* rectangles in them. Where the *Kallar* (salts) is serious, it may take the form of *Kallar shor*, where particularly in cold weather the salts rise to the surface and give the appearance almost of a snow field in the distance; or *Siah* (black) *Kallar* where the salts (including sodium carbonate) do not appear on the surface, but the soil has a most unhealthy yellowish tint and the surface becomes slimy after watering. If sufficient irrigation is given to keep the salts down, lands affected by *Kallar shor* can be made to yield quite good crops. *Siah Kallar* is practically useless. Finally in the Ganji Bar, more especially in the Montgomery Tahsil, and in the north-west corner of the Pakpattan Tahsil in the Nili Bar there are tracts of land called *Bara* which are entirely unfit for economical cultivation by the small holder. True Bara land has a shiny hard surface on which no amount of irrigation or ploughing seems to have much effect. Below this hard surface the soil is full of salts. *Bara* land, not of the extreme type, when once by patience and perseverance grass or any other vegetable matter has been made to grow upon it, is said to be capable of developing into very valuable land. But in the extreme cases, for instance in an area of several thousand acres near Harappa, in the Montgomery Tahsil, it has been definitely proved by the experiments of the Agricultural Department that field crops cannot be made to grow. A suggestion has been made that these areas might be capable of afforestation, since it has been found that with unlimited water shisham trees can be made to grow on *Bara* land. But sufficient canal water is not likely to be available. It is a feature common to all soil impregnated with *Kallar* that it is highly non-absorbent. After heavy rains water will stand on *Bara* land for days together.

Reclamation methods.

The Deputy Director of Agriculture has contributed some notes on the treatment of *Kallar* and *Bara* lands. He observes that land containing white *kallar* (*Kallar shor*) can be improved considerably and good crops can be raised therefrom. The following methods of reclamation are employed :—

1. Scraping the upper surface to a depth of 1 foot 6 inches and removing the salts.
2. Addition of organic matter by green manuring; *san* and *guara* are used for this purpose.
3. Deep cultivation with furrow turning ploughs.
4. Heavy watering.

CHAP. II, A. Agriculture including Irrigation. Reclamation methods.

Investigations made by the Agricultural Department in the laboratory show that the principal difference between *Bara* and ordinary soil is that *Bara* land has a larger proportion of iron and aluminium in the top foot and a greater proportion of soluble salts below the 4th foot. *Bara* soil has more chlorides and less nitrogen and also contains a proportion of sodium carbonate.

The following were the principal methods tested in the field for the reclamation of *Bara* soil:—

1. Application of gypsum.
2. Application of castor cakes alone and in combination with gypsum.
3. Deep cultivation.
4. Top dressing with sand.
5. Application of calcium chloride.
6. Flooding for several months during the summer.
7. Afforestation.

Top dressing with sand and afforestation are considered to be the only serviceable method and in order that afforestation may be a success the land has to be flooded heavily first for two summers and senji or some other suitable crop has to be grown on it during the winter. Top dressing with sand can only be practised economically over small areas where plenty of good coarse sand is available.

Some of the other methods quoted served to improve the soil, but these were not found to be economically practicable for general use. For afforestation purposes, after the soil has been properly prepared, it is recommended that *shisham* trees be planted with 5 feet between the rows and 1½ feet to 2 feet between the plants in the rows. This produces a good canopy in the early stages, the plants being thinned out later on. This thick planting saves much re-planting later.

(*b*) Systems of cultivation.

Previous editions of the Gazetteer contained an exhaustive description of the methods of cultivating the principal crops in the District. This description appears to have been taken almost, if not quite verbally, from Mr. Purser's Settlement Report of the District which was published in 1870. Agricultural conditions have now been so entirely transformed by the extension of canal irrigation that it would appear to be idle again to reproduce these paragraphs. Moreover Mr. Purser's account, if existing conditions are taken as evidence, appears to have been somewhat idealized. Possibly the introduction of canal irrigation has rendered agriculture so much easier that the laborious methods practised

sixty years ago have in fact been modified. In Mr. Purser's time the cultivator was compelled to make the best possible use of the limited water available, whereas now in the greater part of the District an adequate water supply is provided regularly by the Canal Department.

Well cultivation.

In the non-perennial areas of the Sutlej Tahsils wells are still extensively used, more particularly in the Rabi harvest. In the Ravi Tahsils there is as yet very little *chahi-nahri* cultivation, while pure *chahi* is limited for the most part to the Bet circle in the areas not irrigated by the canal. Mr. Fagan in his Final Settlement Report for the District published in 1899 gives an account of the various types of non-*nahri* cultivation which probably still apply to the areas of the District not irrigated by canals "In a well estate which gets little or no canal irrigation or aid from river floods the kharif crops have to be placed as near the well cylinder as possible in order to economise labour and water in the summer months. The small area immediately round the well, locally known as *kada*, naturally gets more manure than the land at a greater distance. The cultivation here is largely *dofasli*, *e.g.*, wheat on maize, methra (a fodder crop) on cotton, tobacco, onions, *zira*, etc., on kharif cotton or maize, or on rabi wheat cut early for fodder or on rabi turnips. The area beyond the *kada* generally gives one crop a year, the rotation generally being a rabi crop in one year followed by kharif in the next. A succession of rabi crops can, however, be taken on the same plot for two or three years, but this cannot be done with the kharif, except in the case of maize and perhaps *jowar*, as kharif cropping appears to exhaust the soil more than rabi. Kharif, however, does well in succession to rabi on the same plot as it gets some advantage from the superior tillage given to the latter. The most distant lands commanded by the well are cropped with rabi each year as far as possible, but short rainfall of course largely contracts this kind of cultivation, while if rainfall is good, a certain amount of *barani* kharif crops, mainly *jowar*, will be raised on the outer parts of the well estate."

"The admixture of well-irrigation with river water is most common in the riverain tracts of the Ravi Tahsils. Wherever in them the moisture necessary for the sowing and ripening of crops can be secured wholly or partially from river water by direct spill or by artificial watercourses, or by lifting with *jhallars*, every effort is made to supplement and, as far as possible, to supersede well-irrigation by these means. In fact in some parts of the Ravi riverain, more especially in the Montgomery Tahsil, a well is re-

CHAP. II,A. Agriculture including Irrigation. Well cultivation.

garded not so much as an essential and indispensable means for cultivation, the irrigation from which may or may not be helped by river *sailab*, but rather as a means for eking out the latter when it is deficient in quantity ; and when *sailab* fails the outturn of the wells in such parts is very small, whereas if it is plentiful the wheels are often removed and set up on a *jhallar* or wherever else they may be needed; if winter rains fail for the rabi, the wheels are put in position on the well and the needful watering given."

Previously *sailab* cultivation occupied a most important position in the agriculture of the District. Mr. Fagan observes that " river flood water becomes available for agricultural purposes broadly in one of three ways—(*i*) by passing down creeks and old river beds (*budhs*), over the shelving banks of which it spills, flooding the adjacent low-lying alluvial land ; (*ii*) by being headed up against the apex of a sudden sharp bend of the river. If the bank is at this pont not too high, and the set of the stream and the levels of the adjacent land suitable, the flood water will overtop the bank and spill over the country for many miles from the main stream of the river : such spill is locally called a *dhak* or *chal* ; (*iii*) by *chhars* or artificial channels, which generally have their heads on creeks or old river beds. The flood water thus made available, is, when needful, raised to the required level by *jhallars*. The latter are generally, however, used on the high bank of the main river or of the the *budhs*."

Abi.

Abi cultivation comprises all cultivation watered by *jhallars* placed on the banks of rivers, or on creeks, or *nalas* communicating with the rivers. *Abi* cultivation is only to be found in the riverain tracts. The *jhallars* are generally placed near wells and when the supply of water to them fails, the crops are, if needful, irrigated by the wells. A greater proportion of *Abi* cultivation belongs to the kharif harvest than is the case with *chahi*.

Barani.

Barani cultivation is now negligible in the District.

Canals.

Canals now serve the whole of the Ravi Tahsils with the exception of a narrow strip near the river, and of course considerable areas of crown waste which by reason of lack of command, or of inferiority of soil, have not been and are not now likely to be allotted. In the Sutlej Tahsils colonization is still in progress and the new canals have not yet been developed fully. But there, too, the culturable area commanded by a perennial or non-perennial canal covers practically the whole of the two Tahsils.

List of crops.

In the following list the names in English and verna-

cular of the crops principally grown are given. The botanical names usually employed are added :—

English name.	Vernacular name.	Botanical name.
	AUTUMN CROPS—KHARIF.	
Rice	Dhan or munji ..	Oryza sativa.
Great millet .. .	Jowar	Andropogon Sorghum.
Bulrush millet ..	Bajra	Pennisetum typhoideum.
Italian millet ..	Kangni	Setaria Italica.
Maize	Makki	Zea mays
Common millet ..	China	Panicum miliaceum.
Sesamum	Til	Sesamum indicum.
Cowpeas	Rawan	Vigna catiang.
Pulses	Moth	Phaseolus acontifolius.
Do.	Mung	Phaseolus mungo.
Do.	Mash	Phaseolus radiatus.
Cotton	Kapah	Gossypium genus.
San-Hemp	Sann or sanni ..	Crotalaria juncea.
Deccan Hemp ..	Sankukra or sinjubara ..	Hibiscus Cannabinus.
Chillies	Lal Mirich	Capsicum frutescens.
Sugarcane	Kamad	Saccharum officinarum.
Melons	Kharbuza ..	Cucumis melo.
	SPRING CROPS—RABI.	
Wheat	Kanak	Triticum sativum.
Barley	Jau	Hordeum vulgare.
Gram	Chhola	Cicer Arietinum.
Peas	Charal	Lathyrus sativus.
Lentils	Masar	Lens esculenta.
No English name ..	Methra	Trigonella Faenum Graecum.
Turnips	Gonglu	Brassica rapa.
Rape	Sarhon	Brassica campestris.
Do.	Toria	Brassica napus.
Do.	Taramira	Eruca sativa.
Tobacco	Tambaku	Nicotiana tabacum.

Agriculture including Irrigation. List of crops

In the canal irrigated areas the millets are grown mostly as fodder in the Kharif. *Jowar* when grown for fodder is called *Chari*. A leguminous Kharif fodder used particularly for green manuring is Guara (cyamopis psoraloides). Valuable leguminous Rabi fodders are lucerne (medicago sativa), Senji (melilotus parviflora) and the trefoils Berseem or Egyptian clover (Trifolium Alexandrinum), Shaftal or Persian clover (Trifolium Resupinatum). Oats (Avena sativa) are also grown for fodder by horse-breeders, being fed green or as oat hay.

Seed time and harvest.

In the following list the time of sowing and cutting the principal crops are noted :—

Crops.	Time of sowing.	Time of cutting.
	AUTUMN CROPS.	
Rice	Middle of April to middle of May in beds. Transplant second-half of July Broadcast from middle of May to end of July.	October.
Jowar	Middle of June to middle of August.	November.
Bajra	Ditto ditto	Middle of October to middle of November.
Kangni	Middle of June to middle of July	September.
Maize	Middle of June to end of August	Middle of September to middle of November.
China	Middle of February to middle of March.	June.
Til	Middle of July to middle of August.	November.
Rawan	Middle of April to middle of June	Middle of August to middle of October.
Moth	Middle of July to middle of August.	November.
Mung	First half of August ..	Ditto.
Mash	Second half of August ..	Ditto.
Cotton	Middle of April to middle of June	Middle of September to end of January.
Sann or Sanni ..	End of May to middle of July..	Middle of October to middle of December.

Crops.	Time of sowing.	Time of cutting.
Sankukra	Middle of April to middle of June	Middle of September to middle of November.
Chillies	In beds middle of May. Transplant middle of June to middle of July.	Middle of September to middle of November.
Sugarcane	Middle of February to middle of March.	November to middle of January.
Melons	Middle of February to middle of March.	Middle of April to middle of September.
	SPRING CROPS.	
Wheat	Middle of October to middle of December.	Middle of April to middle of May.
Barley	October and November ..	First half of April.
Gram	September and first half of October.	Ditto.
Charal	Middle of September to middle of November.	Ditto.
Masar	Ditto ditto	Ditto.
Methra	Middle of September to end of October.	Middle of March to middle of April.
Turnips	Beginning of September to middle of October.	January, February and March.
Sarhon	October-November ..	March.
Taramira	Ditto ..	Do.
Toria	September ..	January.
Tobacco	Second half of October in beds. Transplant from middle of February to middle of March.	June.

The Great millet (*Chari*) and maize when grown as fodder in irrigated areas may be planted as early as March or April and are then ready for cutting in 1½ to 2 months' time.

Vegetables such as turnips, carrots, onions, radishes and spinach are grown in the Rabi. They are sown in September to November and are ready from December to April.

Ploughs.

Furrow turning ploughs are still not very widely used in the District. Expert cultivators use a modified form of the European plough in the first ploughing for breaking up the soil, turning over

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the clods, eradicating weeds and permitting the air to circulate to a suitable depth. Subsequently the soil is watered in order to break up the clods, and later ploughings are done with the ordinary Indian plough which combined with the *sohâgá* or harrow has been found to be the best implement for getting the surface properly pulverised in preparation for sowing. On most of the important grantee farms in the Ravi tahsils and on the larger estates owned by the more progressive farmers throughout the district, furrow turning ploughs are kept for use, as described above, in the early ploughings. But the majority of small holders still content themselves with the ordinary Indian plough from start to finish.

Ploughs.

Drilling.

Similarly the importance of sowing in lines, more particularly in the case of cotton, is generally recognized but it is only in the important farms that it is practised. In the old days before canal irrigation came, when the utmost economy had to be observed in the use of water, the *Nali Hal*, that is to say, a plough with a tube attached by which seed was dropped into the furrows behind the share, was commonly used, particularly in the case of *sailab* cultivation of wheat. But considerable skill is required to get the seed at the right depth, and now that canal water is so plentiful this practice has been to all intents and purposes abandoned. If cotton is sown broadcast, it is impossible to intercultivate it after the early stages with the result that the surface of the soil under repeated irrigation remains hard and unbroken, and the field is covered with a copious undergrowth of weed. But though *kharif* drills of an inexpensive type are now available the ordinary small holder does not use them.

Seed.

Tobacco, pepper and rice are grown from seedlings raised in nurseries, while sugarcane is grown from cuttings. In the previous Gazetteer it was said that "seed is not changed and is said not to deteriorate." But the best cultivators nowadays among the colonists, *e.g.*, the Arains from Jullundur and the Jats and Gujars from Gurdaspur and Hoshiarpur, though they save their own seed in most years, realize that from time to time it is an advantage to get new seed from some reliable source, such as the local agent of the Agricultural Department. The following passage from the previous edition of the Gazetteer describing the sources from which the normal cultivator gets his seed is still applicable to a large number of the small-holders in the district including the canal irrigated area :—

> "[Except in the canal villages,] seed grain is almost invariably borrowed from the *karars*. They give the grain at the market rate of the day, or a little under it, and when the harvest is completed, they are

repaid with interest in kind, at the market rate of the day, or somewhat over it. A *karar* gives, say 8 *topas* of grain and debits the cultivator with one rupee. He charges 4 pies interest per mensem on this amount, a rate equal to 25 per cent. per annum; when *Har* comes round, the *karar* makes up his account and finds, say, Re. 1-2-8 due to him. The market price is then 12 *topas*; so he takes 14 *topas* from the borrower in repayment of 8 *topas* he lent him eight months before."

But as noted above the best cultivators save their own seed, while many others buy it for cash from the agent to the Agricultural Department, or from their more prosperous neighbours.

Harrows.

The ordinary type of harrow is the old *sohágá* or clod-crusher. This is drawn backwards and forwards by a couple or four pairs of bullocks and answers its purpose very well. The man guiding the bullocks stands on the *sohágá* to increase the weight brought to bear on the clods. The more progressive farmers also use modified forms of the European harrow. The type most in favour is the small bar harrow originating from the Agricultural College at Lyallpur. This can be usefully employed for instance if a shower of rain has glazed over the surface of the soil after sowing. The harrow is then used to open up the surface with a view to assisting the immature plants to break through. Similarly with cotton sown in lines good farmers use a type of horse hoe pulled by bullocks to inter-cultivate between the lines. Otherwise weeding is very rarely practised.

Fencing.

Fields are not usually fenced except near the village or along roads where cattle are constantly passing. Fences are made of branches of *kikar* or brushwood or, in the riverain, of *pilchi*. In the colony where brushwood is generally not readily available mud walls are sometimes made instead.

Indigenous methods.

The following passage from the previous edition of the Gazetteer describing the methods adopted for watching crops, reaping, threshing and winnowing, is largely applicable to-day. How far the remarks regarding goblins are justified now it is difficult to say. The beliefs described are probably restricted to the more backward among the old residents of the district. But the passage is entertaining and seems to be worth preserving on that account.

Watching—scare crows.

When young, some crops have to be protected against deer and other animals. For this purpose scare-crows, called *darawa*, are put up. Bones, heaps of stones, strings fastened to sticks, are the usual scare-crows. But rustic art occasionally shows

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itself in the form of a straw man with one leg, and arms stretched out at right-angles to it; gram, poppy, melons, *charri*, and wheat have thus to be protected. When the crop is ripening, birds have to be kept away from it. In the case of *jowar*, *makki*, and *bajra*, a platform called *manna* is raised on stakes or fixed on the top of a tree, about 10 or 12 feet from the ground, or a mud-pillar (*burji*) is raised to that height, and on it a watchman stands, armed with a *khabani* with which he slings mud pellets made by himself at the birds. Each time the sling is discharged it causes a crack, and the watchman yells. One person can watch about two acres this way. Poppy is watched with the *khabani*, but the watcher does not use any platform. Wheat, gram, barley, and *moth* are also watched, but not with the *khabani*, nor is the *manna* in use. The watchman is provided with a long hempen rope, called *titala*, with which he goes wandering about the field. Every now and then he whirls it round his head and brings it down with a crack. One man can watch about 10 acres this way. The fields are watched only at night in Assu and Katik, Phagan and Chetr. The watchmen are mostly Machhis and Menhs. They are paid 3 *mans* (*topa*), or about 2 *pakka mans* for each harvest. Reapers are called *lawa*. They belong chiefly to the class of village servants. But they do not confine themselves to their own village. They go whereever they can get work. The method in which they are paid is noticed in section B (*b*) of this chapter. Reaping is carried on during moonlight nights in the last few hours before day if the straw is very dry, as the moisture of the night air is supposed to strengthen the stalk and prevent the ears falling off. If clouds gather, great efforts are made to get in the crops, as hail is much feared at this season; but hail is very uncommon in this district. Sunday and Wednesday are lucky days to commence reaping. As soon as the grain is cut it is stacked. The reaper gets his share when the crop has been threshed and is divided. He is paid from the *dheri shamilat* or common heap. There are several ways of threshing. The most common is to yoke a number of bullocks together, fasten the one at the left hand of the line to a post, round which the straw to be threshed is piled, and drive them round and round from right to left. This is known as *khurgah nal gahna*, to thresh by the trampling of hoofs. Wheat and barley are first threshed with the *phalhá* or threshing-frame. A pair of bullocks are yoked to the *phalha* and driven round the stake about which the straw is heaped; there may be several *phalhas* at work one after the other, but there are never more than four. One man is required with each, and a couple more with forks to throw the scattered straw back into the heap. One pair of bullocks with the *phalha* will thresh the produce of a quarter of

Watching.

Reaping.

Threshing.

an acre in a day. They will work 8 hours at a stretch, from 8 A. M. to 4 P. M. in the sun. Buffaloes are never used for threshing. When the wheat or barley has been threshed with the *phalha*, the straw is shaken up with the pitchfork, and is blown on one side, while the grain falls to the bottom. Many unthreshed ears are found, and these and the grain are called *send*. They are again threshed *khurgah nal* without the *phalha*. Generally there are four bullocks in a row, and two rows may work at the same time. Each row is called *merh*. Only wheat and barley are threshed with the *phalha*. Rice, *jowar*, *china*, *kangni*, *masar*, *charal* and *zira* are threshed by bullocks. The straw is then shaken and the grain winnowed. *Moth*, *mung*, *mah*, and *rawan* are treated at first as wheat is after the preliminary threshing, and, after being well shaken, are threshed by bullocks; gram is treated as wheat, but both threshings are by bullocks. *Til* is not threshed at all; the pods open and the grain is shaken out; *makki*, *saunf* and *dhania* are threshed with sticks. *China* is often threshed in this way. A hole about 5 feet wide and 2½ deep is carefully plastered. The thresher takes a bundle of *china* straw by the side where the roots were, and beats the ears against the side of the hole. Or else a piece of ground is swept and a log of wood put on it, against which the ears are beaten. One man is required with each *merh*, and there should be one man with a pitchfork for each heap. Eight bullocks will thresh two acres of gram, *jowar*, *charal* or *masar*, or one acre of rice, *china*, or *kangni* in one day. *Khurgah nal* threshing and winnowing should be carried on, if possible when there is a hot wind blowing and a fiery sun blazing over-head, as the thorough breaking up of the straw and separation of the grain are facilitated by these circumstances. There should properly be three persons winnowing. One fills the *chhajj* and gives it to another, who shakes out the contents to the wind; the third sweeps down from the heap forming below all the bits of stick, earth, straw and unthreshed ears, which are found in the heap after threshing. From the time the grain is cut till it is finally weighed, the agriculturist has to be on his guard against *bhuts*, or demons and goblins. Fortunately they are of but middling intelligence, and their principal habits are well known, and so a goblin can be done with a little care. Till winnowing, all that need be done is to get the *mulwana* of the village to write a charm on a piece of paper, which is then stuck in a cleft piece of *kana*, and put on the heap of grain and straw. This is paid for by a fixed fee called *rasulwahi*. Hindus are said to neglect this precaution, unless there is a *mulwana* in their village. Greater care has to be taken when winnowing commences. Friday is the regular weekly holiday of the

Threshing

Winnowing.

Goblins.

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Goblins.

goblins, and if any cultivator commences to winnow on that day he may expect to have his grain vanish. When a fit time has come to winnow the grain, the cultivators and a couple of *chuhras* proceed in silence to the heap, and a couple of other men stay at a little distance to prevent any living thing approaching. Then winnowing is carried on vigorously, but no one speaks. In the evening, if the operation is not complete, the charm remains on one heap and the other is carefully pressed down with the *chhajj*. Goblins are always asleep at night, but any somnambulist is unable to do harm if this plan is adopted. When all the grain has been winnowed and the time comes to divide the produce, the same precautions are adopted. As the goblins are always asleep, or engaged on household duties, at noon and in the evening, one of these hours should be selected for weighing the grain ; this is done with the *topa* ; or if there is any hurry, the amount of a *chajj*-full is ascertained, and the number of *chhajjes* in the heap is found. The weighman is provided with pieces of straw, one of which he puts down for each *topa* or *chhajj*. He must carefully avoid counting the number aloud. As soon as the quantity of grain has been ascertained, the goblins are powerless. It is not clear how far the people really believe in these matters, or how far they act up to their belief. But there are very few who do not believe most thoroughly in goblins being abroad, though they sometimes seem shy about admitting it.

Rotations.

A regular rotation of crops is maintained in all the important farms. In the Assessment Report for the Okara Tahsil mention is made of an elaborate rotation which had then (1929) been recently introduced at the Military Farms—a large estate covering some 20,000 acres near Okara. Under this system a rectangle is divided into ten strips parallel to the watercourse, each strip measuring five half killas or 2½ acres. The following extract will show the main features of the system :—

Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.
Cotton.	Green manuirng	Fallow	Wheat	Fallow	Gram	Cotton	Fodder.
Cotton	Fodder	Fallow	Wheat	Green manuring	Toria	Cotton	Fallow.
Fallow	Wheat	Fallow	Gram	Cotton	Fodder	Fallow	Wheat.

Each rectangle has normally in the Kharif 7½ acres cotton, 5 acres green manuring, 2 acres fodder, and in the Rabi 10 acres wheat, 5½ acres gram or toria, 2½ acres green manuring and 2½

acres fodder. These are with minor variations to suit special classes of soil the principles which govern rotations in all the big farms, where the subject has received careful attention. It will be seen that such rotations involve an extremely high intensity of cultivation. They imply a very careful and economical use of water and are only rendered possible by the practice of green manuring.

Typical rotations in small holdings.

In the same Assessment Report there appears a selection of typical rotations in ordinary zamindari fields. They are as follows :—

Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.	Kharif.	Rabi.
Cotton	Fallow	Fallow	Wheat	Cotton	Fallow	Fallow	Wheat.
Fallow	Wheat	Fallow	Toria	Cotton	Fallow	Fallow	Wheat.
Fallow	Wheat	Cotton	Fallow	Fallow	Toria	Cotton	Fallow.
Cotton	Senji	Cotton	Fallow	Fallow	Toria	Cotton	Fallow.
Cotton	Fallow	Moth	Wheat	Guara	Wheat	Guara	Turnips.
Maize	Gram	Fallow	Toria	Rice	Gram	Rice	Fallow.
Fallow	Wheat	Fallow	Senji	Sugarcane	Senji	Fallow	Gram.
Fallow	Wheat	Cotton	Fallow	Sugarcane	Fallow	Fallow	Wheat.

These rotations are not the result of any connected scheme but follow the year to year decisions of the cultivators concerned. The first of them is the commonest but by no means the best. It is evident that between the wheat harvest and sowing time for cotton the interval is so short as to render the proper preparation of soil for cotton impossible. Toria which is harvested early in January is popular with some farmers as a predecessor to cotton but the land has to be well cultivated and manured before cotton is sown. As regards the practice in non-*nahri* soils the following extract from the previous gazetteer will be of interest :—

Fallows—Rotation of crops.

"Fallowing is a matter which is by no means universally attended to. In the wells with small areas, such as are found in villages where wells are more or less crowded together, it is largely dispensed with, more especially when canal water is available ; the principle then is to make the most of the water by sowing every acre possible. In the case, however, of canal-irrigated wells with big areas attached, and in the case of many of the *bar* wells fallows are more or less systematically given. Among the better

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cultivators, such as the Kambohs, the area attached to the well is divided into four portions (*phiranas*), each consisting of disconnected plots or fields; of these two of a larger area are kept for *rabi* and the other two smaller ones for *kharif* crops. A *kharif* and a *rabi* plot are cultivated each year, and the other two lie fallow. In some cases only two *phiranas* are made up; one lies fallow during the year and the *kharif* and *rabi* crops are sown in the other. As regards rotation of crops: on well lands which get no canal-irrigation the small *kada* area close to the well is to a considerable extent double cropped; the area beyond this generally gives one crop in the year; *i.e.*, a *rabi* crop one year followed by *kharif* in the next. A succession of *rabi* crops can, however, be taken on the same plot for two or three years, but this cannot be done with the *kharif* except in the case of maize and perhaps *jowar*, as *kharif* cropping appears to exhaust the soil more than *rabi*. *Kharif*, however, does well in succession to *rabi* on the same plot as it gets some advantage from the superior tillage given to the latter. The most distant lands commanded by the well are cropped with *rabi* each year as far as possible, but short rainfall, of course, largely contracts this kind of cultivation; while, if rainfall is good, a certain amount of *barani kharif* crops, mainly *jowar*, will be raised on the outer parts of the well estate.

Fallows—Rotation of crops.

"If the well lands receive plentiful canal-irrigation the low-lying area at a distance from the well is cropped regularly in the *kharif* and that nearer the well in the *rabi*. On purely canal-irrigated lands a rotation of crops occurs in the case of rice and gram. In rice cultivation the ground gets very little air, in gram cultivation a great deal: so gram succeeds rice, and rice gram, and the soil is benefited. The leaves and roots of gram are said to be good for rice; and then, as the rice lands are moist, they can be ploughed up for gram without any further trouble as regards irrigation. Manured lands may be cropped harvest after harvest till the effect of the manure is exhausted, but most land is cropped only once in the year; after some time the land gets an extra fallow. Forced fallows, owing to want of cultivators to till the land, or adverse seasonal conditions, are in most places only too common. Owing to some crops not being off the ground when the time for sowing others arrives, the latter cannot immediately follow the former. For this reason, excepting cotton, *kangni*, rice, *sawank* and *makki*, none of the *kharif* crops are followed by *rabi* crops; and the same remark applies, *mutatis mutandis*, to *china*, as a *kharif* crop. Cotton may be followed by *methra* and *senji*; rice and *sawank* by gram, *charal*, *masar* and coriander; and *makki* by all the *rabi* crops. *Kangni* is held to exhaust the soil so no *rabi* crop follows it. As regards the spring crops, *sarhon*,

poppy, tobacco, onions, melons, *methra* and *senji* may be followed by any autumn crop; wheat and barley by cotton, *jowar*, *moth* and *til*; gram and coriander by rice, *sawank* and *mah*; *zira* by *moth*; *charal* by *sawank*, *mah*, and *mung*; and *masar* by almost all the autumn crops.

Manner of laying out land at a well.

"At a well, fully yoked, irrigating about 25 acres in the year, the land will be laid out somewhat in the following fashion. Three quarters of an acre of early *china* or *charri* will be sown to bring the cattle over the end of the hot weather and commencement of the rains. Half a *kanal* will be put down under vegetables of sorts. The regular autumn crops will be an acre, or an acre and a half of cotton; the same of *charri*; one acre of *china* or *kangni*; half a *kanal* of pepper and 2½ to 3½ acres of *jowar*, most of which will be cut for fodder. The regular spring crops will be 2½ acres of turnips or *sarhon*; 15 acres of wheat; and one *kanal* of tobacco. This scheme gives 6½ *kanals* of intermediate crops; 6 *ghomaos* (or acres), 4½ *kanals* of autumn crops; and 17 *ghomaos*, 5 *kanals* of spring crops. Often no *china* or *kangni* is sown in the autumn, and sometimes a couple of acres of barley may be put down in place of as much wheat. The crops invariably cultivated are cotton and *jowar* in the autumn, and turnips and wheat in the spring. On canal-irrigated lands there is no custom as to what crops should be sown, or as to the proportion of each to the others; and cultivation on *sailaba* lands depends on the character of the inundation."

Manure.

The value of manure is fully realized on all hands, but farm-yard manure which is practically the only kind used by the small holder is not available in sufficient quantities to enable him to manure more than a very small proportion of his crops annually. Where tobacco or sugarcane are grown these alone probably absorb all the manure available. In the neighbourhood of the larger towns sweepings are generally sold to local cultivators by the committees concerned. Unfortunately the normal small holder in the colony has not yet assimilated the importance of green manuring and of reasonable fallows, with the result that whereas the soil in the big estates is gradually being equalised to a sound and stable condition of fertility, the general complaint elsewhere is that outturns are not what they were. The zamindar, when taxed with overcultivation, replies that he must fill his own and his dependants' stomachs somehow, by which he means that he will not undertake methods calculated to improve or maintain the quality of the soil which are unproductive of an immediate return in food or money. The small holder in the colony for this reason is disposed with the minimum of labour to get

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as much as he can out of his land, having neither the inclination to work overtime reclaiming bad land, or resources to admit of successive fallows and green manuring. The use of chemical manures is still at a more or less experimental stage.

Intensity of cropping.

In the canal irrigated area double cropping is rarely practised for the reason that in the Sutlej tahsils there is not sufficient water to irrigate the whole area once in a year, while in the Ravi tahsils, though in certain estates cultivation has in the past risen as high as 130 per cent., the better distribution of water which is now the rule should in due course bring all estates down to something between 90 and 100 per cent. cultivation annually. Probably there will always be a few favoured fields near the village site which are liable to be double cropped. But if green manuring be excluded, even in the Ravi tahsils the best conducted estates have not normally cultivated more than 90 to 95 per cent. of their lands annually. In the Sutlej tahsils the proposed intensity of irrigation, perennial and non-perennial, is now 60 per cent. Skilful cultivators with an uninterrupted supply of water on this standard can generally mature something round about 80 per cent. of their land. But in the Sutlej tahsils as a whole cultivation will probably not cover much more than 60 per cent. of the area available as a general rule.

Methods at Convillepur.

The following note has been prepared for this gazetteer by Major L. H. G. Conville of the Convillepur Farm near Montgomery. It describes the methods of cultivation, which have been found to be most profitable in the circumstances of the Lower Bari Doab Colony. The methods described are faithfully followed on this farm with excellent results, but it must not be supposed that such cultivation is typical of the district.

COTTON.

Preparation of land for the crop and manuring.—The land allotted for the crop, which may be fallow or after *kharif* and *rabi* fodder crops, sugarcane, *toria*, gram and sometimes wheat, is irrigated and opened up, in all cases, by the Rajah plough, which is both wide cutting and furrow turning. This inverts the soil and buries leaves and stubble, which enrich it. The exposure resulting from this inversion causes roots to dry and weeds to be eradicated. This plough cuts through the soil instead of tearing through it like the country plough and the land is ploughed to a correct and uniform depth from the first. The mould-board has a pulverising action and it prevents large clods of earth

being left. This plough is only used once and then only for this initial opening.

After this the land is pulverised and stirred up, as many times as possible, by the repeated use of implements, such as the spring tooth harrow, horse hoe, or the ordinary country plough (both the *hal* and the *hallar* or *munah*). As many as 4 or 5 ploughings are given to land where cotton follows fodder, sugarcane and *toria*, but where it follows wheat this number is necessarily reduced and it is therefore our aim to avoid sowing cotton after wheat, as much as possible. By these operations a good tilth is obtained, which means that the soil is in a crumb condition and enables it to retain more moisture, to allow more surface for the root-hairs to spread, and bigger spaces for storage and movement of air—all essential conditions for a good crop.

Farmyard manure is applied to the land between the 3rd and 4th ploughings. The average number of acres manured in any one rectangle being 3, and the average number of cart-loads in an acre being 16. As artificial manures are uneconomical at present market rates, this is the only manuring done directly, but as a certain area of this land for cotton has been green manured with *guárá* (Vetch Field) during the previous *kharif* it retains a good deal of the fertility then imparted, in spite of its having been cropped in the intervening *rabi*.

Varieties sown, pure seed and the time of sowing.—The types of cotton sown here during the past few years are 289-F and 4-F (American Varieties), and Mollisoni (improved *desi* indicum variety), the former on good quality land and the latter on our poorer lands. This practice enables us not only to get the best returns from each of the varying qualities of land on the estate, but is also a form of insurance against unexpected shortage of irrigation supplies, pests, unseasonal weather, including early frosts and untimely rainfall and the variations of the market.

The seed sown is as pure and sound as it is possible to obtain or make it. If it is of our own production, it is obtained, during the middle pickings, from seed cotton (*kappas*), which is carefully picked, not only from plants which are selected in a field as being healthy, but from the fully matured and disease free bolls of those plants. Further selection is made by the stained, diseased and under-sized locks being removed from each pickers heap of seed cotton, when it reaches the village and before it is stored to await ginning. If the seed is obtained from the Agricultural Department, as is often the case, it is seed from their especially rogued and cultivated plots, which is sent here for

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multiplication. In either case, the percentage of soundness and purity of all seed sown is increased further by all immature, broken and foreign seeds being picked out by hand before sowing.

Experience has shown that the best time for sowing on our lands is to commence *rauni*, or the irrigation for sowing, on about the 20th to 25th April, dependent on the date when water is available after the 15 days' closure, which usually takes place in April on this canal. The 289-F is usually sown between the last week of April and the end of May, 4-F between the 1st and 31st May and Mollisoni between the 1st May and 10th June, the poorest land being sown earliest to enable the young plants to withstand the heat in June more easily. The sowing of all varieties is therefore spread over a period ending with the 10th June, and all resowings, owing to bad germination or heavy rainfall are completed by this date.

Preparation of the seed-bed and method of sowing.—To prepare the land for the reception of the seed the *rauni* irrigation is applied. In cases where cotton follows gram or wheat two *raunis* are done and the land well cultivated with a country plough in the period between them. It is essential to keep the soil as moist as possible, especially for American cottons, as it helps the seed to germinate strongly and the roots to spread downwards quickly, and makes the plant more drought resistant and so allows of the first watering being delayed. When the correct *vatar* is obtained after *rauni*, *i.e.*, when the soil is in the right state of moistness for ploughing, which occurs on the third or fourth day, the field is run over with a *sohágá* (a wooden beam drawn by bullocks) and ploughed (*párh lagáná*) with a country plough. It is then levelled with the *sohágá* and again cultivated (*dohar lagáná*) crosswise with either a country plough or a horse or Behar hoe, and finally *sohágá* again. The seed-bed is now ready.

Before being sown, the seed of 289-F cotton is soaked the previous evening in water for one hour, and it is then removed and mixed well with fine damp manure (*gobri*), and kept in a cloth until the morning. Just before being put into the ground it is again sprinkled with water. The same process is applied to the seed of 4-F and Mollisoni, except that it is only sprinkled with water instead of being soaked, before being mixed with the manure, and it is often not sprinkled again in the morning before sowing, if it is found to be sufficiently damp.

The seed is sown in lines, running along the greater length of a field, with a drill (*pora*), or by hand in the furrow behind a country plough (*kera*). The lines are 3, 2½ and 2 feet apart

in the case of 4-F, 289-F and Mollisoni, respectively. To a very small extent and in our poorest lands, where it has been found to pay, the seed is also sown broadcast (*chhattá*). For the maintenance of correct intervals between the lines and drills have metal markers attached, but in *kera* sowing, which we use extensively, a simple wooden marker, consisting of a rod with a solid wooden disc or wheel at one end, is attached to the country plough at the required length, and proves most efficient.

We always allow a liberal seed rate, which is 7 seers per acre in the case of 289-F, 6 seers for 4-F and 5 seers for Mollisoni.

The sowing is done before 10 A. M., or in the cool of the evening on any one day, in order to prevent the seed-bed being deprived of moisture by the hot midday sun.

Together with these sowings *arhar* (Pigeon Pea) is sown along all but the northern boundaries of each acre (*killa*), in order to provide protection for the cotton crop from the desiccating effect of hot winds, especially from the south.

After sowing the seed is immediately covered up by the *sohágá* being run over the field, to compact the seed-bed. The field is then bar-harrowed to a depth only sufficient to loosen the top layer of earth, and care is taken not to upset the compaction left by the *sohágá*, by using it lightly and unweighted. By this means a mulch is obtained on the surface, which helps aeration and conserves moisture. After this the irrigation channel (*zemindara khál*) for the field is made, and the *wats* (bunds) dividing the *killa* into 4 parts of 2 *kanals* each (*kiáris*) to facilitate economy of water in irrigation, are made. To make the latter and to strengthen the boundary *wat* of the field by scraping earth on to it a *jandrá* or wooden rake is used.

Treatment of the crop up to maturity, including intercultivation, thinning and watering.—Nothing further is done to the field until the seed has germinated, unless there is sufficiently heavy rain to form a crust (*karand*), when it is broken up with a bar harrow.

When the plants are about 4 weeks old, *i.e.*, when they are about one foot high, they are thinned in each row by removal by hand, so that a space of 9 to 12 inches is left between each plant.

About 7 or 10 days later, the field is intercultured with a country plough between the rows, about three furrows being made between each. This " dry " ploughing or interculture maintains tilth and enables the plants to get the full benefit from the first watering, which has been deliberately delayed, and which is given about 3 days later.

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Therefore, the field normally receives its first or *kor* watering, about 6 weeks after sowing, but in cases where plants have been attacked by white ants, or are under the shade of trees, or on inferior land, water is given earlier and as soon as it appears to be required.

After this watering, those fields, where plants have grown rapidly and have attained a height of about 2 feet, are intercultured with a country plough or horse hoe or "Handy Andy" cultivator, while those where growth is less rapid and plants are still only about one foot high are intercultured with a bar-harrow, which is weighted.

The second watering is given after an interval of 15 to 20 days, and after it, interculture is again done with one of the above implements excepting the bar-harrow.

Provided there is no rain, waterings are continued at intervals of 15 to 20 days, but the height of the crop only allows of a part of the total area being intercultured after the third watering, and disallows of it altogether with bullock-drawn implements after the fourth watering. However, one further hoeing by hand with the *rambá* or *khurpá* is given to eradicate any grass or weeds caused by irrigation or rain.

By the 1st September the crop has had 5 to 6 waterings according to the date of sowing. September and October are critical months in the life of the crop and two waterings are given during each of them, except that Mollisoni cotton receives only one watering in October, which is its last one. If any spare water is available in November another watering is given to 289-F cotton. Therefore, allowing for early and late sowings, and provided that none of these irrigations have been replaced by rain, Mollisoni receives 6 to 7 waterings, 4-F receives 7 to 8 and 289-F receives 8 to 9.

Harvesting or picking.—Picking is done by women and is organised, in that the field is combed by a line of pickers and they are not allowed to wander about and pick indiscriminately. This is essential when picking for seed selection is being done, to which reference has already been made. The picking of Mollisoni usually commences on the 15th September, and that of American cotton in the first week of October, and it continues in the case of the former well into January, and in the case of the latter often until the middle of February. The picking is done at the intervals of 10 days at the beginning, at intervals of 20 days during the middle and again at shorter intervals towards the end of the season. The total number of pickings varies between 7 and 9.

The pickers are paid in cash at the end of each week by a valuation at the market rate being put on the share of their daily pickings, which is weighed separately and recorded on their payment slips each day. This share varies according to the intensity of cotton at the time of picking and ranges between ⅛th. and 1/16th during the season, making the proportion of the whole crop for which payment is made to pickers about 1/10th. This payment in cash instead of in kind has the advantage of discouraging theft, of ensuring the pickers a fair rate for their labour and of enabling us to handle the whole of our crop, which has been produced with so much care.

SUGARCANE.

Varieties sown, seed and time of sowing.—We chiefly grow the improved varieties from Coimbatore, *viz.*, Co. 205 and Co. 223, but also a certain amount of the thin indigenous variety, called *katha.*

The seed is obtained by burying whole canes in the ground in January, to protect it against frost, and by removing them at the time of sowing and cutting each cane into sets (*paindis*), which are about one foot long and which include two joints. To grow one acre of the Coimbatore variety canes from 10 *marlás* of the previous year's crop are buried and in the case of *kátha* canes from 8 *marlás.*

Sowing is done from the 10th to 20th March.

Preliminary cultivation and manuring.—It is sown on our heavier or good quality land and usually after fallow or a *rabi* fodder crop, such as *senji.* In recent years we have put a very small area under sugarcane, but should we grow it more extensively in the future we should adopt the system of putting one or more whole rectangles under it, in order to facilitate the handling of it as regards manuring, watering and crushing.

The land is prepared, as in the case of cotton, after an initial opening with the Rajah plough following an irrigation, by being ploughed at least 5 times with a country plough and by being "*sohágáed*" 3 times between these ploughings. About 20 cart-loads of well rotted farmyard manure are then applied direct to each acre. After this two more ploughings are given and these operations are completed by the end of February.

Preparation of seed-bed and method of sowing.—*Rauni* is done during the first few days of March and the land is prepared for the reception of the seed in exactly the same way as that for cotton.

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Similarly when the soil is in *tar vatar*, or in the right state of moistness to a higher degree, the sets are placed by hand about 9 to 12 inches apart in furrows made about 9 inches apart by means of a country plough. The sower places his foot on each set as he advances along the furrow, both to partially bury it and to make it lie straight. In order to complete the sowing before any loss of moisture occurs as many helpers as possible, either of the family, or neighbours, are engaged in it. In sowing one acre, often 2 ploughs and 8 persons are engaged in cutting up the cane into sets and placing them in the furrows. After sowing, the field is *sohágáed* but not harrowed.

Interculture and irrigation.—About 7 days after sowing, and before germination is visible, the field is hoed by hand with a *rambá* or *bagúri*, and a similar hoeing is done 20 days later.

The first watering is given about 1¼ to 2 months after sowing, and after it, a much deeper hoeing is done with a *kahi*. After this, waterings are given at intervals of 15 days during May, June and July, dependant on the amount of rainfall, but the crop is too high to allow of any further hoeing. In August and September we find that our lands require more frequent waterings and these are given at intervals of 7 to 10 days. However, in October and November the intervals of watering are again increased to 12 to 15 days and also in December, unless early frost necessitates more frequent watering. Therefore, in all about 18 waterings are given to Coimbators and about 16 to *kátha*.

Harvesting.—The crushing of cane and the boiling for *gur* (raw sugar) commences between the 15th December and 15th January and continues until the 20th February.

As we are more concerned with cotton growing, and grow very little sugarcane, and do not manufacture sugar or handle *gur*, a mutually agreed cash assessment is put on the estate share of the crop and the crushing, etc., is done entirely by the tenant.

TORIA OR INDIAN RAPE.

Preparation of land and manuring.—We grow a comparatively small area, and then only on our good quality and heavier land, and usually in the *wadh* of the wheat crop of the previous *rabi*, which allows ample time for the preliminary cultivation. In June the land is irrigated and opened up with the Rajah plough and it is then repeatedly ploughed and stirred up with a country plough, or in the later stages with other bullock drawn implements, such as the horse hoe.

Seed, seed rate and time of sowing.—The seed sown is obtained from our own crop from a very careful seed selection process, which was started many years ago. One acre was grown then from selected seed, and the seed collected from plants in it, which were of especially healthy and vigorous growth, was used to grow one acre for seed selection in the crop of the following year, while the rest of the crop was grown from the seed of the remaining plants in it. Similarly, this single "selection" acre provided all the seed for the next crop, and for its "selection" acre, and by this being repeated annually a high degree of selection is being maintained.

The seed rate is 2½ seers per acre and sowing takes place in September.

Preparation of seed-bed and method of sowing.—*Rauni* commences about the 5th September, and as in the case of cotton, when the soil is in *tar vatar*, the field is *sohágáed*, ploughed, *sohágáed* again and again ploughed crosswise, but the seed in this case, is sown broadcast in the soil in its ploughed condition. After this it is covered up with a *sohágá* and a bar-harrowing is done.

Interculture and irrigation.—As rain is unusual before germination, and as the plants are too close together to allow of a bar-harrowing after they have appeared above the ground, no interculture is done.

The first watering is given one month after sowing, and the second 6 or 7 weeks later. These usually suffice, but should there be early frost, a third watering is given to help the crop to mature fully.

Harvesting.—The crop is usually cut early in January, if the weather has been fine during the ripening period, but if there has been cloudy weather, harvesting is often not commenced until the 15th or 20th January.

WHEAT.

Preparation of land for the crop and manuring.—As it follows the cotton crop of the previous *kharif* we have about 7 months in which to prepare the soil. As soon as the cotton sticks are cut at the end of February, and water becomes available, the land is opened up with the Rajah plough. This buries all the dry leaves and bolls, etc., left from the cotton crop, and also digs up the deep roots.

Green manuring with *guárá* (Vetch Field) is done in 5 acres in each rectangle of this land. In the last week of March

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an irrigation is applied to the ploughed land, and when it is in *vatar* it is *sohágáed* and ploughed once with a country plough and the "*guárá*" seed, at the rate of 13 seers per acre, is sown broadcast. After that it is *sohágáed*, ploughed again crosswise and again *sohágáed*. The crop germinates quickly and the only watering it receives is the one given to enable the crop to be ploughed in. This is done in June, when the plants are about 2 feet high and just before flowering begins. The crop is flattened with a *sohágá* and then buried with the Rajah plough, and again *sohágáed* to complete the covering up and to level the land. As it is not possible to sow all this *guárá* in March, the remainder is sown in June and ploughed in during August. In order to obtain the *kharif* green manuring concession in revenue allowed by Government all *guárá* is ploughed in by the 15th September. The watering necessary for the ploughing in of the later sown *guárá* is often provided by rainfall, as is that required for the effective rotting of the *guárá* about a week later. If no rain has fallen canal water is used for this purpose when it is spare.

After this the land, so green manured, is ploughed repeatedly with a country plough, and the remaining land for wheat has also been undergoing this treatment ever since the initial opening with the Rajah plough. These operations are often hampered during a heavy monsoon, by the land being too wet for ploughing, and being inundated for long periods. Where this causes the land to be overgrown with grass and weeds and makes the ploughing with a country plough ineffective, the Rajah plough is used to uproot such growth. Often a *sohágá* is used between the ploughings to break up big clods of earth in heavy soil.

In all from 8 to 9 such ploughings are given and the land is in excellent tilth by the beginning of October. This is often obtained, towards the later stages, by stirring the soil with a horse hoe, and rich soils are worked with a *Gujerat* hoe to cut the roots of weeds well below the surface. Great attention is also paid to the levelling of the field, and where necessary and especially around the edges, a *karah* (or leveller consisting of a board about $4' \times 1\frac{1}{2}'$ with a metal edge and drawn by two bullocks), is used for this purpose. This levelling applies to all crops grown here in *wáhn*, or land in a ploughed condition after a previous crop.

No manuring other than the green manuring described above is done.

Preparation of seed-bed and method of sowing.—Rauni is commenced on about the 12th October, and when the soil is in

vatar about 7 or 8 days later, the seed-bed is prepared in exactly the same way as that described for cotton. Immediately it is ready, the seed is sown chiefly with the Automatic Rabi Drill designed by the Agricultural Department, but also "kera" by which the seed is dropped by hand in furrows made about 6 inches apart with a country plough. In our poorest soils sowing by "chhatta", or broadcasting, is also employed. Where the sowing is done with the drill nothing further is done to the field, as the seed has been covered and an even germination has been ensured, but after "kera" sowing the field is "sohagaed" and finally bar-harrowed.

After this the *wats* and *kiaris* are made as described for cotton, and as is done for all crops.

NOTE.—In connection with sowing operations mention must be made of *dâb*, which is done in rich soils to eradicate weeds, such as *kirâri*, *bûtâ* and *pâzi* which are apt to germinate in them because of the *rauni* irrigation. This consists of compressing the land with a *sohaga* as soon as it is in *vatar* after *rauni*, and ploughing it with a country plough or horse hoe, then *sohagaing* and ploughing again, and finally again *sohagaing* it, before the cultural operations done for the preparation of the seed-bed are commenced. Sufficient moisture for this is retained, besides the weeds being destroyed.

Varieties sown, pure seed and seed rate.—Punjab 8-A wheat is the type grown here and frequently fresh seed, which is pure and smut free is obtained from Lyallpur for multiplication here.

Pure seed is obtained from our own crop, which has been thoroughly rogued, from selected areas of good land. All grains which are damaged or touched by rain on the threshing floor are discarded, and only the heavier and fully matured grains, which fall nearest the *chhaji* (winnower) are taken from the heap for seed, thus separating it from the smaller and immature grains of wheat and weeds which may be present. To further ensure soundness, the quantity of seed to be sown by each individual tenant is distributed to him during September and as in the case of cotton seed, he and his family clean it by hand aad remove any unwanted grains that may still be left. All this entails a certain amount of extra labour and supervision, but the resulting seed obtained is purer and sounder than any machine graded seed.

The seed rate varies from 26 to 30 seers per acre according to the quality of land being sown.

Interculture and irrigation.—The first, or *kor* watering is delayed as much as possible but as *wârâ bandi* (water supply in turns) of distributaries usually takes place between the end of October and the end of December, and as there is usually

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an annual closure all through January, it is given to early sowings from the 20th November and is completed by the end of December for the whole crop.

Interculture is done, when the soil is in *vatar* after the first watering by hoeing all fields with a bar-harrow, which is weighted.

The second watering is given in February on the cessation of the long closure, but it is not then possible to do any further intercultivation. Should rain fall in excess in January the second watering is delayed to ward off rust or *kungí*.

The third watering is given in March, about 6 weeks after the second, and the fourth and last watering is given from the end of March to the beginning of April, to help full maturing.

Harvesting.—This commences on the 13th or 14th April, and the crop is cut chiefly by hand with a *daranti* (small sickle) but also to a small extent, by reaping machines. By the former method all the corn is cut very low, and there is no wastage of straw for *bhusa* (broken and bruised straw used as fodder), even where the crop has lodged, which it frequently does owing to green manuring and high winds, whereas the use of machines has been found to be more wasteful and of no practical advantage.

After cutting, it is tied into large bundles (*bhurries*) of a more or less standard size, by means of a rough rope made with wetted wheat stalks, called *sub* or *ber*, and they are stacked three deep and three high in the form of a square at a central heap called a *khalwárá*.

Threshing (*gahái*) commences about the 4th or 5th May, and is done by bullocks dragging a *phalla* (a hurdle covered with wheat straw (*nár*) and cotton sticks) over the wheat from the *bhurries*, which are opened up and spread out on the hard space in the middle of the *khalwárá*. During this process the straw is repeatedly shaken up by means of a *trangli* (a fork with 5 or 6 prongs made entirely of wood) or a *sángá* (a similar implement with only 2 prongs) or a *kundá* (an implement with one wooden prong affixed to the handle at about the same angle as the head of a *kahi*). When all the straw (*nár*) has been broken up fine into *bhúsá*, and the whole *khalwárá* has been dealt with, the mixture, with the grain lying at the bottom, is rounded off into a heap, called a *dhár*, and is then ready for winnowing. This is done either with a *chhaj* (a flat basket made from the thin tops of *sarkandá* or *káná* grass) held high above the head, or by throw-

ing the mixture up in the air with a special *trangli*, which has 8 or 10 prongs and is lighter than the one used for threshing.

Although most of the *bhúsa* is separated from the grain by this winnowing process, yet there is always a small quantity of whole and partially threshed *sittás* (ears of wheat) and pieces of straw left in the heap of grain, and this mixture called *saind*, is trodden down by as many bullocks as possible moving round in a circle. This process is called *mehr páná*. It is then winnowed again with the *chhaj*, or by means of a *karáhi* (a wooden implement resembling a large ladle) and the wheat is now free of all *bhúsa* and dust and is lifted and stored. The finished heap is called a *bohl*, and when the wheat is required for seed purposes the seed is selected from it, as already described.

The *bhúsa* is stored where it lies after winnowing, either by covering (*leeping*) the long low peaked heaps with mud, called *dhars*, or in *músils*, which are nearly conical stacks thatched with long pieces of wheat straw (*púlá*).

CHARI OR GREAT MILLET.

Preparation of land.—It is grown solely as a *kharif* fodder crop, and then only in one acre per rectangle, usually in land which held wheat in the previous *rabi*.

As with other crops, the initial opening is done with the Rajah plough after an irrigation, and ploughed with a country plough afterwards. In this case for early sowings, the *wadh* of wheat is opened in June and only one other ploughing is given, but for July and August sowings it receives 2 or 3 ploughings with a country plough.

Preparation of seed-bed, method of sowing and seed rate.—For June sowings, within a few days of the above preliminary cultivation, and as soon as the *wári* (turn of irrigation) of the rectangle allows of it, *rauni* is done. When the soil is in *vatar* the field is *sohágáed* and ploughed once with a country plough, and the seed, at the rate of 20 seers per acre, is sown broadcast. After this the field is *sohágáed* and again ploughed, and the sowing operations are completed with a third and last *sohágáing*.

As it is seldom grown alone, but is mostly mixed with *guárá* (Vetch Field), or with *másh* and *múng*, or in a mixture with *guárá* and *másh* or *múng*, the seed rate for such mixtures is 24 seers per acre.

Variety Sown.—The type usually sown here is that called *kángar*, which is insipid and has a pithy stem, but the sweet-stemmed variety known as *tor* is also sown.

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As it has been found, in recent years, that July and August sowings are easily liable to damage by smut these are being discontinued and replaced by *bajra* (Bulrush Millet.)

Interculture and irrigation.—No interculture is done.

The first watering is given about 6 weeks after sowing, and further waterings are given according as the crop appears to require them, and even when the cutting for fodder has commenced. In all 3 or 4 waterings are given when none of them has been replaced by rain.

The crop is ready for fodder in 7 or 8 weeks after sowing, and it has usually all been cut by the 12th September.

SENJI OR INDIAN CLOVER OR MELILOT.

Preparation of land and manuring.—This Rabi fodder crop is only grown in one acre per rectangle, and usually either immediately follows *chari* or is grown in the *wahn* (land in ploughed condition) produced after the wheat crop of the previous year. In the former case the preliminary cultivation is that which was given to the *chari* crop, while in the latter case, the wadh of wheat is opened with the Rajah plough in June and 2 or 3 ploughings with a country plough are given before the senji is sown.

No manuring is done as all the available farmyard manure is reserved for the major crops.

Time and method of sowing, and seed rate.—Sowing commences on the 10th to 12th October and two methods are employed to do it. The first and more usual one, is that the field is irrigated and the seed at the rate of 20 seers per acre, is immediately scattered broadcast over it and then lightly raked into the soil by the sower walking in the puddle and dragging brushwood, consisting of branches of *kikar* or *sheeshum*, behind him. This completes the sowing and nothing further is done. The second method consists of doing a very shallow ploughing with a country plough when *vatar* is obtained after irrigation, broadcasting the seed and running a *sohaga* over the field.

Interculture and irrigation.—No interculture is done.

The first watering is given 5 or 6 days after sowing, and before the land has time to harden and break up after the *rauni* irrigation in which the seed was broadcasted. The next watering is given 20 to 25 days later, and is continued every 20 days until as many as 5 waterings may be given, but owing to the small area the fodder has usually been consumed before the time for the 5th watering. Tenants with fewer cattle can make their one acre last until the first week of March.

Variety sown and general remarks.—The more common variety with a yellow flower is the one usually grown here. It is sometimes mixed with *methra* or *charal*, but is usually grown alone. It is practically never sown in the cotton crop as is a common practice in this colony. We frequently grow it in the strips of land in the shade made by roadside trees, where other crops, especially pulses and toria cannot be satisfactorily cultivated.

(c) Agricultural population.

Practically the whole population of the District is either engaged in or dependent upon agriculture. Even the towns, apart from any importance they may possess as residences of hereditary religious leaders as at Pakpattan, or places of pilgrimage as at Dipalpur, exist mainly to satisfy the needs of the farmers in the vicinity. The principal feature of each town is the Mandi and the prosperity of the shopkeepers and produce brokers in the town depends entirely on the prosperity of the agricultural community. When harvests are good and prices are high the District as a whole is prosperous. The economic depression which star ed in 1931 in reducing the market price of agricultural produce, more especially wheat and cotton, to levels undreamt of in the previous years was as ruinous to the commercial classes as to those actually engaged in agriculture.

Labouring classes.

In the villages, apart from the proprietors and the colonists holding land directly under Government, most of whom have the option to become proprietors on certain conditions and after a certain period, there are several other distinct classes of persons directly or indirectly engaged in agriculture. The old Gazetteer distinguishes the tenant (*rahak*), the day labourer (*mazdur*), the village menial or artisan (*kamin*) and the farm-servant (*kama* or *adhjogia*).

Tenants.

Before canal irrigation arrived the economic position of the tenants-at-will was a strong one. This is explained in the following passage from the old Gazetteer :—

> "It is no exaggeration to say that he (the tenant) is the mainstay of cultivation. The demand, except in a limited number of estates, is for tenants to cultivate the land, and not for land to be cultivated by tenants. The prosperity of individual estates and proprietors depends on their ability and success in attracting and keeping tenants, For this purpose advances more or less liberal have to be made to the tenant for seed, for food and for personal expenditure either in cash or in kind, or in the case of the poorer proprietors by giving collateral security for the tenant

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to the money-lender. Tenants insist on being allowed to cut *jowar* and wheat freely as fodder for their agricultural cattle, and also to some extent for those which are kept for domestic purposes, and, as a rule, for such cuttings no rent is paid. In bad seasons or even at other times tenants have little hesitation in migrating to more favoured estates or tracts, very often without repaying the advances which they have received. Outstanding advances due from an incoming tenant to his former landlord are, on the other hand, often paid by his new landlord. The tenant is, broadly speaking, master of the situation, and the expenses incurred in connection with him are generally a considerable tax on the landlord's agricultural profits. There are, of course, more or less marked variations in the tenant-attracting power of different estates; tenants going far more readily to those which get plentiful canal irrigation or *sailab* than to those more dependant on well-irrigation."

This is still so to some extent more particularly in the areas beyond the reach of the canal. It is natural for tenants to prefer canal irrigated land to the less secure and more laborious cultivation on *chahi* or *sailab* areas. But on the whole there is no shortage of tenants in the District. They are not so plentiful now, it is true, as they were a year or two ago. A certain number of them have sought fresh fields in the Sutlej valley colony, or in Bahawalpur, or even in Sindh. At the same time a number of members of non-agricultural classes, *kamins* and the like, who took to agriculture in the early days of the colony when prices were high and conditions generally favourable, have now reverted to their proper position as casual labourers preferring even a small cash wage, *e.g.*, from a road or building contractor, to the changes and chances of agricultural life in the present circumstances of depression. These tendencies however have been to some extent compensated by the fact that a number of grantees in the colony areas have taken to direct cultivation and are now able to do without tenants at all.

Day labour.

Day labourers are rarely employed for agricultural purposes except at harvest time, when there are opportunities particularly for reapers in the wheat harvest, and cotton pickers in the Kharif.

Artisans and menials.

The principal village menials, who are paid in kind for services rendered out of the produce of cultivated land, are the *Kumhar* (potter) and *Tarkhan* (carpenter) who are known as superior *kamins*, and the *Lohar* (blacksmith), *Mochi* (leather worker) and

Nai (barber) who are inferior *kamins*. The first four are all more or less directly concerned with the provision of agricultural implements. The *Nai* is not directly concerned with agriculture, but as the village barber, messenger and general factotum he renders a very considerable amount of indirect assistance in agricultural operations. These *kamins* are called *sepi*, from the *sep* or customary services which they render. Village menials on a similar scale have been introduced into the new villages set up in the colony areas and an inducement to them to throw in their lot with the newly founded colony communities is afforded by the provision in peasant estates of a rectangle of 25 acres, out of which each *kamin* is supplied with an allotment which he is entitled to cultivate for his own support and profit.

The farm servant described in the previous Gazetteer as *kama* or *adhjogia*, is not commonly met with in the colony area. They are distinguished in that the *kama* gets wages in cash and clothing and food, while the *adhjogia* gets no pay but shares in the produce. The *adhjogia*, as his name suggests, belongs properly to well irrigation. For each yoke of bullocks one man was generally considered necessary. There seems to be little to distinguish the *adhjogia* from the *rahak*. Neither term is commonly used now. Agricultural labourers who are rewarded by a share in the produce are generally all classed together as *muzaras* (tenants), but the labourer paid with cash, clothing and food (*kama*) is still found in some of the bigger estates on plots reserved for direct cultivation under the supervision of the land-owner.

(*d*) Principal crops. Wheat.

The principal crop of the District is wheat. In the Sutlej Tahsils at the time of Settlement 1921-22, that is to say, before the Sutlej Valley Canals opened, wheat occupied 43 per cent. of the cropped area in Dipalpur Tahsil and 38 per cent. in the Pakpattan Tahsil. Wheat now occupies 45 to 50 per cent. of the cropped area in *chahi* lands, about 30 per cent. in *abi* and 20 per cent. in *sailab*. In the canal irrigated area wheat normally occupies about 35 per cent. of the cropped area. The various indigenous types of wheat are described in the previous Gazetteer as follows :—

> "Four kinds of wheat are grown : *Pamman* and *ratti* or *nikki*, both red wheats ; and *daudi* and *ghoñi*, white wheats. *Ratti* and *ghoni* are beardless ; the others are bearded. The beards and ears of the red wheats turn black when they ripen ; those of *daudi* remain white. So does the ear of *ghoni*. The ear of *ratti* is squarish, and does not taper ; that of *pamman* is rectangular, and it does taper ; so do those of *daudi*

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and *ghoni*, which are roundish. *Pamman* is the largest kind; next comes *ratti*, and then the white varieties. *Pamman* requires more cultivation than the others. It appears to be the same as the *vadanak* of other districts. The grain of it is considered more strengthening than that of the other three, and will sell dearer; but well-to-do people prefer the white wheat."

These types have now largely been superseded by the types introduced by the Agricultural Department. The most important of these is Punjab 8-A an awned wheat with red chaff and felted glumes. The colour of the grains is amber. The next in importance are Punjab 11 and Punjab 17. The first is a bearded wheat with reddish awns and white grains, while the second is a beardless wheat with reddish straw and awns. A wheat recently introduced is cross 518, a bearded wheat with white straw and glumes. The awns are short and blackish in colour. This wheat is not suited to poor soil, but in good soil there is no better. It is said never to lodge however heavy the crop may be. Another wheat recently introduced is 9-D., a bearded wheat with white chaff and yellow awns. This wheat tillers well and provides an ample amount of straw. It is said to be suitable for late sowings.

Cotton.

In the canal irrigated area cotton is in some ways more important than wheat since it is the principal money yielding crop to the cultivator. Cotton occupies normally about 30 per cent. of the area cropped under canal irrigation. Under *abi* irrigation cotton occupies about 20 per cent. of the cropped area. On *chahi* lands where excessive heat renders well irrigation in summer months for Kharif crops specially arduous, cotton only occupies about 5 per cent. of the area cropped, while for obvious reasons there is practically no *sailab* cotton at all. The most popular type of American cotton is 4-F which was first issued by the Agricultural Department from Lyallpur some twenty-five years ago. A later variety 289-F is popular with some farmers. This is a heavier yielder than 4-F and gives a longer staple. But it is sown later and matures later and consequently is liable to damage from frost. American cotton is termed *narma* locally: 4-F being distinguished as *chitta narma* and 289-F as *kala narma*, the latter having a fuzzy dark-coloured seed.

American cotton.

Desi cotton.

Of Desi cottons the pre-eminent type is *Mollisoni* and, in recent years, this type has superseded American cotton over a considerable area in the Okara Tahsil. Though Desi cottons do not command quite as high a price as Americans, they are able to stand up more efficiently against unfavourable agricultural

conditions. There have been several serious failures more especially in the American cotton crop in recent years, the reasons of which have not yet been fully investigated. The symptoms have been shedding of leaves and the premature opening of bolls, the local term for which is *tirak*. These failures have been partly the cause for the increased popularity of Desi cotton. At the same time the difference in price between the American and Desi cottons has of late years decreased so that it stands now roughly at Re. 1* per maund and the premium on American cotton has lost much of its attraction. Another type of Desi cotton which is believed to be even more drought resisting than Mollisoni is the local red leaved cotton known technically as Sanguineum and locally as Multani.

Gram. Gram is a crop of some importance especially in riverain areas. It does well on *sailab* land. In canal irrigated lands it occupies about 4 per cent. of the cropped area. It is an easy crop to deal with and does not require much water after the preliminary watering.

Sugarcane. Sugarcane, though it occupies at most 2 per cent. of the canal irrigated area and generally less, is a valuable crop and appears to be increasing in popularity in spite of the calamitous fall in the price of Gur. This is partly due to the introduction of canes from Coimbatore which are very much more productive than the local variety. Other good types of sugarcane are obtainable from the Gurdaspur District. This crop demands plenty of manure and water and careful cultivation. It also occupies the land for ten months and is therefore difficult to fit in to a rotation. If a large area is sown with cotton it is impossible to grow much sugarcane because there is not enough water for it. But some farmers discouraged by several bad cotton harvests prefer to restrict the area under cotton and to divert the surplus water to an acre or two of sugarcane.

Toria and other oilseeds. Toria appears to have been practically unknown in the District before the opening of the Lower Bari Doab Canal. It is now a valuable crop in canal irrigated areas occupying 4 to 5 per cent. of the cropped area in the typical rotation. Toria is sown in September and reaped in January, so it occupies the soil a shorter time than other Rabi crops and it is harvested most conveniently for the farmer just at the time when his Kharif instalment of land revenue is due. It is a common saying that the proceeds of cotton provide the cultivator with money to replenish his stock of cattle or implements and pay off the money-lender. Toria supplies the Kharif instalment of land revenue, while the Rabi instalment absorbs a share of the wheat crop which the cultivator can ill

* This is now not the case. The difference is Rs. 3 or more—January 1935.

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spare. Other oilseeds grown are *taramira* and *sarhon*, but the area they cover is inconsiderable. Sesamum (*til*) is not grown much in the Ravi Tahsils. In the Sutlej Tahsils at the time of the Settlement of 1921-22 *til* occupied 1½ per cent. of the cropped area in the Dipalpur Tahsil and 2½ per cent. in Pakpattan Tahsil. It is sometimes sown with *moth* and *mung* or with *moth* alone and sometimes with *jowar*. It is not grown on well land. When the crop is cut, the stalks are placed in a circle with their tops pointing inwards and are left there for a fortnight with a weight upon them. This heatens and softens the pods. Then the stalks are placed on the ground with their tops pointing upwards leaning against each other or against a straw rope. The action of the sun causes the pods to open when the grain is shaken out on a cloth. Fifteen seers of *til* seeds produce 6 seers of sweet oil.

Tobacco.

Tobacco is of some importance in *chahi* lands. The tobacco from Massanke in Okara Tahsil is particularly popular. But it is a crop on which a good deal of labour has to be spent and it does not therefore appeal to the somewhat rough and ready methods of the *nahri* farmer. The method of cultivation is described in the previous Gazetteer as follows :—

> "Towards the end of October the seed-bed is prepared. It is manured and dug up with the *kahi*, and the earth is finely pulverized. Two *chittaks* of seed are mixed with as much earth, and gently scattered over a seed-bed, one *marla* in extent. This will supply plants for two *kanals*, when planted out. The seed is then rubbed in with the hand or thorn-bushes. Manure is scattered over the bed and water is given ; or the manure may be scattered on the water. The seedlings are watered every 15 days. When the nights get cold, they are covered with screens or leafy branches of trees. The north side of the bed is screened completely, and the west side partially. In Katik the preparation of the tobacco field commences. Manure is put on the ground to the height of about 4 inches. Water is turned on, and the field ploughed twice and harrowed. The ploughing and harrowing are repeated in Maghar, Poh and Magh. In Phagan, trenches about 15 inches deep and broad, with ridges of the same breadth, are made with the *jandra* and dressed with the *kahi*. They are filled with water ; and the seedlings taken from the nursery are planted at intervals

of 18 inches, about 6 inches from the top, on the sides of the ridges. The trenches are filled with water about once a week. One month after transplanting the ground is weeded, and a little *kallar* put at the roots of each plant. This treatment is repeated at intervals of 20 days to four weeks. At the last weeding, some hoe with the *kahi* and put goat's dung in the trenches. The flower is nipped off all plants, except those reserved for seed. This makes the leaves spread, and prevents the plant growing tall. When no more leaves form, the plants are cut down with the *datri*, and left on the ground three days, during which they are constantly turned. Then a hole, big enough to hold the crop, is dug in the earth; the leaves are put in, covered with grass and earth, and left for 10 or 15 days. Next they are taken out, the stalks and hard ribs are removed, and the leaves dried in the shade, and then made into twists, called *subbs*. Stripping tobacco is called *chhilai*, and the person (generally a *kamin*) who does the stripping and twisting, is paid usually five *subbs* for each hundred he prepares, or two or three *subbs* for working till noon; sometimes he gets 4 *sers* per *man* of tobacco prepared. It is very necessary to water tobacco just before cutting it, as otherwise it loses seriously in weight. It is not usual to mix tobacco with *gur*, nor are the stalks burned, and the ashes added to the mixture. Only one kind of tobacco, the *desi* or indigenous, is known."

Rice.

Rice is not a popular crop. It is generally only grown where the soil is stiff and intractable and not suited to wheat. In the Gugera Branch in the Okara Tahsil, it occupies 4 per cent. of the cropped area. But it does not fit well into a rotation as the soil on which rice has been grown is temporarily at all events spoilt for other crops. The crop is generally cultivated from seedlings and after the seedlings have been planted out the soil has to be kept permanently under water.

Jowar and charri and fodders generally.

The great millet when sown for grain is called *jowar*, and when sown for fodder is called *charri*. There is very little *jowar* in the District. For assessment purposes in the Ravi Tahsils, *jowar*, *charri*, maize and *bajra* were all classed as Kharif fodders. In fact these are very little grown for grain in canal irrigated areas. Another valuable Kharif fodder is *guara*, a leguminous plant which is on that account particularly valuable for green manuring. *Sann* (hemp) is also grown for the same purpose. Rabi fodders

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include oats, turnips, lucerne, *senji*, *shaftal*, *methra*, *rawan* and *charal*. *China* is also grown as a *zaid rabi* crop. Oats are fed to horses green or as oat hay. Lucerne is of course an excellent fodder for horses, while *senji* is also popular. Berseem and *shaftal* are types of clover. *Methra* and *rawan* (a small bean) are used extensively as green fodder and not uncommonly they are mixed with other crops such as *senji*. *Charal* is a kind of field pea. It is sown only on inferior land in the Bet. Hard ground recently thrown up by the river is often planted with *charal* as its roots are supposed to have the property of breaking up and softening the soil. *China* is not much grown in canal irrigated areas. It can be cultivated in either harvest. For assessment purposes in the Ravi Tahsils, it was classed as a fodder and it is not an important crop in any case. Kharif fodders in the canal irrigated areas occupy 8 to 10 per cent. of the cropped area and Rabi fodders about 14 per cent.

Vegetables.

Vegetables are not much grown as a Kharif crop and they are of little importance anywhere except in the neighbourhood of the towns, where large profits can be made from them. Similarly melons are profitable in the neighbourhood of market towns. In the villages vegetables are found only in very small patches and belong more to the domain of the kitchen garden than of agriculture.

Pulses.

Pulses (*moth*, *mung* and *mash*) are not extensively grown. *Moth* is the commonest. The stalks and leaves of this plant are said to be an excellent fodder for cattle. *Mung* and *mash* are sometimes sown mixed together, while *mung* may be mixed with *jowar* or *til* and *mash* with *rawan*.

Yields.

As regards average yields in maunds per acre Mr. Purser who carried out the Settlement in 1872-73 has some interesting remarks to make :—

> "Concerning a few crops I have been able to form an opinion, partly from actual experiment and partly from enquiry; and I will state what I think the outturn on an acre of average soil, when the crop has been fairly cultivated, and has not suffered from, or benefited by, an unusual season. Irrigated wheat produces 16 maunds, or about 1,300 lbs. per acre. Barley, by all accounts, produces one-quarter more than wheat; so it ought to yield 20 maunds, but it does not get as good treatment, and may not produce so much. Rice gives 17 or 18 maunds of cleaned grain. *Kangni* produces 14 maunds per acre; but the outturn varies very much. I would

put the yield of *china* at 12 maunds. Cotton produces 6 maunds or, roughly speaking, 120 lbs. of cleaned fibre. Lieutenant Elphinstone puts the yield at 12 maunds or 240 lbs. of cleaned fibre. I believe that new land on the Ravi will produce that much, and 10 maunds on the Sutlej ; but in a couple of years the outturn falls off by at least one-half. Poppy produces 6 *seers* of opium, or 3 maunds of *post* and 3 maunds of seed. Tobacco produces 25 maunds of green plants, which will dry down to about 6 maunds. An acre of turnips sells for Rs. 24. Lieutenant Elphinstone says they sold at 1,600 to 3,200 lbs. per rupee. Assuming the highest price now, the yield, would be nearly 17 tons, about one-half less than the English average including tops in both cases. But I doubt if 3 maunds are produced in the *marla*. As regards other crops I can give no opinion that would be of much value."

Settlement yields.

The outturns estimated by Mr. Purser for wheat, barley and cotton are higher than any Settlement Officer has assumed since. In the Settlement of 1921-22 in the Sutlej Tahsils the outturns in maunds per acre, assumed by the Settlement Officer were as follows :—

	Dipalpur.		Pakpattan.	
	Nahri.	Chahi.	Nahri.	Chahi.
	Mds.	Mds.	Mds.	Mds.
Cotton	3½—4½	4½—6	3½—4½	4½—6
Rice	12½—16	11—14	13—15	11
Bajra	4—5	5—6	5—7	5
Jowar	4	5—7	4—5	4½—8
Maize	5—8	6—9	5—7½	6—9
Mash	3—3½	4	3½	4
Til	2½—3	3½	2½—3	3—3½
Wheat	6—8	8—10½	6—7½	8—10½
Gram	7—8	7—7½	6½—8½	6½—8½
Barley	6½—8	9—12	6½—8	8—10

At that time the Sutlej Valley Project Canals had not started running and the Settlement Officer's Nahri outturns related to inundation canals only. As compared with outturns now obtained in perennial canal areas they are very conservative. In the Settlement of the Lower Bari Doab Colony which began

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in 1927 Nahri outturns in maunds per acre have been assumed as follows :—

—	Okara.	Montgomery.
	Mds.	Mds.
Rice	20—23	15—18
Cotton	4—5	4
Pulses	5	5
Wheat	10—12	12—13
Wheat straw	14—16	15—16
Barley	10	12—13
Gram	7—8	7—8
Toria	5—6	5

These yields were considered by Government to be unduly conservative.

In both Tahsils Barani outturns were assumed to be half Nahri. Otherwise the only special outturns that were assumed in the Bet circle of the Okara Tahsil were 12 maunds grain and 15 maunds *bhusa* for *chahi* wheat, 8 maunds grain and 10 maunds *bhusa* for *sailab* wheat and 6 maunds for *sailab* gram while in the case of *abi* and *sailab* wheat in the Montgomery Tahsil the outturns assumed were 8 maunds grain and 10 maunds *bhusa*. It is hardly necessary to point out that these assumed outturns, as in the case of the Sutlej Tahsils, are undoubtedly conservative. In a good year and with a reasonably good soil and proper cultivation wheat in the Montgomery or Okara Tahsils may easily average 20 maunds to an acre over a large area. In fact this average has been obtained by the Convillepur Farm at Montgomery over the entire farm on more than one occasion. Mr. Purser was also perfectly right in saying that new land on the Ravi would yield up to 12 maunds of cotton per acre. But this outturn cannot be maintained. Land that has been reasonably cultivated over a period of years cannot be expected to yield in a good harvest an average of more than 8 or 9 maunds per acre ; while definitely inferior land, of which there is a considerable amount in the Montgomery Tahsil, will often fail to yield more than 3. No outturns in maunds were assumed in the Montgomery and Okara Tahsils for sugarcane, vegetables, oilseeds other than *toria*, tobacco or fodder. For commutation purposes a flat rate in rupees per acre was assumed for these crops.

There are no fruit farms in the Sutlej Tahsils. An experiment was made in setting up vegetable farms near the Mandi towns, but this has been abandoned. Small orchards planted more particularly with oranges and other citrus trees are popular with some of the bigger estates in the Ravi Tahsils and ten 6-acre plots in the neighbourhood of Okara Mandi have been leased out for planting fruit gardens by Government to some of the leading men in the vicinity. There is also a fruit garden held on lease from Government near Montgomery, the lessee being Sardar Ganda Singh, China. But by far the most important fruit farm in the District is the Indian Mildura Farm near Renala which is held on lease from Government by Mr. F. J. Mitchell and his two sons. This garden covers an area of 720 acres, and is planted mainly with oranges and lemons. The lessees, who would probably find it difficult to market as such the very considerable outturn of oranges and lemons which the garden will produce when in full bearing, have shown considerable enterprise in starting the manufacture of lemon squash, orange squash and marmalade. Landholders generally are becoming more interested in fruit cultivation in which they have been given a lead by the Agricultural Department and their fruit specialist Sardar Lal Singh. Experiments have been made with marketing Renala oranges in London and Her Majesty the Queen expressed satisfaction with a case of these oranges which happened to come her way, but it does not appear that Punjab oranges can be marketed in Europe extensively with profit. There is, however, a satisfactory Indian market for these fruits and the best methods of marketing are being investigated.

Fruit.

The following statement shows the total cultivated area in acres in the Montgomery District every five years since last settlement :—

(c) Agricultural development.

Year.	Irrigated		Unirrigated.	Total cultivated.
	By Government works.	By private individuals.		
	Acres.	Acres.	Acres.	Acres.
1896-97	175,765	171,160	49,594	396,519
1901-02	187,874	145,264	332,029	665,167
1906-07	292,030	206,131	278,830	776,991
1911-12	192,047	194,155	271,648	657,850
1916-17	574,504	189,714	288,512	1,052,730
1921-22	1,062,008	163,534	105,101	1,330,643
1926-27	1,171,810	157,949	150,675	1,480,434
1931-32	1,249,915	134,610	227,364	1,611,889

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The year 1896-97 was a particularly bad year. The summer rains were poor and *sailab* failed. This no doubt partly accounts for the small area cultivated in that year, while in the following years it seems that large areas of crown waste land were leased out on temporary cultivation terms. The effect of the Lower Bari Doab Canal is shown in the increase by some 700,000 acres between 1912 and 1922, while from 1922 to date the further increase of some 300,000 acres may be attributed in part to the operation of the Sutlej Valley canals.

Seed.

The various types of selected seed introduced by the Agricultural Department have enormously enhanced the cultivators' profits. These types of seed have been indicated in the preceding section. The following figures show the extent to which these improved seeds have superseded the old types in the District :—

Name of the crop.	Total area during 1932-33.	Acreage under improved varieties during 1932-33.
	Acres.	Acres.
Cotton	275,455	261,516
Sugarcane	21,297	10,174
Wheat	406,116	336,618

Fodder.

The Agricultural Department further deserves credit for the introduction of valuable types of fodder, *e.g.*, Lucerne, Berseem, Sudan grass, Elephant grass and Japan rape.

Implements.

Methods of cultivation and implements are discussed above in Section (*b*) of this Part. The Agricultural Department has been instrumental to some extent in popularising improved types of plough together with chaff cutters, horse hoes and bar harrows. A simple type of bar harrow has been designed at Lyallpur and this and a simple type of chaff cutting machine are probably the most common types of improved implements in the District. Furrow turning ploughs cannot be said to be commonly used except in the big farms and by the more enlightened small holders. Horse hoes are intended primarily for inter-cultivation, for instance in cotton, but they are not common. Such inter-cultivation as is done is generally carried out with the ordinary Desi plough.

There are three establishments maintained by the Agricultural Department in the District— Agricultural Department.

(1) An agricultural station at Montgomery.

(2) A seed farm at Shergarh on the borders of the Okara and Dipalpur Tahsils.

(3) A seed farm at Fatna in the Nili Bar.

But the Department does not depend entirely on their Departmental Seed Farms for improved seed. Reliable seed is also obtained by the Department from the Renala and Coleyana Estates in the Okara Tahsil and the Convillepur Estate near Montgomery.

Sardar Sir Jogendra Singh holds a grant near Iqbal Nagar in the Montgomery Tahsil which is intended to demonstrate the uses of steam ploughing tackle. The use of steam ploughs demands that the fields be laid out in a special way with broad intersecting roads fit for the passage of the steam engine. It is doubtful whether steam ploughs will ever be of any use except in large estates where for any special reasons the land-holder desires to avoid the cost of Batai cultivation and prefers to cultivate on a large scale under his own direct supervision. Cultivation by motor tractors is useful similarly to the large land-holder, more particularly to horse breeders, who desire to raise fodder crops over large areas as cheaply as possible. But whether by reason of the present economic depression or otherwise, tractors are not much used in the District at present. Mechanical traction.

The editors are indebted to Sardar Lal Singh, the Fruit Specialist, working with the Punjab Agricultural Department for the following note on fruit cultivation :— Note by Fruit Specialist.

Acreage.—According to a survey made in 1928 by the Fruit section of the Punjab Agricultural Department the district of Montgomery had 1,437 acres under fruit gardens, of which Okara Tahsil possessed about 866 acres, Dipalpur Tahsil 277 acres, Montgomery Tahsil 212 acres and Pakpattan 82 acres. The biggest garden of over 450 acres* at Renala Khurd in Okara Tahsil belongs to Mr. F. J. Mitchell, a Government grantee, and the second biggest garden of 75 acres also belongs to another Government grantee Dr. Ganda Singh, Cheema and is situated near Montgomery town. There were in all 103 gardens in this district possessing an area of over 3 acres each ; 53 gardens of over 5 acres each, 13 gardens of over 10 acres each and 5 gardens of over 20 acres each. In the matter of total acreage Montgomery District in 1928 occupied

* The exact area is 720 acres.

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9th position amongst the districts of the province which is partly due to the fact that a great portion of the district has only recently been colonized and consequently most of the gardens are young. A distinct feature of these gardens however, is that they are mainly planted as commercial orchards unlike the pleasure gardens of older districts. Recent economic depression in general agriculture, coupled with the activities of the Agriculture Department in this branch, has produced considerable stimulus as a result of which there has been a rapid extension in commercial orchards in recent years and Montgomery District may aspire to be the most important centre of citrus production in the Punjab in the near future.

Fruit crops.—The fruit trees grown are all kinds of citrus varieties, mangoes, guava, grapes, jaman, pomegranate, crab apple, falsa, fig, mulberry, banana, peaches, plums, etc. Citrus fruits, however (Malta and sangtra especially) are the most important of all and occupy by far the largest area as the climate and soil of the district are admirably suited for the production of these fruits. Other fruits mentioned above are being grown on a very small scale and are not of any great commercial importance as the varieties grown are generally inferior and the climate for most of them not suitable. Grapes so far grown were of ordinary quality, but the Agriculture Department is now in a position to recommend suitable varieties. Falsa is a very hardy plant and can do well in the district provided the fruit can be disposed of soon after picking. Bananas are usually of inferior varieties (mostly culinary) and its production is not recommended. Pomegranates do fairly well, but suffer greatly from splitting of fruits. Peaches, mostly of flat variety, and plums of local inferior varieties flourish greatly, but the superior varieties of these fruits have not yet been successfully established. Mangoes are mostly seedlings, as grafted trees being delicate get established with difficulty and have to be protected against frost in winter and hot winds in summer. *Ber* (*Z. Jujubee*) is a hardy tree and does very well indeed. The Agriculture Department has successfully top-worked hundreds of old wild *ber* trees with a view to convert them to superior varieties. Other fruits are of little importance.

Nurseries.—It has been the practice so far amongst the fruit growers to purchase fruit trees from outside nursery men, mostly from Lahore, Lyallpur, Agra and Saharanpur. There are a couple of small nurseries at Montgomery and one at Renala Khurd, but the number of plants sold from these has not been very considerable. The attempts of the Department of Agriculture in inducing private growers either to propagate their own plants from trees

of outstanding merit or to purchase the same from reliable nurseries have been partially successful and more and more attention is being devoted to this important phase.

Marketing.—With the rapid development of commercial gardens of large sizes in the district in recent years, the problems of marketing the fruits have come to the forefront. The Montgomery Fruit Growers Association, organised a few years back, has as one of its objects the co-operative marketing of the members' fruits. In fact some of the members, particularly Mr. Mitchell, have adopted standard methods of grading and packing their produce and these fruits have elicited praise from various parts of India. Mr. Mitchell has also been responsible for sending the first consignment of Indian oranges to England.

(f) Rural credit. Working of Land Improvements and Agriculturists' Loans Acts.

The following table shows the balances outstanding at the close of the last two years under the Land Improvements and Agriculturists' Loans Acts :—

	Act XIX of 1883.		Act XII of 1884.	
	Balance on 31st March 1932.	Balance on 31st March 1933.	Balance on 31st March 1932.	Balance on 31st March 1933.
	Rs.	Rs.	Rs.	Rs.
Montgomery	1,02,274	1,10,238	72,445	64,499
Okara	27,089	23,457	4,205	5,720
Dipalpur	1,08,821	1,06,734	32,502	32,304
Pakpattan	40,873	45,207	36,129	34,501
District Total ..	2,79,057	2,85,636	1,45,281	1,37,024

Loans under the Land Improvements Act are generally taken for sinking new wells or repairs to existing wells, digging watercourses, breaking up or levelling untilled and uncommanded land and installing pumping plants for irrigation; while loans under the Agriculturists' Loans Act are as a rule for the purchase of bullocks or seed. Under these Acts the rate of interest is 5½ per cent. and recoveries are effected in very easy instalments, sometimes as many as 40 instalments spread over 20 years.

Co-operative Credit Societies.

These loans are of great value to the cultivator. But where co-operative credit societies have been set up, a loan from the society is generally taken in preference to a Tacavi loan from Government. There are now 591 co-operative societies of various sorts in the district out of which 490 are agricultural credit societies. The total membership of these agricultural credit societies

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is 12,470 giving an average membership of between 25 and 26 members per society. The working capital of these societies is over 20 lakhs of rupees averaging just over 4,000 per society. Twenty per cent. of the loans outstanding with these agricultural credit societies was recovered during the year 1932-33 as opposed to 23 per cent. in the previous year. This percentage is considerably above the provincial average of recovery—Montgomery ranking in this respect as the third district in the province. The amount of money on loan to members of agricultural credit societies at the end of the year 1932-33 was nearly 17 lakhs of which 3 lakhs principal and 1½ lakhs interest were recovered during the year. The recent economic depression has probably benefited the movement to some extent, in that though expansion has naturally been less rapid the opportunity has been taken to close down the more hopeless societies.

Other forms of co-operation.

Other forms of co-operative societies include thrift societies, of which the membership consists mainly of school masters and whose working capital is represented by the savings of their members, and better living societies which lay stress particularly on reforms in social customs and ceremonial, hygiene and sanitation. Special attention is being given to better living societies at present. There are now 15 such societies in the district as opposed to 8 last year. There is a most successful zamindars' sale society at Okara which in the past year handled business worth 9 lakhs. There are similar societies at Arafwala and Chichawatni; while the Fauji Zamindars Union at Renala has recently started endeavours similarly to dispose of the produce of its members on commission.

Central Banks.

There are central co-operative banks at Montgomery for the Ravi Tahsils and at Pakpattan for the Sutlej Tahsils. The working capital of the Montgomery institution rose in the year 1932-33 from 9 lakhs to 11¾ lakhs, and of that at Pakpattan from 8 lakhs to 8¼ lakhs. The societies affiliated with these banks recovered, in the case of the Montgomery institution 21 per cent. of their loans outstanding in 1932-33 and 13·5 per cent. in respect of Pakpattan.

On the whole the prospects of the co-operative movement in Montgomery are bright. The economic depression appears, while checking the previous rapid expansion, to have led to useful consolidation work which should strengthen the position of the movement when economic conditions improve and expansion again becomes possible.

Co-operative staff.

The Circle Registrar of Multan is in general charge of the co-operative movement in the district assisted by 4 inspectors paid

by Government. The Punjab Co-operative Union pays 20 sub-inspectors for each central co-operative bank.

Sales and mortgages of land are somewhat restricted over a large area of the district, the occupiers being colonists who have not yet obtained proprietary rights. The following tables show figures for sales and mortgages separately for the last two years :— Sales and mortgages.

Sales.

Name of Tahsil.	1930-31.		1931-32.	
	Area sold in acres.	Price in rupees.	Area sold in acres.	Price in rupees.
Montgomery	1,919	5,02,840	3,174	6,76,177
Okara	2,715	3,30,555	1,791	3,50,605
Dipalpur	1,407	2,57,409	1,894	3,70,832
Pakpattan	1,910	6,61,798	3,095	3,76,561
Total ..	7,951	17,52,602	9,954	17,74,175

Mortgages.

Name of Tahsil.	1930-31.		1931-32.	
	Area transferred in acres.	Consideration in rupees.	Area transferred in acres.	Consideration in rupees.
Montgomery	751	1,19,698	1,329	1,52,053
Okara	1,191	1,76,162	2,923	2,33,868
Dipalpur	3,206	2,33,510	3,017	1,42,929
Pakpattan	1,674	1,40,312	4,012	2,65,430
Total ..	6,822	6,69,682	11,281	7,94,280

For the reasons indicated above the area of land under mortgage is not a real criterion of the indebtedness of the district. There is every reason to believe that the amount of the floating debt in the district—mostly loans from village shopkeepers unsecured except on the strength of entries in the shopkeeper's Floating debt.

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account books—is very large. Included in the amount are numerous loans taken by colonists in their districts of origin. It has been estimated for the whole district as between 1½ and 2 crores of rupees. A large amount of this sum is due to interest. These petty accounts are generally made up with compound interest at each harvest and when, as has been the case for the last 3 or 4 years, the zamindars at harvest time are not prepared to make any payment on account, it is obvious that the addition of interest on each occasion will rapidly multiply the amount of debt outstanding. The rate of interest on these transactions is commonly as high as 24 per cent per annum. But though in this way the burden of debt has undoubtedly increased by reason of agricultural depression, it is at the same time probably true to say that there have been very few fresh loans recently. The village shopkeeper has suffered from financial stringency probably even more than the zamindar and he will not now lend money except on the most impeccable security. Zamindars as a whole have had to cut down their cash expenses to a minumum, when loans are a necessity, *e.g.*, to meet compulsory payments to Government, colonists sometimes resort to a mortgage of a part of their holding to the money-lender, the transaction being generally entered in the revenue records as a cash rent in order to avoid the necessity which is laid on Government tenants to secure the Collector's sanction to mortgage their lands.

Bankruptcy.

On the other hand some agriculturist debtors have taken to cutting their losses by resort to the Bankruptcy court. This is a comparatively new tendency and may lead to a restriction in agricultural credit in future. It is probable, however, that with this menace before their eyes when money again comes to be more plentiful and debtors are again in a position to make regular payments, many money-lenders will be prepared to effect compromises with their debtors waiving much of the interest which has accrued during the lean years in return for an appreciable payment against the principal debt outstanding.

Creditor class.

As regards the general mass of floating debt the creditor is generally, as indicated above, the village shopkeeper, who is very possibly financed by some more important firm in the local mandi. But quite a number of agriculturists, more particularly among the Sikh grantees of Government land, have now taken a hand in the game of money-lending. They are prepared to give credit more freely than some of the professional money-lenders for the reason that they can take land on mortgage unrestricted by the Land Alienation Act. They are also in closer touch with their debtors and in a better position to press them for repayment. It

is believed that, more particularly among the retired military officers from Sikh regiments, there are several who have collected quite respectable fortunes in this way.

(g) Veterinary.

The following note has been contributed by the Director of Veterinary Services—Mr. Quirke, for whose assistance the Editors are very grateful.

Hospitals and Dispensaries.

There are only 8 veterinary hospitals in the district. These are located at Montgomery, Chichawatni, Sheikh Fazil, Arifwala, Pakpattan, Dipalpur, Shergarh and Okara.

This number is not sufficient to meet the needs of such an important district and is supplemented by a scheme of fourteen outlying rural dispensaries which aims at providing facilities for veterinary aid to remote villages. These dispensaries are visited on fixed days by the staff.

The function of the veterinary hospitals is not only to treat cases brought there, but they also serve as disease controlling centres for a large number of villages. The average number of villages attached to each hospital is approximately 270 which according to all standards is too many for effective supervision by one veterinary assistant.

Contagious diseases, etc.

Rinderpest, Hæmorrhagic Septicæmia, Foot and Mouth disease and Black Quarter are the commonest contagious diseases met with amongst the livestock of this district.

1. *Rinderpest.*—Vernacular names: *Mata, Pir, Sul, Mok, Seetla,* or *Cheechak.* Outbreaks of this disease usually occur in an epidemic form in cycles of every fourth or fifth year. The disease is met with in cattle and buffaloes, sheep and goats. The Bets of the rivers Sutlej and Ravi which traverse this district are a constant source of infection, as cattle from the adjoining districts are brought in for grazing which very often bring disease.

The disease responds to careful handling and can be controlled by strict isolation, better feeding and protective inoculations. Detailed instructions are issued by the Civil Veterinary Department from time to time for information and guidance of all concerned.

2. *Hæmorrhagic Septicæmia.*—Vernacular names: *Galghotu* or *Ghari.* This disease is chiefly met with in the low-lying and marshy areas. It is very fatal specially amongst buffaloes. To control this disease preventive vaccinations of all young cattle in known diseased areas are carried out by the Department twice a year before the rains.

3. *Foot and Mouth disease.*—Vernacular names; *Munh Khur, Rora* and *Mohar.* This is the commonest of all the diseases

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and is chiefly met with along the main thoroughfares. It is spread by the movement of stock. There are practically no deaths from this disease except in young and weak stock. Ordinary disinfectants are used as mouth-washes and for foot baths.

Black Quarter.—This disease though met with in the district is not common. It is endemic in certain well-marked localities where prophylactic vaccinations are carried out by the department every year.

Other diseases.—Cow and Sheep Pox cases are occasionally met with in the district and respond readily to treatment.

Three days' Sickness or "Vil."—This condition is not very common in this district. The sick animals usually recover after three or four days without any treatment.

Parasitic diseases in sheep and goats.—Parasitic diseases sometimes cause heavy mortality amongst sheep and goats in the low-lying and marshy areas. Preventive measures are strongly recommended to owners.

Breeds and Breeding Operations.

Horse and mule-breeding.—Previous to November 1932, horse and mule breeding operations of the entire district were under the charge of the Army Remount Department. Since that time the two unbound tahsils of the district (*viz.*, Dipalpur and Pakpattan) have been handed over to the charge of the Civil Veterinary Department.

There are at present two horse and two donkey stallions maintained at the expense of the District Board in these tahsils.

No fees are charged for the services of these stallions which are located at District Board stallion stables.

An average quality mare can be purchased at about Rs. 250 while the prices of small village riding ponies, under 13 hands high, range between Rs. 25 and Rs. 60.

Detailed information regarding horse and mule breeding operations in the bound area can be had from the District Remount Officer, Montgomery.

Donkeys.—These animals are generally in the hands of low class people, chiefly, kumhars, mochis and sweepers, who use them as pack animals and make no effort to control breeding. They are of fair size about eleven hands high and of a mixed breed. A good male donkey costs from Rs. 20 to Rs. 25 while the price of a female donkey is about Rs. 15.

Cattle.

The Montgomery (Sahiwal) or Ravi breed of cattle which is famous for its milking qualities throughout India is the old indigenous breed of this district. The breed has long since been

dispersed with the advent of Irrigation works and in its present form is met with along the banks of the river Ravi and in the Dipalpur Tahsil villages.

Chief characters of the breed.—The colour of choice of the breed is red or deep red, but animals of red and white, black and white and *lakha* (light dark) are also common. Typical cows of this breed possess short heads and ears, small horns, an oval shaped body, fine soft skin with big udders and prominent milk veins. The tail is long and pointed almost touching the ground. Cows without horns and prominent umbilicus are said to be the best milkers.

Bulls of the breed have broad forehead, small eyes like an elephant, long muzzle, broad chest and very loose sheath and dewlap. They do not make good bullocks and are very sluggish. The breed is scattered all over the district in the hands of the junglies and cows are exported to all districts in the Province. The milk yield varies between 6 to 15 seers per day.

To help the survival of the breed in this area a special Montgomery Cattle Breeding Scheme has been introduced by the Department in the Dipalpur Tahsil where 65 bulls all bred at the Jehangirabad Grantee Cattle Farm have been concentrated. Besides the above a Dairy Farm located near Montgomery town with an area of 485 acres and carrying 258 head of stock has been granted by Government to Sardar Datar Singh to encourage this breed. The average price of a good Sahiwal cow is Rs. 100 and of a good bull Rs. 80 while a bullock of four teeth can be easily had at about Rs. 40.

Hissar Breed.—Settlers from all parts of the Province have flocked to this district bringing with them their own local types of cattle which are mostly of the Hissar type and suitable for plough purposes.

Chief characteristics.—The most common colour of this breed is grey or dark grey. The animals of this breed possess wide foreheads, medium horns, bright eyes, thin muzzle, broad chest, tight sheath, fine short whip-like tail and fine coat with strong straight legs.

The breed is famous for its draught qualities and the cows make fair milkers.

To encourage this breed amongst settlers there are at present 101 approved bulls working in the district and in addition there are 4 Grantee Farms leased by Government for stock breeding. The area of these farms is 7,499 acres carrying at present some

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1,800 head of stock and 17 approved stud bulls. The average price of a good Hissar cow is Rs. 80, of a good bull Rs. 200 and of a bullock Rs. 100 to Rs. 150.

Buffaloes.

There are two breeds of buffaloes, indigenous to this district, called "Nili" and "Ravi." The names "Nili" and "Ravi" were given to the breeds as these are found along the rivers Sutlej and Ravi respectively (Nili = Blue, referring to the blue water of the Sutlej).

Characteristics of the Nili Breed.—This is one of the finest breeds in the Punjab and is well known for its various qualities. The animals of this breed are mostly black or brown in colour. possess small well-set heads, hollow face with small active eyes. Horns are thick at the base and pointed at the tip and form well-formed rings, commonly known as "Kundi." ears are thin and pendulous and neck is long and thi[illegible] gaining greatly in breadth and depth towards the limits. The tail is well-set and long, almost touching the ground. The legs are comparatively short. There is generally a big prominent udder, with well developed teats about 8 inches long which are a feature of the breed. The skin usually is jet black, sparsely covered with fine hair. The average milk yield is 10 to 16 seers per day. The price varies from Rs. 100 to Rs. 200 for a good buffalo, while the price of a good bull is about Rs. 80.

Buffaloes with white foreheads, while tail and white legs (Panch Kalyan) wall-eyed, and jet black colour form the pure breed and are much sought after.

Ravi breed.

Ravi breed.—This breed is also very famous and is very popular among the Junglies of Montgomery, Multan, Lyallpur, Sheikhupura and Lahore Districts.

General characteristics of the breed.—Mostly black and brown colours are met with in this breed. The breed is chiefly met with along the river Ravi and round about the Bahadurnagar Farm in Mardani, Hassanwala, Khichhian villages and Okara town.

The animals of this breed possess fairly big heads, flat forehead, thick short neck, wide hind quarters, big soft udder with long teats, spiral or dropped horns, thin soft hairless oily skin and long thin tail.

The milking capacity of the breed chiefly depends upon the nature of food and methods of feeding. The milk yield varies from 8 to 15 seers per diem.

A bull of the breed costs about Rs. 70, while a good buffalo from Rs. 100 to Rs. 175.

General methods of feeding.—Herds of buffaloes are grazed during the night on the rough vegetation that grows along the rivers during the summer season. In winter when grazing is scanty, animals are fed various fodders including peas, gram, wheat, barley, methi, senji and shaftal all of which are grown in the Bet ilaqa for this purpose. Concentrates like crushed gram, oilcakes and cotton seed are not fed by village breeders but those who keep one or two buffaloes for milch purposes supplement the ordinary ration with concentrates.

Breeding Operations.—There are at present 2 District Board and 83 privately owned buffalo bulls working in the district. Male buffalo calves ordinarily are destroyed at birth except those out of very good milkers and these are kept for breeding purposes by the Junglies.

Sheep and Goat Breeding.

The Desi or brown-faced, long broad eared Bagri sheep are alone found in this district. Sheep and goats are only kept by the lower classes, there being one or more flocks in each village. As an industry it does not exist in the district owing to the shortage of suitable grazing areas. Sheep are chiefly kept for the purpose of milk and mutton and are sometimes exported to Lahore and Amritsar Districts for the purpose of meat.

The average price of a sheep is Rs. 6, of a ram Rs. 5, of a he-goat Rs. 5, while a she-goat costs about Rs. 7.

Camels.

Both the Bagri and Desi breed of camels are met with in the district. Owing to extensive colonization and introduction of better roads, good camels are becoming rare in the district. The Bagri breed is better liked than the Desi amongst the Junglies.

Chief characteristics.—The ideal Bagri has a lean forehead, with bold and alert eyes, curved neck, wide chest, good forearms with massive quarters which do not slope too much. These animals are rare to find, only "Doglas" which are a cross between the Bagri and Desi are commonly met with.

The Doglas possess a coarse head, with low protruding underlip, neck like a sign post, straight shoulders, elbows tucked in and weak shapeless hind quarters. He combines an uncertain and revengeful temper with loathsome lack of self-control when rutting.

The colours are brown, dun and light red. Brown is the most popular colour. Todas (young ones) only suckle for six months. The female gives its first issue at 4 years and then after every two years.

January to March is time for conception while the period of gestation is about 13 months.

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The average price of a male camel fluctuates between Rs. 100 and Rs. 170, while that of a female between Rs. 90 and Rs. 180.

Pasture grounds.

Owing to canal irrigation, practically all the available land has been brought under cultivation and except for Shamlat Deh there are no grazing areas.

There are only two rakhs in the District under the charge of the Forest Department for the production of firewood. These are situated in the Montgomery and Dipalpur Tahsils under an area of some 19,266 and 9,029 acres. Live-stock are mostly stall-fed except along the river banks.

Fairs and Shows.

There is only one horse fair and cattle show held in the District which is usually in the month of March at Montgomery. The Civil Veterinary Department is endeavouring to start a series of small one-day village shows throughout the District and a beginning will shortly be made.

Besides the officers of the Army Remount Department, a Deputy Superintendent of the Civil Veterinary Department is stationed at Montgomery who holds the dual charge of Multan and Montgomery Districts, under the direct supervision of the Superintendent, Civil Veterinary Dedartment, North Punjab Circle at Rawalpindi.

Operations of the Army Remount Department.

The Editors gratefully acknowledge their indebtedness for the following note to Major A. H. Mackie, M. C., and Major F. P. Denehy, M.C. of the Army Remount Department :—

The Indian Horse and Mule-Breeding Commission of 1900-01 observed in their report that, by utilising the resources of the new Canal Colonies then being established, the Government of India had a unique and unrivalled opportunity of securing a permanent supply of suitable country-bred remounts. The Commission strongly recommended the distribution of land to colonists in the Jhelum Canal Colony on horse-breeding conditions, as such a scheme would admit of breeding operations being carried out on practical, closely controlled, and systematic lines, and would afford an opportunity of demonstrating to the people of the country the material advantages of intelligent stock-breeding.

Eventually a horse-breeding circle was in the year 1903, formed in the Jhelum Canal Colony based on the scheme recommended by the Horse-Breeding Commission. The advantage of the "controlled" system of horse-breeding as imposed on the peasant grantees of the Jhelum Canal Colony was soon apparent and in marked contrast to the "unbound" system in force in all other districts.

Had the Government of India not undertaken any extension of their horse-breeding operations, it is clear that India will have to import yearly large numbers of horses for its peace requirements alone, and without any appreciable reserve to fall back on in the case of an emergency, except by importation from overseas which may be interrupted.

With a view to making India less dependent on foreign markets for military horses and at the same time not losing sight of the economic value of such operations, it was decided to extend the system of "controlled" horse breeding by taking advantage of the opportunity offered by the establishment of the new Colony on the Lower Bari Doab Canal.

It was originally anticipated that sufficient land could be set aside in the Lower Bari Doab Canal Colony to admit of the maintenance of 5,000 horse-breeding and 2,000 mule-breeding grants. Owing, however, to serious reduction in the area of cultivable land available and to other causes, the area which was eventually allotted by the Colonization Officer held a maximum of only some 3,400 horse-breeding rectangles.

Pending the formation of the Lower Bari Doab Colony, the Government of India sanctioned the notification of the Montgomery District as a "selected district" for Horse, Mule and Donkey breeding operations in 1915, and this district was to be administered as part of the Lahore Circle until further orders.

Owing to the War and the shortage of Remount Officers, it was not until January 1921 that an Army Remount Department Officer was posted to this district, which was then termed the Multan Area and comprised the following:—

(*a*) The Dera Ghazi Khan District.

(*b*) The Khanewal, Kabirwala, Mailsi and Lodhran Tahsils of the Multan District.

(*c*) The Okara, Montgomery, Pakpattan and Dipalpur Tahsils of the Montgomery District.

Of which the Okara, Montgomery and Khanewal tahsils were known as the "bound" portion of the "Multan Area."

During 1924-25 the designation of the "Area" was changed from "The Multan Area" to "The Montgomery Area."

At the time of writing (1934) "The Montgomery Area" comprises only three Tahsils, *i.e.*—

(*a*) Okara and Montgomery Tahsils of the Montgomery District.

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(*b*) The Khanewal Tahsil of the Multan District. The whole a narrow strip of land about 150 miles in length and from 15 to 20 miles in width, which is served by the Lower Bari Doab Canal.

All Horse, Mule and Donkey breeding operations in the remaining "unbound" tahsils were discontinued by the Army Remount Department owing chiefly to the poor results through the lack of interest by the breeders and secondly to the necessity of economy.

From January 1921 the District Remount Officer toured the district with the Colonization Officer, distributed land and selected suitable men as horse breeders.

During these tours the District Remount Officer inspected the mares of the District and found that the majority of them were not of a high enough standard to produce Remounts.

According to the terms of a horse breeding grant the tenant was supposed to produce a mare which, if considered up to standard, was branded and accepted by the District Remount Officer.

This, however, was impracticable as a man selected for a grant promptly produced a useless mare for which he had paid a fabulous sum of money. The District Remount Officer then decided the only way to cope with the situation was to purchase mares for the grantees from dealers at an average price of Rs. 500 and this proved successful.

During the same period the Indian Cavalry Runs were done away with, and a few selected mares were purchased by the District Remount Officer and sold to breeders.

In spite of the number of mares produced by dealers and those received from the Cavalry Runs it was found that sufficient suitable mares for horse breeding were not forthcoming to complete the full complement of 3,400. Hence during 1923-24 it was decided to commence mule Breeding and 500 of the grantees whose Chaks were situated at the tail-end of various distributaries where the land was inferior, were selected as mule breeders and good pony mares including Kabuli mares which are eminently suitable for mule breeding were purchased for them through dealers. It was not until 1927 that the full complement (3,400) of mares was reached.

At the commencement of operations in 1921, there was one Stallion Stable in the Lower Bari Doab Canal Colony and that was situated at Montgomery. It was therefore necessary to construct as soon as possible a sufficient number of Stables throughout the Colony to accommodate the Stallions.

During the period 1921-22 fifteen katcha Stallion Stables were erected. These Stables sufficed at the time, but as the number of mares increased and new stallions were allotted to the Area, it was found that they were inadequate. Therefore during 1925-26 steps were taken to construct pucca permanent stables.

The following statement gives the stables and date of construction now present in the Area :—

These are so situated that no mare has more than 12 miles to walk to attend her Stallion Stable :—

No.	Name of Stallion Stable.	Date of construction.
1	Renala Khurd	1927.
2	Chak 50-3 R. (Pir Sachiar)	1927.
3	Shahpur (105-9 L.)	1927.
4	Lumsdenwala (108-12 L.)	1927.
5	Sharifabad (180-9 L.)	1927.
6	Okanwala	1927.
7	Okari (34—14-L.)	1927.
8	Mian Channu*	1927.
9	Daulatpur*	1927.
10	Faridkot*	1927.
11	Jahania*	1927.
12	Montgomery	1930.
13	Chhab*	1927.
14	Shahbore	1928-29.
15	Mamura Kalan*	1928-29.
16	Okara	1931.
17	Kassowal	1928-29.
18	Pakhi (59-5 L.)	1928-29.
19	Qureshiwala*	1931.

The breeding operations have made rapid strides and proved a great success. Large number of horses and mules are purchased from this colony annually by Government, and those which are not disposed of in this way go towards making the country self-contained in War when cut off from other sources and are also available as a valuable contribution to the ordinary economic requirements of the country.

*In Khanewal Tahsil, Multan District.

Benefiting by all experience in the Shahpur Area the law of primogeniture was not enforced in the case of horse-breeding tenancies in the Lower Bari Doab Colony and the scheme whereby selected colonists can lease an additional Government horse-breeding rectangle for a specified period of years has proved far more satisfactory.

By selecting the most suitable tenants for these rectangles, keen horse breeders have been procured, which has reflected favourably on the Horse-Breeding Operations generally.

Turning to a few technical aspects of the industry, a few remarks on the type of mare and stallion maintained in the District are of interest. When the Jhelum Canal Colony operations were commenced, the foundation stock consisted of the pick of the indigenous mares procurable in the country together with a small percentage of mares which had been graded up by breeding operations in the older studs and " unbound " areas such as the United Provinces, Rawalpindi and Baluchistan Areas.

As already remarked on the inauguration of Lower Bari Doab Canal Colony, though good mares in sufficient numbers were not easy to procure in the first instance, a better type of foundation stock was procured than was available when Shahpur Area was started. In addition to a valuable supply of graded-up mares and fillies which came from the latter area and some of the older studs and " unbound " areas, mares were imported from Australia and any imported mares available in the country were also bought up. Apart from the suitable soil good tenants and other favourable elements the rapid success of the horse-breeding operations in the Montgomery Area is largely due to the excellence of the initial brood stock.

No review of the Horse Breeding Operations in the Montgomery Area, however brief, could be complete without a few remarks on the Montgomery Race Club.

Remount Officers in the earliest days of the operations realised the necessity of stimulating the development of fillies, which were eventually destined for the stud, by regular work. In order to ensure this and at the same time impart a valuable knowledge of horsemanship and horsemastership into breeders a race course was established at Montgomery.

In 1923-24, with the assistance of the Civil authorities, and the support of influential Europeans and Indian Gentlemen in the Colony, the D. R. O. formed a Horse Breeding Association. The

Society was supported by over 95 per cent. of the peasant breeders. In the following year a Race Course was laid out round the Fair Ground, and the first meeting was attended by no less than 3,000 spectators.

The keenness of the local population may be gauged by a visit to the course today, where the track, well designed paddocks and stands, compare more than favourably with those of many "up-country" Race Clubs.

The professional element has been discouraged and it is a pleasure to see practically all the starters, owner-trained and frequently owner-ridden.

The success of this indigenous enterprise is remarkable and is proof of the genuine keenness of the Colonists on horse breeding and the fact that they continue to support the racing at Head-quarters in Montgomery is an indication that they realise the benefits which regular work bestows on their stock.

In conclusion, the active co-operation of the Punjab Government, and the part which private individuals and institutions have played in encouraging horse breeding in the Colony is worthy of commendation.

Government have since the inception of the breeding operations given financial assistance in the form of prize money and premiums to the Khanewal and Montgomery fairs.

The following have also given generous donations which have been devoted to the encouragement of local racing and to distribution to breeders in the form of prize money and premiums. :—

W. I. T. C., Ltd.

R. C. T. C.

Sir Victor Sassoon, Bart., K.C.I.E.

Sir C. N. Wadia.

Their generous and public spirited support has not only stimulated the indigenous industry, but financially benefited peasant breeders who owe these donors a debt of gratitude.

(b) Irrigation

With its scanty and precarious rainfall anything like systematic Barani cultivation in this district has always been impossible. Prior to the comparatively recent introduction of weir controlled canal irrigation agriculture depended almost entirely either on artificial irrigation from wells or inundation canals, or on river

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floods (Sailab) or river water lifted by Jhallars (Abi). In those days even wells if unassisted by inundation canals or river floods were, except in seasons of unusually good rainfall, a precarious and unreliable means of cultivation. If at that time the district had had to depend on wells alone it would soon have become an uninhabited desert. With the exception of a few scattered estates in the Bar cultivation was confined to tracts which had in more or less recent times received river floods or irrigation from the Sutlej canals.

Sutlej Inundation Canals.

The Sutlej inundation canals have now as indicated in Part B of Chapter I been merged in the perennial or non-perennial canals of the Sutlej Valley Project. The history of this Project in so far as it relates to the Montgomery District has been briefly discussed in Part B of Chapter I.

Dipalpur Canal.

The Dipalpur Canal has already run for some 40 miles through the Lahore District before it enters the Dipalpur Tahsil, which it does near Bhila Gulab Singh, having first thrown off the Khanwah Branch, which enters the District a few miles north of the main canal. The Khanwah Branch (following in the main the alignment of the old Khanwah Canal) splits at Hujra into the North and South Distributaries, which with their Minors serve the northern portion of the Dipalpur Tahsil, extending a few miles into the North-East corner of Pakpattan. The North-East corner of the Dipalpur Tahsil is reached by the tail of the Chunian Distributary of the same canal. The Dipalpur Canal bifurcates at Rukanpur into the Upper Sohag and Lower Sohag Branches, of which the Lower Sohag is by far the longer and more important, extending far into the Pakpattan Tahsil ; this branch trifurcates at Gurditta into the Para, the Malka Hans and the Nurpur Distributaries, of which the Nurpur is the longest, tailing off in the Arifwala plantation. The irrigation supplied from the Dipalpur Canal is entirely non-perennial, the channels running (river supplies permitting) from about 10th April till early October. The designed irrigation ratio on this system is 3·48 cusecs at outlet head per 1,000 acres of cultivation.

Pakpattan Canal.

The Pakpattan Canal, which has its headworks at Sulemanke, runs for about 12 miles through the Dipalpur Tahsil, but supplies no irrigation till it has run for another 5 miles in Pakpattan. It then throws off, on the left bank, a small non-perennial distributary, the Bhatti, and, a mile further on at Ghumariwala, the important Khadir Branch, which runs along the southern edge of the Pakpattan Tahsil and supplies single-harvest irrigation to that area, and far on into the Mailsi Tahsil as well ; its northern boundary

of irrigation is, throughout most of the Pakpattan Tahsil the old embankment of the Southern Punjab Railway, which, as indicated in Section G below was relaid on a more northerly alignment to serve the perennially-irrigated area of the Colony. After Ghumariwala the main line of the Canal continues in a westerly direction towards the north-West corner of the Pakpattan Tahsil, and throws off distributaries, mainly from its left bank, which (with the exception of two or three serving proprietary villages) supply perennial irrigation to the area north of the Khadir boundary; the most important of the Distributaries are 2-L (Qabula Distributary) which flows past Arifwala and ends north of Jamlera, and 3-L (Fatna Distributary) which is of far larger size and flows on over the Mailsi border. The designed irrigation ratio of perennial channels of the Pakpattan Canal is 2.88 cusecs per 1,000 acres of cultivation; on non-perennial channels the ratio is the same as on the Dipalpur Canal.

Lower Bari Doab Canal.

The history of the Lower Bari Doab Canal has also been discussed briefly in Part B of Chapter I. From the headworks at Balloki this canal for about 30 miles runs sourth-west till it approaches the North-Western Railway line near Renala. Out of this 30 miles approximately the first 20 miles are in the Lahore District. From Renala the canal follows the main watershed of the Doab a course nearly parallel to and north of the railway line. The discharge at the head is 6,750 cusecs out of which the Khanewal Tahsil in the Multan District gets a share. The Okara and Montgomery Tahsils are served by the Gugera Branch and the distributaries 1 to 7-E from the right bank of the canal and distributaries 1, 1-A, 2, 4, 5 and 9 to 14 from the left bank of the canal. Canal irrigation throughout the Okara and Montgomery Tahsils is perennial. On the Gugera Branch the Canal Department aims at an irrigation ratio of 3 cusecs delivered at outlet head for every thousand acres of cultivation. The irrigation ratio throughout the rest of the Lower Bari Doab Canal system is 3.33 cusecs delivered at outlet head for every thousand acres of cultivation. The estates on distributary 1-A on the left bank in the neighbourhood of Renala being uncommanded by flow are irrigated by a hydro-electric pumping system originally installed by the late Rai Sahib Sir Ganga Ram who held the area commanded thereby on lease from Government for a period of ten years in return for his expenditure on the installation. This area with two smaller uncommanded areas on the right bank in the Okara Tahsil, which are also irrigated by electric pumping plants and were originally on lease with the late Rai Sahib Sir Ganga Ram, have now been taken over for irrigation purposes by the Canal Department.

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Wells.

. In the year 1896-97, 10,884 wells existed in the district, of which 9,588 were in use. The wells now in use (1933) number 9,261 distributed over the Tahsils as follows :—

Tahsil.	Number of wells working.	Average acres of pure chahi, 1929-30 —1931-32.
Montgomery	396	5,684
Okara	715	7,439
Dipalpur	5,305	82,819
Pakpattan	2,845	28,481

Recently in the Sutlej Tahsils a considerable number of disused wells in the Bar have come to light in areas allotted to Janglis or other colonists. Such colonists are generally prepared to pay a reasonable sum to Government in return for proprietary rights in these wells. In areas proposed for non-perennial irrigation wells are definitely necessary as a supplement to the Kharif supply from the canals, more particularly to mature the Rabi crop which has been sown in land watered by the canal just before it closed down in the autumn. In such areas, Crown tenants are not eligible to acquire occupancy rights until wells have been sunk in their holdings.

Equipment and capacity of wells.

Water is always raised by the persian wheel and most of the wells are *pacca*, that is lined with masonry. The depth of the wells to the water varies from a few feet near the river to 50 feet or more in the Bar. The cost of a well and the area it can irrigate annually depends very much on the depth of the water. The area a well can water depends so much on the nature of the soil and character of the season, the quality of the cattle employed and the industry of the cultivator that it is not possible to say the area irrigated is so much, neither more nor less. Mr. Purser found the average area in spring was just 8-1/8th acre per yoke in fair average soil with water 25 feet from the surface. This would give about 25 acres as the area irrigated from a well per annum. The area, however, varies in different parts of the district. In the previous Gazetteer when well irrigation was very much more important than it is now, it was found that a fair average would have been 25 acres in Dipalpur, 20 acres in Pakpattan and

Gugera (Okara) and 15 acres in Montgomery. Though if *Chahi Nahri* and *Chahi Sailab* land were included, one well could no doubt irrigate more than 30 acres. The case is altered now. It will be seen from the figures shown above that the actual irrigation per well annually amounts now to about 10 acres in the Okara and Pakpattan Tahsils, something over 14 acres in the Montgomery Tahsil and between 15 and 16 acres in the Dipalpur Tahsil.

Sinking a well.

In sinking a well, a hole rather larger than the proposed brick cylinder is dug down to the sand. This is called *par*. Then a circular frame (*chak*) is laid down in the *par*, and the cylinder of brick and mud, or in rare cases of brick and lime, is built on it. When this has got a few feet above the surface, the sand and earth inside and under the *chak* are dug out, and hoisted up and thrown aside. As the cylinder sinks, it is built up at the top. The excavation, after laying down the *chak* till the water is reached, is called *tor*. It is made by a class of men called *tobas* or *thobas*. The *toba* is armed with a broad heavy pick-shovel like an exaggerated *kahi* or *kassi*. This he strikes into the sand or earth, and when it has got a good grip it is pulled up with its load by those above. When the water is reached the excavation is called *tobai*. On the water becoming deep the *toba* has to dive. The work is very hard, and he is fed in the most sumptuous way. As soon as the cylinder has been sunk deep enough, the parapet is completed, and the wood-work put in its place. There is no fixed depth to which a cylinder should be sunk below the water level. If the *chak* rests on firm soil, a smaller depth will suffice than when the foundation is shaky. In a single-wheeled well the diameter of the interior of the cylinder will be ten to twelve feet, and the thickness of the brick-work from eighteen inches to two feet. Sometimes in sinking a well, hard sticky clay occasionally mixed with *kankar*, called *jillhan*, is met with. If there is much of this, it is found impossible to sink the large cylinder or *kothi* and a smaller one has to be sunk inside it. Similar smaller cylinders are sunk, when the water-level in the well has fallen, or the bottom has given way. They are known as *bachcha*. Wells are built sometimes large enough to allow of two Persian-wheels working at the same time. Such a well is called *wan*. Its cylinder has an interior diameter of about 15 feet. It costs about one-quarter, or as much as one-third more than a single well of the same depth. When water is near the surface, and the supply is good, such double wells are common. But where the water-level is deep tenants dislike working at *wans*; for the men working one wheel may be put to much inconvenience by those at the second wheel driving

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on their bullocks at an extraordinary pace, and so reducing the water-level below the limit reached by the buckets of the first wheel. In this district wells have no springs. They are filled by percolation. In some wells the water-level is never much reduced—the water is then said to be *pakka-pani*. In some the water-level is reduced by ordinary working of the well; the water in this case is called *ubkas*. If a well is not subject to much influx of sand, it is cleaned out once in 10 or 12 years, but otherwise in five or six. The cost is small. As long as the water is shallow, the cultivator does the clearance himself; when it becomes deep, *tobas* are employed. *Kacha* wells are not common. They are found only near the rivers. Sometimes they last very well—four or five years; but two years would be a high average. They are very uncertain, and may tumble in at any moment; and sometimes do, just when they are wanted to mature the crops. From the bottom to a few feet above the water they are lined with a cylinder made of wood, or branches of *pilchi* or *kana*. Such wells are the only ones found in tracts subject to serious inundation, as it matters little whether they are knocked in or not. The irrigation capacity of a *kacha* well is but little inferior to that of a *pacca* well.

Well gears.

The wood-work of a well is called *harat*. This is the ordinary Persian-wheel. It consists of many parts. The size of the wheel depends upon the depth of the well. The larger it is, the easier work for the bullocks. The *jora* or pair of horizontal and vertical wheels are made of *kikar* but on the Ravi *ukhan* is sometimes used. The *mahal* or rope frame to which the buckets are fastened is made of *munj*. A *jora* at the end of last century was reported to cost about Rs. 20 if made of *ukhan* and Rs. 30 if made of *kikar*. Enquiries in the Okara Tahsil made by Extra Assistant Commissioners under Settlement training in 1928 showed that a *jora* cost Rs. 100 to Rs. 120. Now-a-days iron well gear is obtainable and is of course very much more durable. For instance if *munj mahals* are used, 5 or 6 are required in a year, each *mahal* costing about Rs. 10 as opposed to Rs. 2 at the end of last century. Whereas iron buckets are reported to last for about 3 years without replacement. The lifting gear for a well if made of wood together with *mahal*, buckets, etc., costs now-a-days something under Rs. 300. If iron gear is installed instead the cost is only about Rs. 100 more. The size of the bucket depends on the depth of the well: the deeper the well the smaller the bucket.

Jhallars.

A *jhallar* is merely the Persian-wheel of a common well transferred to the bank of a canal, the margin of a *jhil* or the high bank of a river or creek. A small pool is excavated immediately below

the *jhallar* to collect the water, and afford the wheels a sufficient surface to work upon. As almost the whole expense consists in the wood-work, *jhallars* are constructed and abandoned again without materially affecting the prosperity of the zamindars. They are met with in favourable situations on the Ravi and Sutlej, but the cultivation depending on them in these situations is very precarious. In the case of an ordinary *jhallar* the water is much nearer the surface than in an average well, and so the *jhallar* will irrigate much more than the well; at least half as much more. Cultivation by *jhallar* from a river or *budh* is known as *Abi* cultivation. *Jhallars* are sometimes installed to lift the water on to uncommanded land from a canal distributary or water-course with the permission of the Canal Department. The cultivation in these circumstances is recorded as *jhallari*.

The following statement shows the number of *jhallars* working in 1933:—

	Montgomery.	Okara.	Dipalpur.	Pakpattan.
On rivers or *budhs*	63	32	70	38
On canal distributaries or water-courses	6	16	2	..

Method of well working.

The following observations on the methods of working a well from the previous Gazetteer are interesting, though the area in which pure *chahi* irrigation is done is now not very important. Most of the best cultivators have migrated into the canal irrigated areas and the wells are mostly very lightly worked.

> "A *kamil*, or thoroughly found well, has six yokes of two bullocks each. In some cases there are as many as eight yokes, but the average is under six. If the well is fully yoked, there are, as a rule, more than one set of cultivators. In this case they take turns at irrigating. These turns are called *waris* or *baris*. The length of each *bari* depends on the number of yokes and the aridity of the soil. The more yokes the longer each *bari*, the drier the soil the shorter each turn. The length of the *bari* is generally six hours in Montgomery, 12 hours in Pakpattan and Gugera, and 24 hours in Dipalpur. If there are eight yokes at a well, each will work one *pahar* or three hours; if there are six, three will work during the day, the others during the night. If there are four yokes, each works one *pahar* and a quarter; and when the fourth yoke has done its work, the first begins again. Four yokes can keep the well

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going day and night. Less than four cannot. A well with six yokes will irrigate about 5 kanals, or 5/8th of an acre of fair *gasra* land in 24 hours, when the water is 25 feet from the surface but very much depends on the seasonal conditions; if there has been good rainfall, 6 or 7 kanals can be watered. The deeper the water and the more sandy the soil, the less the area irrigable. About one acre of *sikand* could be irrigated by the same well in the same time, but less thoroughly owing to the slower rate of percolation downwards in *sikand* as compared with *gasra*. During the hot months irrigation is carried on only during the night. In the cold weather each homestead well is a small village in itself. The cultivators with their families, cattle and goats, reside at it. Sheds are put up for the cattle, and feeding troughs prepared; fodder is collected in circular stacks made of cotton stalks (called *palla*); the oratory or *tharha* is put in order and strewed with straw; and every one settles down to five months' hard work. And standing out in a slushy field in one's bare legs, a couple of hours before sunrise on a January morning, with thermometer marking 10 degrees of frost, opening and closing the water-courses leading into the little beds into which the fields are divided, is not the work those people would choose for themselves who are fond of calling the natives lazy."

Areas irrigated.

The following statement shows for the year 1932-33 the total areas entered in the records of each Tahsil as irrigated. Perennial and non-perennial canal irrigation, irrigation by wells and irrigation by *Jhallars* have been shown separately. A comparison of this statement with the statement on page 182 above will show that only in the Pakpattan Tahsil is the area entered as *Chahi* normally fully cultivated annually :—

Tahsil.	Total cultivated area.	Total area under perennial canal irrigation.	Total area under non-perennial canal irrigation.	Total area irrigated by wells.	Total area irrigated by *jhallars*.
	Acres.	Acres.	Acres.	Acres.	Acres.
Montgomery ..	452,669	440,114	..	6,764	960
Okara ..	315,660	297,389	..	11,365	229
Dipalpur ..	282,028	..	104,639	154,002	1,365
Pakpattan ..	342,624	134,100	104,806	27,318	491

Canal water rate.

The sum charged to the irrigator on account of the canal water supplied by Government is called Occupiers' Rate or Abiana. This is levied at each harvest at a rate varying in accordance with the crops grown and matured in each acre sown. Rates of Abiana are notified from time to time by Government in exercise of the powers conferred by Section 75 of the Northern India Canal and Drainage Act. A schedule for the Lower Bari Doab Colony was published in Public Works Department, Irrigation Branch Notification No. 0474-R. I., dated the 14th July 1931. Irrigation from this Canal in the Ravi Tahsils is all perennial. The important rates per acre matured are: Sugarcane, Rs. 12; Rice Rs. 7-8-0; Cotton, Rs. 6-4-0, wheat Rs. 5-4-0, oilseeds Rs. 4-4-0 and fodder Rs. 1-8-0. If arrangements for lifting water from canal distributaries or water courses have to be made by the irrigator, he pays only half rates. Perennial irrigation in the Sutlej Tahsils is subjected to similar rates. The substantive notifications are Irrigation Branch Notifications Nos. 1198-R. I., dated the 9th November 1926 and No. 0280-R. I., dated the 26th September 1927. Such amendments as there have been later are concerned to amplify the definition of fodder crops and to ensure that certain crops ploughed in as green manure before 15th September are not assessed to water rates.

Non-perennial channels in the Sutlej Tahsils are assessed to a special schedule of water rates. These include the entire Dipalpur Canal and on the Pakpattan Canal the Khadir Branch and the Distributaries named Chak Dogar, Bhatti, Rahmanki, Tabbar, Salimkot, Jiwan Shah and Shaffi. The schedules for these channels show a Rs. 10 rate for sugarcane instead of Rs. 12, and considerably reduced rates for all Rabi crops. Wheat for instance is charged Rs. 2-8-0 instead of Rs. 5-4-0.

Remissions for failed crops.

These charges are calculated for every holding at each harvest by a staff of Patwaris and Zilladars maintained by the Canal Department, and they are generally payable unless there has been a complete failure in the field in question. Standard rules for remissions of occupiers' rate were published in Irrigation Branch Notification No. 0252-R. I., dated the 12th July 1929. Two types of remission are contemplated, (1) casual remissions of the total Government demand over areas not less than one acre in extent where the crop is found to be so nearly a complete failure that the cultivator can recover nothing beyond the seed and the bare costs of cultivation; (2) remissions over large areas in the case of widespread calamities. Remissions of the second type present little difficulty as the effect of a widespread calamity such as a

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hail storm is not open to much dispute. The other type of remission which is dealt with at every harvest is a much more troublesome matter. The practical point which the canal inspecting officer has to decide in respect if each field for which an application for remission is put up, is whether the crop in that field amounts to less than 25 per cent. of the normal crop, the normal crop being interpreted as one giving a yield equal to that adopted by the Settlement Officer for the crop in question when framing his half nett assets estimates. It should be observed that these ordinary harvest to harvest remissions cover not only Abiana, but also land revenue, Malikana and cesses. There are now no partial remissions in the Ravi Tahsils. In the Sutlej Tahsils there are some channels on which cultivation is not yet considered to be sufficiently developed to justify the full application of the standard rules. Here special arrangements of a more or less temporary nature are in force, assuring the cultivator of more generous treatment, a somewhat less rigorous interpretation of "failure" being permitted. Originally in Irrigation Branch Notification No. 0155-R. I., dated the 24th June 1929, it was laid down that in case of widespread calamities in the Sutlej Tahsils on the Pakpattan or Dipalpur Canals, if it was believed that over a considerable area an average crop in the particular season was more than a four anna, but less than an eight anna crop, half remission might be granted and whole remission if it was believed to be less than a four anna crop. It was added that owing to irrigation on these canals not having yet become stable, special rules should be applied temporarily, the effect of which was that it was the zilladar's duty to grant remission according to the 4-anna—8-anna rule whenever due whether it was claimed or not. Subsequently these special rules by Irrigation Branch Notification No. 1875-S./Rev., dated the 28th June 1933, were limited in their application to certain specified channels in the Bar division of the Pakpattan Canals.

Acreage rate.

It has always been the settled policy of Government in connection with canal construction that all charges for the digging of water-courses and building of culverts over them, should be borne by the irrigators and not by Government. In the Ravi Tahsils all water-courses and culverts were made by Government and the expenditure was recovered from the irrigators in the form of acreage rate charged at Re. 0-8-0 per assessed acre in each harvest. This charge might more properly be called "construction rate," the term acreage rate being liable to cause confusion. Collections under this head in the Ravi Tahsils have been discontinued since the 1st of April 1929, as it has been calculated that

the total sum to which Government is entitled has been reached. In the Sutlej Tahsils, when colonization started, an estimate was prepared of the probable expenditure in the whole colony on culverts, water-courses, etc., and the charge per allotted acre was fixed at Rs. 8. This was either payable in a lump sum when the land was allotted or in eight half-early instalemnts totalling Rs. 4-4-0. As regards proprietary villages it was believed that the owners would be prepared in their own interest, where remodelling of water-courses was considered necessary, to pay the same charges. If they were not prepared to do so, it was directed that they should be given the option of doing the work themselves in accordance with the Department's requirements. But in 1929 numerous representations having been received, it was decided that in proprietary areas no culverts should be constructed for the present and that the acreage or construction rate should be fixed at Rs. 1-10-0 per acre of the gross culturable area within the Chakbandi, if paid in a lump sum, or Rs. 1-12-0 per acre recoverable in 8 equal half-yearly instalments in the case of those who preferred to make payments by instalments.

Costs of sinking a well.

Mr. Purser in 1870 gave a very detailed report of the costs of sinking a well. For a well 40 feet deep, one mile from the brick kiln, he estimated an inclusive charge of Rs. 300-7-6. The account begins with an item of Re. 1-4-0 for Gur for good luck and ends with Rs. 2 given in charity. Calculations made by officers undergoing training in the Lower Bari Doab Colony settlement in 1928 indicated that the average cost of sinking and equipping a well was something over Rs. 1,500 excluding the cost of bullocks, and that subsequent maintenance charges, again excluding bullocks, and without reckoning interest on the capital cost of the cylinder, were some Rs. 146 per annum of which some Rs. 33 per annum had to be borne by the proprietor and the remainder by the tenant. These sums of course do not represent cash payments as much of the labour and materials are supplied free locally. Confirmation of this estimate is supplied by the British Cotton Growing Association of Khanewal, in the Multan District, who sunk a number of wells in the Mailsi Tahsil near the border of the Pakpattan Tahsil in 1929-30. These were pacca wells with iron *mahls* and several have tubes a couple of hundred feet down to tap lower water. These wells cost just under Rs. 1,600 each. The cost of labour and materials has decreased in the last few years. The member of the British Cotton Growing Association who supplied the above figures estimates that the same wells would now cost Rs. 1,300 to Rs. 1,400 each and that a good pacca well with iron *mahl* and equipment could now be sunk to a depth of 60 feet to 80 feet for about Rs. 1,200. Wells recently sunk on 6-R., bricks being pro-

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cured from Montgomery (five or six miles away) and much of the labour being provided by the zamindars themselves are reported to have cost Rs. 1,000 to Rs. 1,100 each.

Kachha wells.

Kachha wells can probably be sunk at a cost of few hundred rupees. These are only of use where the water level is high, for instance near the river. Normally the cultivators who are going to use them supply most of the labour themselves and find the materials on the spot, so that the actual cash expenditure is negligible.

Section B.—Rents, Wages and Prices.

(a) Rents.

At the time of Mr. Fagan's settlement cash rents were practically unknown in the district. Rent was almost universally taken n the form of *batai* or actual division of the produce. This is still the case outside the canal irrigated area.

Cash rents, Ravi Tahsils.

In the area irrigated by the Sutlej Valley Canals it is difficult as yet to generalize regarding standard cash rents. In the Ravi Tahsils though cash rents have been more or less common since the Lower Bari Doab Canal started to run, agricultural economics have passed through so many vicissitudes, especially in the last few years, that here too it is impossible to lay down any reliable standard. In 1927-28 6 per cent. of the cultivated area in the Okara Tahsil and 14 per cent. of the cultivated area in the Montgomery Tahsil were cash rented. In each Tahsil rents varied within very wide limits. But in all cases they have this feature in common that the rents fixed represented net profits to the landholders, all costs of cultivation and all the Government demand, land revenue, Abiana, etc., being met by the lessee. During the prosperous years of agriculture between the Great War and the recent economic depression, there were lands, for instance near Renala in the Okara Tahsil, which brought in a clear profit of Rs. 52 per acre to the landholder. In 1927-28 in the Ganji Bar Circles in the Okara and Montgomery Tahsils, that is to say, the circles in which there was practically no old proprietary land, the average cash rents were respectively Rs. 26 and Rs. 20 per acre. In those days Rs. 10 per acre was considered to be an exceedingly poor rent for canal irrigated land. But from 1930 to 1933 there has been a very considerable fall in renting values in these Tahsils. An investigation of the cash rents taken and offered in the course of these three years shows that the average cash rent per acre in the Ganji Bar circle in the Okara Tahsil fell from Rs. 23-8-0 to Rs. 11 and in the Montgomery Tahsil from Rs. 18 to Rs. 10. It should, however, be understood that since the economic depression started and agricultural prices dropped, holders of good land have been less and less ready to lease it on cash rent. When

prices were high cash rents were a convenience to proprietors who were too busy in other ways, or too lazy to supervise personally the cultivation of their lands, or to grantees who were not compelled to reside on their grants and who preferred to stay in their old homes. In such cases if the land was good and a satisfactory rent could be obtained the landholder preferred to accept it. *Batai* rents imply a certain amount of supervision, more particularly at harvest time when the produce is being divided. But when prices of agricultural porduce are low and the cash rents obtainable correspondingly meagre, holders of good land who previously drew satisfactory rents for them, are driven in their own interests to take *Batai* rents instead. Absentee landholders who previously lived in their old homes and regularly drew fat rents from their colony holdings, find that a sleeping interest in agriculture under such conditions is not enough. So that in the past few years not only has the area under cash rents decreased in comparison with the previous period, but out of the area so rented there is a much smaller proportion of good land than there used to be. It would be generally true to say that landholders in present circumstances do not let out their lands on cash rents unless compelled to do so by special reasons. One form of compulsion which not uncommonly leads to cash renting now-a-days is the necessity for ready money which can only be obtained in return for a lease of agricultural land to the money-lender. In the case of such forced leases as this it is not to be expected that the rents fixed will be generous.

Sutlej Tahsils.

In the Sutlej Tahsils prior to the introduction of irrigation from the Sutlej Valley Canals, cash rents were practically unknown except in the neighbourhood of Pakpattan (non-perennial area). In the ordinary course of events, the advent of controlled irrigation, in particular on perennial canals, would have been followed by the introduction of cash rents; but the condition of prolonged agricultural depression which has prevailed in the early years of colonization has operated to prevent their introduction, and the *batai* system is still prevalent. Cash rents, where introduced, have not exceeded Rs. 100 to Rs. 150 per rectangle per annum in the perennial area, the Government demand being paid by the lessee. Cash rents for valuable non-perennial land close to Pakpattan have varied from Rs. 10 to Rs. 15 per acre, but in the Dipalpur Tahsil the small area under cash rents only paid from Rs. 3 to Rs. 4 per acre, land revenue being payable by the landlord.

Produce rents. Ravi Tahsils.

Produce rents in the canal irrigated area in the Ravi Tahsils are almost universally half and half throughout, that is to say,

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the landlord takes half the produce, pays half the land revenue and Malikana and half the Abiana, and sometimes supplies half the seed. Sometimes a landlord also takes an additional share of produce called Malikana or *kharch*. This may vary from 1 to 2½ seers per maund.

There is considerable variation from well to well as regards *Batai* rates in *chahi* lands. At last settlement the normal rate in the Montgomery Tahsil for well-irrigated crops was said to be ⅓rd and in the Gugera (Okara) Tahsil ¼th. Rates in the Okara Tahsil are still more generous than in Montgomery. Probably the average rate in Okara can fairly be taken to be 1/4th of all produce except fodder and bhusa, of which the landlord gets no share at all. On the other hand, the landlord takes 2½ seers per maund from the common heap as Malikana. In the Montgomery Tahsil it would be fair to assume that the landlord takes ¼th of all produce including fodder and *bhusa*. In all cases in both Tahsils, the landlord pays the Government demand and the tenants supply their own seed. In *Barani* and *Sailab* cultivation, the landlord takes ⅓rd or 2/5th in the Okara Tahsil and ½ in the Montgomery Tahsil. In *Abi* cultivation in the Okara Tahsil, the landlord takes ⅓rd, but the tenant keeps all the fodder he wants for the cattle working the *Jhallar*. In the Montgomery Tahsil the landlord takes ⅓rd of the produce except fodder and approximately ⅙th of the fodder.

Sutlej Tahsils.

In the Sutlej Tahsils, throughout the perennial area, the system in half *batai*. In the non-perennial areas, the rates are as follows :—

	Khadir Branch.
Kharif ..	.. The same as in the perennial area.
Rabi ..	.. The landlord takes one-third share.
	Dipalpur Canal.
Nahri ..	.. Crown waste area. Half *batai*. Proprietary area. The landlord takes one-third.
Chahi-Nahri	.. The landlord takes one-fourth in both Crown waste and proprietary areas.
Chahi ..	.. The landlord takes either one-foruth or one-fifth, according to the quality of the soil.
Sailab ..	.. The landlord takes one-third share.
Barani ..	.. The landlord takes one-third share.

In the proprietary estates on the Dipalpur Canal, the advent of the Sutlej Valley Canals has made no difference in the rate of *batai*.

On the Khadir Branch the *batai* in Kharif has become half, whereas it used to be approximately what it is at present in the proprietary estates of Dipalpur Canal.

(b) Wages in the village.

There are no large labour centres in the Montgomery District. Probably the most important type of wage earner is the village artisan or menial, who is generally paid in kind at harvest time. In new colony estates members of these classes are attracted to the *abadi* by small temporary grants of Crown land near the village *abadi*. For the purposes of the recent settlement in the Lower Bari Doab colony an enquiry was made into the dues paid to such persons in the Okara and Montgomery Tahsils. The *Tarkhan* (carpenter), *Kumhar* (potter) and *Lohar* (blacksmith) are more or less common to every village. In addition to these, payments are made to reapers, winnowers and cotton pickers. Of course the *Kumhar* (potter) is more important in *chahi* lands where he makes pots for the Persian-wheel, than in *Nahri* lands. Other minor servants who are paid at harvest time are the village *Nai* (barber) and *Mochi* (cobbler), while payments are also made to the servant incharge of the mosque or other religious building, and sometimes to charity. All these charges vary from village to village. In *chahi* lands the *Tarkhan* and *Kumhar* may draw 3 maunds of rice or maize in the Kharif and 5 to 6 maunds of wheat in the Rabi per well. The *Lohar* will get about half the above. The winnower (*Kaman* or *chhajji*) may get 1 seer of rice per maund and one seer of wheat per maund, with 2½ seers thrown in for each heap. The reaper may get 1½ maunds of rice per acre in the Kharif and 1½ maunds wheat in the Rabi. In lands other than *Chahi*, the *Tarkhan* and *Lohar* may get 10 seers of rice in the Kharif and 25 seers of wheat in the Rabi per plough. The winnower and reaper draw the same wages as in *Chahi* lands. The cotton picker gets about 1/12th of the total produce picked. After a thorough enquiry and comparison of the scale of wages paid in separate villages in each circle, it was found that the share from the gross produce which was normally paid to village artisans and servants amounted to something between 10 and 12 per cent. Since the fall in prices of agricultural produce, landholders have been able to economise to some extent over this expenditure. Reapers and cotton pickers have not been engaged unless they were absolutely necessary—the landholder and his family wherever possible doing the work themselves. Where casual labour has been employed the amount paid has been reduced not less than 50 per cent. All payments to

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village artisans and servants made in kind come from the common heap and thus fall equally on the landlord and the tenants. The practices here described hold good with small variations in the Sutlej Tahsils also.

Wages and surveys.

Since 1912 regular wages surveys have been held in the Punjab every five years. A preliminary survey was held in 1909. The results of these surveys including that of 1909 in so far as they reflect on the wages of rural labourers and artisans in the Montgomery District are shown in the following table :—

	UNSKILLED LABOURER BY DAY.		Carpenters by day.	Mason by day.	Ploughmen by month.
	Range of typical rates.	Most common rates.			
	Annas.	Annas.	Annas.	Annas.	Rupees.
1909	5—8	6	16	16	6
1912	5—6	6	16—20	16—20	6—12
1917	7—8	8	16—22	18—20	8—16
1922	9½—12½	12	24—36	28—36	12—20
1927	7½—12½	12	24—36	24—40	9—19
1932	4½—8½	6	14—24	16—24	6—12

It will be seen that the wages in the last Survey, *viz.*, that of 1932 correspond very closely with those prevailing in 1909 to 1912. In 1912 the Director of Land Records considered that the wages reported from Montgomery were unexpectedly low in view of the fact that the excavation of the Lower Bari Doab Canal was then in progress and there must have been a great demand for labour. In 1917 the effects of the Great War become apparent. At that time the cost of living, mainly due to a general rise in prices, had gone up very considerably. In the Punjab in general the Director of Land Records found that there had been an increase of nearly 30 per cent. in the labourer's average expenditure on food, while the rise in the price of cloth and other important items of expenditure in the labourer's family budget had been greater still. On the whole he considered that the increase in wages had not kept pace with the increase in the cost of living. The Survey for 1922 was found to indicate a further general rise in prices together with a tendency to abandon conformity to a typical wage. It was found that though there was still a fixed rate for unskilled labour in a particular village, it tended more and more to have a competitive rather than a customary value. "Moreover," says the Director of Land Records, "in villages where the land-owning

tribe is hard working their menials tend to work hard and remain occupied and command a high price for their labour. While in villages of idle zamindars the menials also tend to be idle and get less wages." 1927 saw the pendulum swinging again in the other direction. As compared with 1922 the average price of staple food-grains in the Punjab had fallen by about 16 per cent. and wages fell accordingly. Another reason for this fall in wages was the growing tendency among zamindars to prefer direct cultivation to getting their land cultivated by others. An important contributing factor was the increase in unemployment owing to the dullness of trade. 1932, as indicated above, shows a return to pre-war conditions. Unemployment has gone up very considerably, direct cultivation has increased, and the members of the menial class who in years of agricultural prosperity took to working on the land had reverted to daily labour.

(c) Prices of staple food-grains.

The staple food-grain throughout the district is now wheat. Millets such as Jowar and Kangni and the pulses, Moth, Mash and Mung, may sometimes be used in the winter when the farmer's stock of wheat is exhausted. Gram is eaten to a certain extent either parched or in the form of *dal*. As an index of food prices it will be sufficient to consider wheat and gram.

Prices of these grains rose steadily from Annexation to the peak of the agricultural boom in 1921 after the Great War. Mr. Purser in the seventies of the last century made a careful enquiry by studying the books of village shopkeepers into the prices actually realized by the cultivators from 1842 to 1871. During this period the average price of wheat was Re. 1-2-0 per maund and gram Re. 0-12-0 per maund. In the nineties of the last century for commutation purposes in the Ravi Tahsils the price of wheat was taken at Rs. 1-13-0 per maund and of gram Re. 1-5-0 per maund. In the Sutlej Tahsils the corresponding prices were Re. 1-11-0 for wheat and Re. 1-3-0 for gram. Prices continued to rise and in the five years before the Great War, 1910 to 1914, wheat varied from Rs. 2-5-0 to Rs. 3-4-0 per maund and gram from Re. 1-8-0 to Rs. 3-4-0.

In the early days the inhabitants of the district were not really much benefited by the rise in prices. Mr. Purser observed :

" In 1871 Mr. Roe, the Settlement Officer, gave it as his opinion that the increase in price of late years has arisen from a diminished supply, and not from an increased demand. I have lived in the *parganah* during the whole time that these high prices prevailed, and I know, from what I have seen with my

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own eyes, that the condition of the agriculturists has been one, not of prosperity, but of very great distress. It would also seem at first sight that the construction of a railway right through the heart of the district must have greatly benefited the people. No doubt it would have done so, had the agriculturists had any surplus produce to export; but as they had barely sufficient for their own consumption, the opening up of new markets was practically useless. In fact, in one way the railway has injured them; for it has led to a much stricter conservancy of the Government jungle; formerly the zamindars obtained all the wood they required free or almost free. Now they have to pay for it, and get it with difficulty; besides this the subordinate conservancy establishment greatly increases their indirect taxation."

In pre-colony days the district was permanently hard up, cash expenditure was limited mainly to the Government demand on account of land revenue. The cultivators in the riverain and the nomad graziers of the Bar just managed to support themselves and their dependants on the produce of their fields or of their flocks and herds. But when first the inundation canals in the Sutlej Tahsils and then the Lower Bari Doab Canal in the Ravi Tahsils brought prosperity to the district, money became more plentiful and wheat and gram came to be sold for export purposes. Consequently the prices in the district came more to be regulated by prices in the Punjab as a whole. Before 1912 the harvest price of gram was generally under Rs. 2 per maund. In 1912—1915 it rose to Rs. 3 and in 1920 to Rs. 4-3-0. It fell to Rs. 3-8-0 in 1925 and in 1933 was down to Rs. 2. The Census Report of 1931 shows that in the province the average price of wheat from 1911 to 1920 was over Rs. 4 per maund. While from 1921 to 1929 it never fell below Rs. 4 and rose in 1921 to Rs. 7-8-0.

It was of course realised that special circumstances connected with the Great War were mainly responsible for this and that such very high prices were not likely to be permanent. In the settlement of the Sutlej Tahsils in 1921-22 for commutation purposes the price of wheat was taken at Rs. 2-12-0 per maund and of gram at Rs. 2. The Sutlej Valley Project Canals had not then started running, but even so the prices were conservative. In 1928 for commutation purposes in the Lower Bari Doab Colony after careful enquiries into Mandi prices and village prices it was considered that the price the cultivator would normally get for his wheat could be fairly fixed at Rs. 3-10-0 per maund and for gram at Rs. 2-12-0 per maund. At that time these prices were also on the conservative side.

From 1930 onward in the wake of worldwide economic depression agricultural prices fell to levels which they had not touched for thirty years or more. At one time in 1931-32 the village price for wheat in some parts was as low as Re. 1-4-0 per maund. The 1933 wheat harvest was a very bountiful one, but prices held up better than was expected, partly owing to a short harvest in the United Provinces. The average price for which the cultivator sold his wheat in the villages was probably in the neighbourhood of Rs. 2-8-0 per maund.

Very little wheat is now exported overseas. Surplus wheat has recently gone more eastwards to the United Provinces than westward to Karachi. While of the wheat that does go to Karachi a considerable proportion is intended for transport by sea to Calcutta—sea transport right round the peninsula being cheaper than rail transport over land.

The commutation prices per maund finally approved for the Lower Bari Doab Colony Settlement were Rs. 3 for wheat and Rs. 2-2-0, for gram as compared with 1933 harvest prices averaging Rs. 2-10-0 and Rs. 2 respectively. But it was not the intention of Government to take the full demand justified by the commutation prices adopted unless and until prices improved (See Chapter III, part C.)

(d) Standard of living.

In pre-colony days a large proportion of the residents in the district had hardly got beyond the pastoral stage in civilization. They supported themselves largely on their flocks and herds and had small opportunity to use money for any purpose. In the riverain areas and in the towns or larger villages no doubt conditions were more or less the same as in the rest of the Punjab; but throughout the upland areas of the Ganji Bar and the Nili Bar expenditure on dress, housing and household furniture was practically nil. Canal irrigation has changed all that. Colonization started with the Great War and from 1914 to 1924 the development throughout the district in the general standard of living was phenomenal; but this standard was not maintained for long. Economic conditions began to droop in 1928 to 1929. By 1933 the normal small holder had exhausted most of his savings and had been compelled to cut down his expenditure to the minimum, while the village shopkeeper and money-lender was some times in even harder case, having financed in the prosperous years loans for which there was now no hope of early recovery and being himself unable to repay the loans which he himself had taken from more important financiers in the towns for the purpose. It has come to be realised now that the boom following on the years of the war was in the nature of things a feverish and evanescent phase, and that the subsequent slump, though painful,

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was still inevitable. The material condition of the people may probably now be described more properly as normal than it could have been at any time in the last 15 years.

The middle classes.

Probably the middle-class clerk on a more or less fixed wage has gained less from the boom and has by compensation suffered less from the slump than other classes of the community. He was probably given some sort of compensation in the big towns when prices were particularly high; but similarly his wages have been subject to cuts since prices fell. His standard rose after the war to some extent but his wages rose at the same time, and now in spite of temporary cuts in his wages he is still able to keep things going more or less satisfactorily. As compared with the cultivator he is compelled to spend a considerably larger proportion of his income on dress, housing and household furniture. Clothing for himself and his family may cost him something about Rs. 100 a year. For housing he may have to pay Rs. 5 to Rs. 8 a month. Some of the more prosperous clerks own their own houses which may be worth round about Rs. 2,000 each. In the house the living room or *baithak* may contain a few chairs, a bed and a table costing Rs. 10 or Rs. 15 in all. Along the wall opposite to the entrance there is generally a *parchhatti* or shelf fixed into the wall which is reserved for the surplus pots and pans worth say Rs. 15. In the adjoining room there is a similar shelf provided with covered tins containing grain, sugar and other eatables. One part of the inner room is set aside for kitchen and bath room, though cooking is generally done outside in the courtyard during the summer. Clothing and valuables are generally kept in a large tin box in the inner room. He believes in the motto 'Early to bed and early to rise'. A great part of the day he of course spends in the office. For amusements he depends on an occasional show at the cinema, games of football and hockey, festivals and cattle fairs. He probably does not spend much more than Rs. 15 a year on amusements. It is noteworthy that the middle class clerk is particularly anxious to have his children well educated, and as he generally lives in the town, he is able to do so more or less economically.

Farmers.

Cultivators form by far the largest class in the district. The cultivator's cash income is now-a-days exceedingly small. The Board of Economic Enquiry has been producing recently most valuable accounts of farm economics in the Punjab. A farm in the Montgomery district is dealt with in the publication of this Board entitled "Farm Accounts in the Punjab" for the years 1930-31 and 1931-32. We find that the total surplus available for a landlord of 25 acres in the year 1930-31, after allowing for

the cost of cultivation and management, was Rs. 320, nearly Rs. 13 an acre. In the following year on a farm of 48 acres the landlord's surplus was nearly Rs. 600 (something over Rs. 12 an acre). In the former year on a 25 acre farm the tenant appears to have got into debt, while on a 48 acres farm in 1931-32 the tenant made a modest profit of nearly Rs. 6 an acre. It will be seen that the cultivator has not very much margin for luxuries. He has to keep back for himself and his family approximately three seers of flour a day, say 36 maunds of wheat, worth Rs. 60 to Rs. 70 at present prices. His personal clothing costs him probably about Rs. 13 a year. Clothing for his wife will cost about the same. He does not spend much on clothing for his children who until they are ten years old wear little or nothing. The cultivator, whether tenant or proprietor, generally lives in houses made of mud. The roof may be made of mud or reeds resting on rough hewn beams of wood. In the ordinary colony village each resident cultivator is allotted a site measuring 2 kanals. This is generally shut in by mud walls. A beginning is made by building a hut consisting of one room and further rooms of the same type are added as the family increases. There is generally a separate shed for cattle, except in the case of jangli cultivators who commonly keep their cattle in their fields. The cost of setting up a house of this nature is probably not more than Rs. 60 to Rs. 70, and the cost of upkeep is negligible. Apart from the necessary number of beds for the family and guests, the furniture consists mainly of earthen pots for storage, brass and aluminium pots and pans kept on shelves in the walls and a few miniature beds for sitting on. Bedding for an average family probably costs Rs. 30 and furniture and utensils Rs. 15 to Rs. 20. The cultivator spends practically nothing on amusements.

Artisans.

The wages of the landless day labourer have been approximately halved in the last five years. The skilled labourer draws Re. 1-6-0 to Re. 1-8-0 where he used to draw Rs. 2-12-0 to Rs. 3 and the unskilled labourer Re. 0-5-0 or Re. 0-6-0 instead of Re. 0-12-0 or a rupee. No doubt the purchasing value of the rupee has increased but so has unemployment. It is said that at present an unskilled labourer will now sometimes work in rural areas for no return other than his food. He has practically no credit. His clothing and necessaries probably do not cost him much more than a few rupees a year. His amusements such as they are cost him nothing. The skilled labourer is in a somewhat different position. He sometimes earns as much as a middle class clerk. Probably about half of his income goes in food, 15 per cent. in clothing and 15 per cent. in housing and furniture. It will be seen that the margin for luxuries is insignificant.

Section C.—Forests.

The following note on Forests in the Montgomery District has been supplied by Sardar Sahib Sardar Bahadur Singh, Divisional Forest Officer, Montgomery Forest Division. He is an expert on the subject of irrigated plantations on which he has recently published a valuable handbook.

Types of forests in Montgomery District—their areas and situation.

There are two types of forests in Montgomery District, namely :—

(1) Scrub forests known as dry *rakhs* and (2) artificially raised shisham plantations.

Some 20 years ago the dry *rakhs* covered 555,959 acres area (*viz.*, 64,575 acres Reserved Forest and 491,384 acres Unclassed forest) in the Montgomery District. Under the colonization scheme 553,998 acres area has since been disforested and the rest 1,961 acres area (*viz.*, 1,611 acres Reserved Forest and 350 acres Unclassed Forests) still continues to be under the control of the Forest Department. These latter areas are situate near Harappa between Ravi river and the old Lahore-Multan road.

The dry *rakhs* being the indigenous Punjab plains forests served both as fuel and fodder reserves to the benefit of the people. With the spread of irrigation the wood-bearing areas having thus almost disappeared necessitated the establishment of irrigated plantations, their primary object being to ensure the supply of firewood and timber to meet the growing needs of colonists and other important market centres. The following statement gives the areas reserved for the formation of plantations in the Montgomery District :—

Serial No.	Name of plantation.	Situation.	Area in acres.		Punjab Government Notification reserving the areas.
			Gross area.	Net area to be planted up.	
1	Chichawatni ..	Montgomery Tahsil. Situated on Lahore-Karachi Railway line, near Chichawatni.	11,539	9,085	No. 19293, dated 1st September 1919.
2	Arifwala ..	Pakpattan Tahsil. Situated on Montgomery-Arifwala road, near Kamir and Kote Kanugo.	9,839	(a) 3,000	No. 11146, dated 31st March 1931.
3	Dipalpur ..	Dipalpur Tahsil. Situated on Montgomery-Dipalpur District Board road near Pipli Pahar.	9,537	(a) 3,000	No. 22771, dated 7th July 1931.

(a) The available supply of water from Sutlej Valley Project Canals cannot irrigate more than 3,000 acres in each plantation.

Of the three plantations—Chichawatni plantation has come into bearing and is being worked under a proper Working Plan since 1931-32. Under the provisions of the Working Plan about 2,200,000 cubic feet stacked firewood is being annually exploited which finds market at Lahore and Amritsar; the timber trees which are at present left standing along *khals* and compartment roads will be ready in another 40—60 years' time.

Apart from production of fuel and timber the plantations provide:—(1) grass for local requirements, (2) grazing of cattle owned by neighbouring villagers, (3) employment to 400 men daily and (4) substantial revenue to the State; for instance, Chichawatni plantation, which has reached maturity, will yield Rs. 1,15,000 gross revenue and a surplus of Rs. 43,000 per annum over 9,085 acres net planted area.

Species contained in each type of forest as well as minor forest produce with their economic uses.

The following is the list of species growing in each type of forest with their economic uses:—

(1) DRY *RAKHS*.

(*a*) *Trees*.

1. Jand (*Prosopis spicigera*, Linn).—This is the principal tree of the dry *rakhs* growing either pure or mixed with its other associates (Nos. 2-4). It is an excellent firewood and is readily sold. The foliage is much lopped for fodder as also the pods, and the sweetish pulp around the seeds is eaten green or dry, raw or cooked in times of famine.

2. Karir (*Capparis aphylla*, Roth).—The wood is hard and compact—least affected by white-ant; used locally for beams and rafters and agricultural implements. The flower, buds, ripe and unripe fruits are pickled. The ripe fruits called "*delas*" are greedily eaten by people.

3. Van (*Salvadora oleoides*, Dcne).—The wood being light and loosely grained is not fit for firewood and is thus left standing while clearing land for cultivation. The fruits called "*pilus*" are eaten by people and the leaves lopped for fodder for camels.

4. Farash (*Tamarix articulata*, Vahl).—It is a fairly good firewood and grows gregariously on saline soils and depressions. The wood is used locally for ploughs, well-curbs and turnery.

5. Kikar (*Acacia arabica*, Willd).—The tree grows rather sparsely in the rakhs, but is largely cultivated in the fields. The wood is hard and is used for agricultural implements. The foliage and pods provide fodder for sheep and goats; when lightly lopped or pollarded it reproduces itself and gives no injurious shade while standing amongst agricultural crops.

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6. Ber (*Zizyphus Jujuba*, Lamk).—A medium sized and almost evergreen tree grows in *rakhs*; used for agricultural implements. The tree is much lopped for fodder and fencing the fields; the fruit is eaten by people.

7. Pilchi (*Tamarix dioica*, Roxb).—A medium sized tree or shrub; grows gregariously along Ravi river and depressions. Used locally for fuel and making baskets.

(*b*) *Minor forest produce.*

1. Kana (*Saccharum Munja*, Roxb) and Kahi (*Saccharum spontaneum*, Linn).—are amongst the important minor forest produce; these grow along Ravi river in areas subject to inundation. The upper leaf-sheaths of the flowering stems yield fibre (*munj*) used for coir matting and for making ropes. Kana is used locally for roofing.

2. Grasses which spring up after rains afford good fooder to the cattle. The common grasses which grow in *rakhs* are:—(*i*) Dab (*Eragrostis Cynosuroides*, Bean). It is coarse and tufted grass; grows in damp localities subject to inundation; not a good fodder; it is sometimes difficult to eradicate from cultivated lands. (*ii*) Chhimbar (*Eleusine flagellifera*, Nees). It is a good fodder grass; unlike *khabal* it grows rather taller and the flowering spikes are comparatively much shorter and thicker. Generally grows on sandy loam but tolerates to some extent *kallar* soil. (*iii*) Khabal (*Cynodon Dactylon*, Pers). It is one of the best grasses for fodder; commonly grows on good soil, (*iv*) Gharam (*Panicum antidotale*, Retz). A tall grass 3-5 feet high; the stem being woody and thick. It is not, therefore, relished by cattle except buffaloes. (*v*) Lunakh (*Sporobolus arabicus*, Boiss). An inferior kind of grass, generally grows on saline soil. It is not a good fodder grass and is eaten only in the absence of better quality grasses. (*vi*) Swank (*Panicum Crus-galli*, Linn) A good fodder grass; grows on loam or sandy loam soils. The grain is eaten by poor people (*vii*) Khawi (*Andropogon laniger*, Dasf). A tufted and scented grass; the roots called *khas* are used for making *tatties*. Generally grows on saline soil. As a fodder it is not very much appreciated (*viii*) Palwan (*Andropogon annulatus*, Forsk). A good fodder grass and makes fine hay. Grows on rich soil (*ix*) Mohrak (*Fimbristylis dichotama*, Boeck). Commonly grows in low lying areas where water collects. It is small low growing grass with double stem and hardy bulb of a persistant nature. It is fairly good fodder grass.

3. Amongst weeds the commonest are:—(1) Malla (*Zizyphus nummularia*, Lamk). It is a thorny shrub largely cut and used for

fencing fields. The leaves are lopped for fodder and the fruit called *mallas* is greedily eaten by people (*ii*) Lani (*Salsola fœtida*, Del) and Lana (*Suæda fruticosa*, Forsk). These grow in saline soil and are very common in waste lands. These form the favourite fodder for camels. (*iii*) Bhakhra (*Tribulus terrestris*, Linn). It is a small shrub ; the fruit usually breaks into five pieces containing hard spines which punctures bicycles and bites while walking bare-footed. The fruit is used in medicines and is considered to be tonic (*iv*) Bathu (*Chenopodium album*, Linn). It is common weed which grows after rainy season. In moist soils it attains sometimes 8—10 feet height (*v*) Jhingan (*Sesbania aculeata*, Pers). It is a leguminous shrub which grows abundantly in fields from the seed carried by water. It is a useful fodder relished by both horned cattle and browsers. (*vi*) Harmal (*Peganum Harmala*, Linn) is a perrenial plant ; grows commonly in waste and fallow lands, (*viii*) Ak (*Calotropis procera* R. Br.) commonly grows on waste land. Goats eat the leaves and the wood is burnt. At one time there was great demand of the fibre which the pod contained and (*viii*) Sufed Buti (*Blumea lacera*, D. C.) and Pili Buti (*Pulicaria crispa*, Benth) are common weeds which grow in moist localities.

(2) IRRIGATED PLANTATIONS.

(*a*) *Trees.*

1. Shisham (*Dalbergia Sissu*, Roxb) artificially raised by means of canal irrigation and forms the principal species in the plantations. Produces firewood in 15—18 years rotation and timber 40—60 years ; the firewood finds ready market in Lahore and Amritsar ; the timber trees used for roof beams, *karries*, wheels, boats, carts and other agricultural implements ; the wood burns into charcoal.

2. Mulberry (*Morus alba*, Linn) largely introduced by water or birds forms the lower storey during first rotation. Yields very valuable timber, largely used in the sports industry at Sialkot for tennis racquets, hockey sticks and cricket bats, etc., and fetches Rs. 2 to Rs. 4 per cubic foot.

3. Kikar (*Acacia arabica*, Willd) originally introduced in *kallar* soils now grows in patches in Chichawatni plantation. Owing to its mortality by fungus and frost the species has no future in the plantations.

4. Farash (*Tamarix articulata*, Vahl). This species is being introduced in Arifwala and Dipalpur plantations where water supply from Sutlej Valley Project Canals is inadequate and irregular.

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5. The other species which form only a small proportion of the growing stock are:—(1) Khair (*Acacia Catechu*, Willd), (*ii*) Siris (*Albizzia Lebbek*, Benth), (*iii*) *Eucalyptus rudis*, Endl, (*iv*) *Eucalyptus rostrata*, Schl, (*v*) Bakain (*Melia Azedarachta*, Linn). These species are so small in number that they can hardly be of any economic value at present.

(*b*) *Minor forest produce.*

Amongst grasses those of great economic value to the people and the Forest Department are:—(*i*) Chhimbar (*Eleusine flagellifera*, Nees), (*ii*) Khabal (*Cynodon Dactylon*, Pers), (*iii*) Dhaman (*Pennisetum Cenchroides*, Rich), (*iv*) Swank (*Penicum Crus-galli*, Linn) and (*v*) Palwan (*Andropogon annulatus*, Forsk). While others of less importance are (*i*) Lunak (*Sophorobolus arabicus*, Boiss) (*ii*) Gharam (*Panicum antidotale*, Retz) and (*iii*) Khawi (*Andropogon laniger*, Dasf).

The common weeds which grow in plantations are (*i*) *Sarkana* (*Saccharum Munja*, Roxb), (*ii*) Bathu (*Chenopodium album*, Linn), (*iii*) Ak (*Colotropis procera* R. Br). (*iv*) Sufed Buti (*Blumea lacera* D. C.), (*v*) Lani (*Salsola fœtida* Del), (*vi*) Bui (*Kochia indica*) and (*vii*) Jhingan (*Sesbania aculeata*, Pers) removed by villagers free of any charge for fodder in large quantities.

System of management, control and disposal of produce.

The afforestation scheme in each plantation is drawn up combined with temporary cultivation. Annually about 500 acres area is taken up for afforestation and the rest is leased out for temporary cultivation subject to the condition that the lessee has to surrender the area to be afforested each year in good time to allow trenches to be dug therein. Consequently the unplanted area leased for cultivation brings in revenue and, as the afforestation scheme progresses each year the area under temporary cultivation gets gradually decreased till finally planted out. In this manner, the afforestation is practically done out of the revenue realized from temporary cultivation. In this respect the actual figures of Chichawatni plantation show even a surplus of Rs. 4,92,041 at the close of the formation period after defraying all costs of afforestation and establishment.

For the purposes of control each plantation is divided into Blocks of 2,500 acres each. A Block consists of 4-5 irrigation Chaks commanded by one or two outlets or *Moghas*. A unit of control is a compartment which measures about 50 acres or two squares each. In each compartment *Khals*, *Pasels* and trenches are dug according to different system of lay out. *Khals* draw water from an irrigating Main emanating from each outlet. When water flows, the *khals* irrigate *Pasels*, which in their turn irrigate trenches alongside which trees grow and flourish.

When a plantation has reached maturity, which period is usually taken 15—18 years in the case of Shisham crop, the trees are cut wholesale from each compartment under a silvicultural system called " Clear felling " subject to the reservation of certain trees left over for the production of timber. The felled trees now regrow into thick crop without any artificial aid by means of coppice shoots and root-suckers. In the second rotation, however, the cost of maintenance of the plantation is considerably reduced and the surplus increased by production of mulberry timber.

The crop on maturity is realized by selling trees either standing on contract system or by departmental exploitation. The former is the system at present in practice in the Montgomery Forest Division, whereby the purchaser pays for the wood cut and stacked by him at his own cost and sells by exporting the same to important towns such as Lahore and Amritsar where whole of the produce is consumed.

Agricultural customs; supply of local needs; use of fodder in scarcity; grazing of cattle, use of firewood, &c.

The population surrounding the plantations largely consists of Mohammadans—the original inhabitants of pre-irrigation days called " Janglies " and a large number of Military grantees and *abadkars* of all races, who have migrated from other Districts.

These people are entirely agriculturist and depend on plantations for the supply of grass, which is sold to them on permit system—the quantity used being about 360 tons per annum. In a year of scarcity and drought several thousands of cattle are kept alive on the fodder and leaves available from the plantations. The grazing of cattle is another boon which the Forest department has conferred upon the people since 1931. During the last 2 years about 8,000 cattle were admitted annually for grazing in the plantations. A small quantity of thin firewood is also being used by villagers as also by ginning factories at Chichawatni town. At present the population of the new towns in the Ganji Bar and *Nili Bar* colonies gets enough wood for their consumption from the remnants of dry *rakhs*, which still exist in the cultivated lands; but the demand must eventually fall on plantations in a few years time when these remnants have been cleared.

The small area of the dry *rakh* left at present under the control of Forest Department provides fodder, fuel, timber for agricultural requirements and grazing of cattle on lease system.

Fire protection.

The routine measures about fire protection are being consistently enforced in all kinds of forests. The fire-lines are being kept clear of inflammable material in plantations where there is danger from fire. The clearing of *kana* grass from all the plantations has minimised danger from fire to a very great extent.

CHAP. II, D. Minerals.

As a consequence of this and of fire protection measures no fire of any serious nature has taken place within the last 5 years.

Section D.—Minerals.

There are no mines and mineral resources of any importance in the district. A certain amount of saltpetre is recovered in the Okara tahsil, and if there were a sufficient market for it, saltpetre could probably be found in many parts of the district; but the demand for it is small.

Section E.—Arts and manufactures.

(a) Hand industries.

The district is not conspicuous for its arts and manufactures. There is no mill in the district manufacturing cloth. Ordinary country cloth known as Khaddar is woven on handlooms in nearly every village. In towns and large villages, *e.g.*, Pakpattan, Malka Hans, Kabula, Dipalpur, Hujra, Attari, Haveli, Basirpur, Harappa and Fatehpur cotton carpets, sheets and *lungis* are made, but these articles are only sold locally. In the old villages and in such parts of the colony as has been allotted to local grantees weaving is done by *Paolis*. The immigrant colonists have brought their own weavers with them. The work of the indigenous *Paoli* has the better reputation.

The printing of cloth in various coloured patterns for use in quilting or for women's clothing is carried out by the dyer class (*Chhimbar*). This work is not done extensively.

The only regular factory for cotton and woollen goods, *e.g.*, carpets, rugs and blankets is in the Central Jail at Montgomery, but most of the products of this institution are supplied on indent to Government departments.

Most of the jewellery and metal work of any value is imported. There is an industry of sorts connected with the manufacture of tin boxes and trunks in Montgomery, Okara, Chichawatni and Arifwala. Large tin boxes are becoming popular for the preservation of cloth goods. Prices of such boxes vary from Rs. 5 to Rs. 25 and the materials are imported from Amritsar and Karachi. Such material is imported into Montgomery to the value of Rs. 3,000 annually.

Wooden bodies for motor lorries and tongas are made in Montgomery and Arifwala to some extent, while household furniture of a simple nature is made in Montgomery, Okara, Arifwala, Pakpattan and Chichawatni. The usual woods used are Deodar and Shisham. Deodar comes from Jhelum or Wazirabad and Shisham from Chhangamanga forest plantation. The woods

mostly used by village carpenters are Kikar (*acacia*), Okan (Farash) and Shisham. Kikar and Okan are readily obtainable locally.

(*b*) Factory industries—cotton factories.

The commonest type of factory in the district is that concerned with the ginning and pressing of cotton. A list of the factories at present in existence with details of the work done in the past 3 years is given below:—

Name of factory with year in which started.	1930-31.		1931-32.		1932-33.	
	Cotton ginned.	Cotton pressed.	Cotton ginned.	Cotton pressed.	Cotton ginned.	Cotton pressed.
	lbs.	lbs.	lbs.	lbs.	lbs.	lbs.
1 Rai Sahib Dhanpatrai-Dewanchand, Montgomery, 1919 ..	2,900,000	2,900,000	3,506,800	3,506,800	2,597,200	2,597,200
2 Japan Cotton Factory, Montgomery, 1919 ..	1,998,800	1,998,800	1,340,000	1,340,000	1,427,600	1,427,600
3. Rai Sahib Dhanpatrai-Jowaladas, Montgomery, 1919 ..	3,049,200	3,049,200	1,762,200	1,763,200	1,926,000	1,926,000
4 Lala Gopalshah-Nathumal, Chichawatni	2,789,080	2,789,080	..	..	1,996,848	1,996,848
5. Ganasingh-Bahadursingh, Chichawatni	..	..	1,990,184	1,990,184	1,988,616	1,988,616
6. Amirchand-Jowaladas, Chichawatni	Not available.					
7. B. C. G. A. Cotton Factory, Iqbalnagar, 1924	1,230,000	4,100,000	..	..	3,034,000	1,025,000
8. Wassuram-Dilbaghrai, Nurshah, 1924	..	..	..	..	..	..
9. Sandagarmal-Mohrisheh, Nurshah, 1925	..	..	..	..	..	..
10. Kirparam-Brijlal, Okara, 1915 ..	91,656	9,648	67,754	7,132	74,272	7,818
11. Fatehchand-Ramditta Mal, Okara, 1915	100,682	10,598	31,758	3,324	108,138	11,383
12. Edulji Dinshaw, Okara, 1923 ..	92,026	9,687	33,382	3,514	44,640	4,699
13. Bhai Dial Singh, Okara, 1919 ..	33,250	3,500	28,500	3,000	23,750	2,500
14. Krishna Factory, Okara, 1919 ..	74,100	7,800	75,060	7,901	82,650	8,700
15. Birla Brothers, Okara, 1925 ..	95,352	10,037	106,400	11,200	115,558	12,164
16. Sir Gangaram-Balakram Okara, 1918	61,926	6,308	33,012	3,475	29,374	3,092
17. Hampur Cotton Factory, Dipalpur, 1894	581,369	..	209,499	..	..	..
18. Krishna Factory, Dipalpur, 1933..	..	..	..	..	112,500	..
19. A. C. Ice and Cotton Factory, Pakpattan, 1927 ..	760,000	..	..	..	647,890	646,000
20. Bikram Cotton Factory, Arifwala, 1931	..	..	1,793,094	1,793,094	3,387,218	3,387,218
21. Dhanpatmal-Jowaladas, Arifwala, 1927	5,397,012	5,397,012	5,255,172	5,255,172	3,529,846	3,529,846
22. Edulji Dinshaw, Arifwala, 1927 .	6,328,822	6,328,822	1,601,610	1,601,610	1,948,330	1,948,330

CHAP. II, E. Arts and Manufactures. (c) Others.

The factories at Nurshah were opened in 1924-25, but after working for 2 or 3 years they were closed again owing to quarrels among the owners.

There are two ice factories one at Montgomery and another at Okara. The cotton factory at Pakpattan has also an ice making plant, while Messrs. Dinshaw at Arifwala also make ice for local consumption.

The Military Farm at Okara exports bhusa for military purposes to Bannu, Kohat, Abbottabad, etc. They turn out approximately 300,000 lbs. a year.

Saltpetre is manufactured at various places in the Okara, Montgomery and Dipalpur Tahsils and there is a refinery at Okara which turned out 400 lbs. refined petre in 1930-31. The outturn in 1932-33 has fallen to 1,200 lbs. Saltpetre is exported to Karachi, Bombay and Madras through Messrs. Ralli Brothers.

(d) Labour.

While the cotton factories are working, labourers from the United Provinces and from other parts of the Punjab migrate into this district. Most of the skilled labour comes from Lahore, Gujranwala, Amritsar and Sialkot. Unskilled coolies come from the United Provinces or are recruited locally from village menials. The average wages paid last year (1932) for this work are reported to have been as follows :—

Class of work.	Sex of worker employed.	Rate.
		Annas.
Filling opener with uncleaned cotton	Male	8
Carrying from opener to ginning machine.	Male	10
Ginning	Female	5
Pressing	Male	8½

Section F.—Commerce and Trade.

Commodities.

The principal imports into the district include sugar, rice, seeds, salt, kerosine oil, timber, iron, leather, cigarettes,, piecegoods and machinery. The exports are entirely limited to raw products of which the principal are wheat, gram, cotton, toria and hides. Some Mohammadans, generally Sheikh by caste, have dealings in hides and leather ; otherwise trade, both import and export, is in the hands of the Hindu community.

The principal trade routes in the district are the two railway lines running east and west through Montgomery and Pakpattan respectively. Lorry traffic is on the increase. The Sutlej Tahsils are particularly well served with a through metalled road. Most of the cross-roads communicating north and south of the railway line are unmetalled. There is, however, a good metalled road between Pakpattan and Montgomery and between Okara and Dipalpur and lorries are used to a considerable extent on these roads; while they can at a pinch find their way over most of the district provided the unmetalled roads are not flooded by canal or rain water.

Routes.

Section G.—Means of Communication.

(a) Railways.

There are now two lines of Railway running through the district, both in the general direction east to west. The most important is the Main Lahore-Karachi line of the North-Western Railway which enters the district near Wan Radha Ram and runs through Okara, Montgomery and Chichawatni, leaving the district near Iqbalnagar. The second line is the Sutlej Valley Branch, running from Amritsar *via* Kasur in the Lahore District to Lodhran in the Multan District. This enters the Dipalpur Tahsil east of Kot Hira Singh, and, running through Basirpur, Pakpattan and Arifwala, leaves it west of Mana or Chak Shah Niwaz. Before the War, the line after leaving Pakpattan followed a more southerly alignment through Kabula. During the War, it was dismantled and the rails sent to Mesopotamia for military use. On their return, a more northerly alignment was decided on in view of the approaching colonization of the Bar area of the Pakpattan Tahsil. Branch railways linking Montgomery and Pakpattan and Dipalpur and Okara have been projected from time to time; and recently sanction was accorded to a branch from Lyallpur crossing the Ravi near Gugera and running through Okara, Dipalpur and Haveli (Wasawewala) to cross the Sutlej at the Suleimanki Weir and join the Ferozepur-Samasata line at Chananwala. Financial stringency has hitherto prevented this project being put in hand. The construction of the Lahore-Karachi main line appears to have been the main justification for the removal of the headquarters of the district from Gugera to Montgomery or Sahiwal as it was then called. At that time as Mr. Purser pointed out* the railway was not of very great commercial value to the cultivators in the Montgomery District. They had practically no produce to export, while conservation of fuel for the railway deprived them of their principal source of firewood in the Rakhs of the Ravi Tahsils. Canal ir-

*Cf. Ch. II, Part B (c).

CHAP. II, C. Means of Communication.

rigation has now changed all that. All the Mandis of any importance are situated on one or other of the two railway lines which gives them direct access to Karachi on one side and to the Central Punjab on the other.

(b) Roads.

The last edition of the Gazetteer (1898-99) has the following paragraph :—

> "There are no metalled roads ; but as there is no wheeled traffic, the want is not felt. The district is traversed in all directions by fine broad unmetalled roads, some of which were cut through the jungle at the expense of the people, after the unsuccessful insurrection of 1857."

Few pictures could more vividly illustrate the development that has taken place in the last thirty years than that given in this paragraph. Taken over the district as a whole, the road communications are still poor by modern standards, but the mileage of metalled roads is now 271, there is heavy motor traffic over most of these roads, and an insistent demand for an extension of metalling. The bullock cart is now universal throughout the district.

The principal roads of the district are as follows :—

List of Roads under Montgomery Provincial Division.

Name of Roads.	Mile from	To	Metalled.	Unmetalled.	Total.
I.—Arterial Roads.					
1. Lahore-Multan-Quetta Road, Arterial No. 4 ..	59·03	143	52·85	31·12	83·97
2. Link Road in Montgomery ..	..	..	0·72	..	0·72
3. Delhi-Multan Road, Arterial No. 6	264	337	42·25	30·75	73·00
4. Montgomery-Arifwala-Qabula Road, Arterial No. 26 ..	1·59	36·12	34·54	..	34·54
5. Montgomery-Pakpattan Road, Arterial No. 27 ..	1·91	28·5	26·59	..	26·59
6. Jaranwala-Okara Road, Arterial No. 32	1·24	17·87	10·06	7·61	17·67
7. Toba Tek Singh-Chichawatni-Burewala Road, Arterial No. 39	30·35	61·02	16·12	14·55	30·67
Total Arterial Roads ..	..	..	183·13	84·03	267·16
II.—Other Roads.					
1. Fatna-Jamlera-Mana Road ..	0	26·32	22·60	3·72	26·32
2. Arifwala-Trikhni Road ..	1·03	8·60	7·57	..	7·57
3. Railway Station Harappa to Protected Area, Harappa ..	0	4·25	..	4·25	4·25
4. Civil Station Roads, Pakpattan	..	..	1·83	..	1·83
Total other roads ..	..	..	32·00	7·97	39·97
GRAND TOTAL ..	..	..	215·13	92·00	307·13

Metalled or partially metalled roads in charge of the district board are :—

No.	Name of road.	Metalled		Unmetalled.	
		Mls.	Flgs.	Mls.	Flgs.
1	Lyallpur-Tandianwala-Gugera Okara-Dipalpur	18	1	18	..
2	Sayyadwala-Renala Khurd-Shergarh-Hujra-Attari ..	10	5	37	5
3	Gugera—Satgara-Renala Khurd	5	5	12	4
4	Halla-Akbar-Kaureshah-Montgomery	8	..	35	4
5	Montgomery-Dipalpur ..	2	5	28	3
6	Montgomery-Mirdad-Harappa..	4	6	7	..
7	Okara-Akbar	3	..	12	..
8	Chichawatni—Mudhial ..	3	5	13	..

Road administration.

The Executive Engineer of the Public Works Department, who is in charge of road construction in the district has contributed the following note:—" In schemes of colonization earlier than the Nili Bar the method of providing communications had been to leave the construction of roads to follow in a leisurely way in the wake of colonization with the result that absence of reasonable facilities of communications in the earlier years had increased the hardships and difficulties of pioneers. With a view to alleviate these hardships and counting on better prices for sales of land in return, Government decided in the case of the Nili Bar to construct proper metalled or surfaced feeder roads to serve various mandi towns.

This division was initially constituted as the Nili Bar Communications Division to prepare and carry out projects for roads, buildings and mandi towns included in the Nili Bar Colony Scheme. The charge of Civil Works under head " 41—Transferred—voted " as far as the civil district of Montgomery is concerned, was transferred with effect from 15th January, 1926, from the Multan Provincial Division to the Nili Bar Communications Division, which was later on styled Montgomery Provincial Division, which is its present name. An Executive Engineer is in charge of it and he is assisted by a Sub-Divisional Officer at

CHAP. II, E. Means of Communication.

Montgomery for the execution of works of Government Buildings and Roads in the Montgomery district.

"Besides the roads constructed out of the Nili Bar Project certain arterial roads were taken over from the district board in pursuance of the policy by which the province becomes responsible for the construction and maintenance of all arterial roads. The work of improving, metalling and surfacing these arteries in the Montgomery district, also devolved on this Public Works Department Division."

(c) Ferries.

None of the canals or other waterways in the district are used for purposes of navigation. Not even on the Ravi or Sutlej rivers is there any boat traffic except for a certain number of ferries on each river which are controlled by the District Board. The following is the list of such ferries :—

RAVI RIVER.	SUTLEJ RIVER.
Okara Tahsil.	*Dipalpur Tahsil.*
1. Qila Bhaman Singh.	1. Ford Wah.
2. Jhando.	2. Chuhar Mahtam.
3. Piralli.	3. Khewa.
4. Mari Jhambra.	
Montgomery Tahsil.	*Pakpattan Tahsil.*
1. Khai.	1. Bhila Maleka.
2. Alam Shah.	2. Ahloka.
3. Mehr Shahana.	3. Malkana.
4. Qutab Shahana.	4. Bhallo.
5. Hakim ke Kathia.	5. Shahanwali Momeke.
6. Dadra.	6. Nura Rath.
7. Jand.	7. Bhuk.
8. Muhammad Shah.	8. Madho.
9. Haveli Tara.	9. Bilara Dilawar.
10. Chichawatni.	10. Jamlera.
11. Nawab ke Kathia.	
12. Jhalar Dina Tulla.	
13. Daduana.	
14. Bhusi.	
15. Kikri Sher Shah.	

(d) Posts and telegraphs.

If the area subsequently removed from the Montgomery District be excluded, there were only 25 post offices in the district in 1898. The only telegraph offices in those days were at each station on the main Lahore-Multan line and at Pakpattan. There is now one head post office at Montgomery and in the district 16 sub-offices and 135 branch offices. The sub-offices are located

as follows :—(The number of branch offices grouped under the Montgomery head office and each sub-office are shown in the second column.)

	Number of Branch offices.
Montgomery Head Post Office	12
Sub offices.	
Montgomery City	..
Montgomery Kutchery	..
Dinpur	7
Rajkot (Chak 16-11 L.)	12
Chichawatni	5
Kassowal	8
Iqbal Nagar	8
Okara	19
Renala Khurd	21
Colesar	8
Dipalpur	..
Haveli	2
Basirpur	9
Pakpattan	8
Pakpattan Mandi	..
Arifwala	16
Total ..	135

Out of the above Post Offices in the following cases a telegraph office is combined with the Post Office :—

1. Montgomery Head post-office.
2. Dinpur.
3. Chichawatni.
4. Kassowal.
5. Iqbal Nagar.
6. Okara.
7. Renala Khurd.
8. Dipalpur.
9. Pakpattan.
10. Arifwala.

There are of course also telegraph offices at all railway stations.

Section H.—Famine.

The earliest record of a serious scarcity of food stuffs in the District dates from 1868. But there does not then appear to have been very widespread mortality. Orders were issued that if any unemployed labourers came to Montgomery employment would

1868

CHAP. II, H. Famine.

be found for them. Various Government works were undertaken. For instance, in the Montgomery Tahsil work was started on a road from Qabula towards Delhi and a canal was dug connecting Montgomery with the Sukhrawa drainage. Some new canal cuts were also made in the Okara Tahsil, while Tahsil and Thana buildings were erected at Hujra and a "customs" bungalow on the district boundary in the Pakpattan Tahsil. At the same time a number of zamindara works were undertaken in the way of sinking wells, installing jhallars and arranging for drainage. These works appear to have been financed by Taccavi. Subscriptions were collected for relief to the sick and needy.

1895—1902. Again from 1895 to 1902 there appears to have been more or less constant scarcity. It is recorded that a large number of Bikaniris came into the district to find food and many of them died on the way. Relief works were undertaken in 1896. The Sohag Canal was widened and the Malka Hans and Dhapai canals were excavated. In 1899 a charitable relief fund was set up.

Present day. Since perennial irrigation came with the Lower Bari Doab Canal the district is as secure against famine as any district can be.

CHAPTER III.—ADMINISTRATIVE.

Section A.—Administrative Divisions.

Administrative Divisions.

Organisation.

The executive and revenue administration of the District is under the control of the Commissioner, Multan Division, whose headquartes are at Multan. The judicial head is the District and Sessions Judge, Montgomery, who has also a considerable volume of work from the Lahore District and whose headquarters are, therefore, in Lahore. In order to assist the Deputy Commissioner in the administration of the Sutlej tahsils a sub-division consisting of Dipalpur and Pakpattan tahsils was formed in 1911. The Sub-Divisional Officer has his headquarters at Pakpattan.

During the last 20 years portions of the District have been so constantly under settlement or colonization and the changes brought about thereby have been so extensive, that it is impossible to say now what is the *normal* headquarters and sub-divisional staff. Since the colonization of the Lower Bari Doab started in 1913 there has only been a single year (1923-24) when the Deputy Commissioner controlled the whole district without the assistance of a Settlement or Colonization Officer.

Revenue work.

At present the Deputy Commissioner as Collector has at headquarters a Revenue Assistant and a Colony Assistant (Lower Bari Doab Colony only). These officers both exercise powers as Collector in some departments of their work. Similarly at Pakpattan the Sub-Divisional Officer exercises most of the powers of a Collector.

Tahsils.

The Montgomery Tahsil comprises 530 villages. The Tahsildar is assisted by one Naib-Tahsildar at headquarters and one Colony Naib-Tahsildar at Chichawatni. The subordinate revenue staff consists of 6 Kanungos and 128 Patwaris. This tahsil is a heavy charge. Since the Kamalia Ilaqa has been transferred to the Lyallpur District sub-division into two tahsils will probably be unnecessary. But a Naib-Tahsildar at Chichawatni is expected to be a permanent necessity.

The Okara Tahsil comprises 383 villages. The Tahsildar is assisted by one Naib-Tahsildar at headquarters and one Colony Naib-Tahsildar at Renala. The post at Renala is only temporary. The subordinate revenue staff consists of 4 Kanungos and 76 Patwaris

The Pakpattan Tahsil comprises 671 villages. The Tahsildar is assisted by one Naib-Tahsildar at headquarters and one at Kabula. The subordinate revenue staff consists of 6 Kanungos and 109 Patwaris.

CHAP. III, D.

Administrative Divisions. Tahsils.

The Dipalpur Tahsil comprises 548 villages. The Tahsildar is assisted by one Naib Tahsildar. The subordibate revenue staff consists of 6 Kanungos and 93 Patwaris.

Tahsildars all exercise powers as II Class Magistrates and as Assistants Collectors, II Grade, while Naib-Tahsildars exercise powers of a III Class Magistrates and Assistant Collectors, II Grade.

Nili Bar.

In the Nili Bar the Colonization Officer, whose headquarters are at Pakpattan, is assisted by an Assistant Colonization Officer and two Extra Assistant Colonization Officers. He also controls four Colony Naib-Tahsildars whose headquarters are at Gaggu, Arifwala, and Malka Hans in the Pakpattan Tahsil and at Dipalpur in Dipalpur Tahsil. It must be remembered that the greater part of the Nili Bar Colony lies in the Multan District and that, therefore, the colony superior staff is larger than would be required for the area in Montgomery District alone.

Criminal work.

The Deputy Commissioner as District Magistrate is assisted at headquarters by an Additional District Magistrate and two General Assistants. The Colony Assistant, Revenue Assistant, and the Treasury Officer also transact magisterial work. All these magistrates exercise I Class powers and one of them in addition to the Additional District Magistrate has powers under section 30 of the Criminal Procedure Code. The Sub-Divisional Officer at Pakpattan has powers under section 30 of the Criminal Procedure Code, summary powers under section 260 of the Criminal Procedure Code and power to hear appeals from the orders of the II and III Class Magistrates in his sub-division. It is probable that a I Class Magistrate will be required at Pakpattan to assist the Sub-Divisional Magistrate before long.

There are the following Honorary Magistrates :—

(1) Chaudhri Mahla Singh, exercising II Class powers at Okara ;

(2) Khan Bahadur Fazal Dad Khan, exercising II Class powers at Kot Fazal Dad Khan near Yusufwala ;

(3) Hafiz Khalil-ul-Rahman, exercising II Class powers at Montgomery ;

(4) Baba Harbans Singh Bedi, exercising III Class powers at Montgomery.

The Colonization Officer, the Assistant Colonization Officer and the Extra Assistant Colonization Officers at Pakpattan exercise criminal powers in connection with colonization duties, but they are seldom used.

CHAP. III, A.

Administrative Divisions.

The District Judge is assisted by one Senior Sub-Judge exercising I Class powers at Montgomery, one Sub-Judge with III Class powers and one Sub-Judge with IV Class powers at Montgomery, and one Sub-Judge with IV Class powers at Pakpattan.

Civil work.

Police arrangements are discussed in part H of this chapter. Jail administration is discussed in the same part.

Police and Jails.

The estate of Baba Harbans Singh Bedi has recently been taken under the superintendence of the Court of Wards. The Court of Wards also administers a small estate possessed by one Abdulla Khan comprising parts of 8 villages in the Pakpattan Tahsil. A manager is employed on a salary of Rs. 30 a month plus Rs. 10 horse allowance. The annual income of the estate is only about Rs. 1,200 which is hardly enough to cover the educational and maintenance charges of the ward, his sister and mother.

Court of Wards.

There are only 5 Panchayats under the Panchayat Act in the district. They hardly justify their existence. That at Kue Ke Bahawal disposed of 17 criminal cases and 87 civil cases during the year 1932-33 and has a balance of Rs. 178 in its fund. This is the most successful of the five. But though official Panchayats have been a failure so far, the powers unofficially exercised by lambardars and other leading persons in rural areas are still very considerable. This will appear more particularly in connection with criminal administration which is discussed in part B of this chapter.

Panchayats.

The Deputy Commissioner's office establishment at Montgomery is as follows :—

Deputy Commissioner's Office establishment.

Superintendent	1
Head Vernacular Clerk	1
Head Treasury Clerk	1
Stenographer	1
Special Clerks	9
Senior Grade Clerks	11
Junior Grade Clerks	62
Non-pensionable posts	13
Paid apprentices	6

Section B.—Civil and Criminal Justice.

Civil.

Civil work in this district is still not very heavy, though there has been some increase lately. The report for 1932-33 shows 7,215 cases disposed of to the money value of Rs. 18½ lakhs. This total exceeds the amount decreed in the previous year by 5 lakhs. Most of the suits are money suits or suits connected with land, and

CHAP. III, B.

Civil and Criminal Justice.

the majority of them relate to sums between Rs. 100 and Rs. 500.

Criminal.

Criminal work has naturally increased very greatly with the continual increase in the population flowing to the colony. But in relation to the population crime is not as formidable as in most districts. Cattle theft and house-breaking are still the most common forms of crime. But crimes of violence resulting from quarrels over women or canal water are becoming more important than they were. The Janglis of the riverain areas are not averse from settling their more serious quarrels with *lathis* and when this happens it is not uncommon for partisans on both sides to join in. Dacoities are very rare, and, such as they are, are generally committed by outsiders from Lahore or Ferozepore. In petty cases of theft or burglary resort is generally had to the village elders in the first instance rather than to the police. Most villages have their own trackers who are employed in cases of stolen or strayed animals, and the usual rule is, if you can track the animal down, you are entitled to get it back. If the tracker fails, the injured party goes to the unofficial Panchayat and try to persuade them to visit the suspects as an influential deputation with a view to recovering the stolen property. In this respect abducted women are sought out in much the same way as stolen cattle. It is only when such methods as these have been tried and found wanting that the police are informed, by which time the possibilities of working out the case in a satisfactory manner have been reduced to a minimum. Influential go-betweens frequently continue their efforts to secure the recovery of the stolen cattle or abducted woman even after the police have taken up the case, with the result that witnesses are not anxious to appear in court and are likely to perjure themselves if they do, since an amicable settlement out of court is always considered more satisfactory. Thus, although as indicated in the previous part of this chapter, official Panchayats have failed, the village elders are still practically arbiters of what course should be taken in many transactions of a criminal nature. It is not uncommonly these elders who decide whether the accused should be handed over to justice or not.

Cattle theft.

There is a considerable trade in stolen cattle with agents in Bahawalpur State on one side and Lyallpur District on the other. The regular trade route for stolen cattle runs from Shahpur through Jhang, Lyallpur and Montgomery to the States of Bahawalpur and Bikaner, and up and down this route there are various persons who are in a position to give information as to the whereabouts of many stolen animals. But who these persons are is naturally known only to the few.

The strength of the local bar and the establishment of petition-writers is as follows :—

LOCAL BAR.

Name of place.	Pleaders.	Advocates.
Montgomery	61	12
Okara	6	..
Dipalpur	2	..
Pakpattan	13	1

PETITION-WRITERS.

Name of place.	1st Grade.	2nd Grade.
Montgomery	2	28
Okara	..	4
Dipalpur	1	1
Pakpattan	2	12
Renala Khurd	..	2
Chichawatni	..	1

Registration.

The Deputy Commissioner is the *ex-officio* District Registrar and the Treasury Officer is *ex-officio* Sub-Registrar and in the absence of the Registrar does all the registration and miscellaneous registration work holding charge of old records.

The Tahsildars of Montgomery, Okara, Dipalpur and Pakpattan and their Naib-Tahsildars stationed at headquarters of the tahsils are *ex-officio* Sub-Registrars for their respective jurisdictions. There is no non-official Registrar or Sub-Registrar in the

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district. The following table shows the work performed during the last two years :—

Name of the Registration Office.	Number of deeds registered.					
	1931.			1932.		
	Compulsory.	Optional.	Total.	Compulsory.	Optional.	Total.
Registrar	12	..	12	6	1	7
Sub-Registrar, Montgomery ..	321	59	380	354	78	432
Sub-Registrar, Okara ..	162	19	181	181	19	200
Sub-Registrar, Dipalpur ..	211	11	222	270	27	297
Sub-Registrar, Pakpattan ..	421	46	467	509	42	551
Total ..	1,127	135	1,262	1,320	167	1,487

The increase in the number of deeds registered in 1932 as compared with 1931 is believed to be due to economic depression, minor transfers of land having been forced upon the zamindars as the only means of obtaining ready money—credit with moneylenders having been in many cases exhausted.

Section C.—Land Revenue.

(a) Village communities and tenures. 1856.

Mr. Elphinstone wrote as follows in 1856 regarding the village tenures of the District :—

> "That people accustomed to a semi-independent nomadic life should accommodate themselves to all the intricacies of tenure which prevail among more civilized communities in India, could hardly be expected ; my observations on this head will therefore be brief. The *zamindari* tenure , which involves obedience to the elders of a village, observance of local customs, and a generally pacific disposition, is by no means in favour with the Jat tribes, except in its most simple form, that of a village belonging to a single proprietor. It prevails, however, among the Arains on the Khanwah canal, the Kambohs and Khatris of Pakpattan and Gugera, and to some extent among the small tribes,

who have been before explained as being included among the Wasiwans. In form it does not appear to differ from the *zamindari* tenuree of the North-Western Provinces. It includes all estates belonging to a single proprietor, as well as those where possession of land has not been separately defined among the different shareholders, and the Goverment revenue is paid by an allotment on shares according to the custom of the village."

"The *bhayachara* form of tenure is very common, and in great favour with the Jats. Each member of the brotherhood is in separate possession of his part of the estate. He only pays that portion of the revenue assessed on the land in his possession, and enjoys the whole surplus profits accruing from his property. The joint responsibility of members of a village community, so prevalent in some parts of India, and now also introduced in this part of the Punjab, appears to have had no existence under the Sikh rule—at least as regards this district. The Government took its prescribed share of the actual produce; proprietors, therefore, who had allowed their lands to fall out of cultivation, did not contribute towards the revenue of the estate. The existence of separate village communities composed of members connected with each other by ties of race or blood, appears not to have been owing to any interest the Government felt in the matter, but solely to the habits of the people themselves. So long as the marketable value of the land shall remain low, and the monied classes find no advantage in investing their capital in land, there is very little fear of the *bhayachara* communities in this district being broken up by any but natural causes, such as the deterioration of the soil, or the destruction of the estate by the inroads of the river. The rule of pre-emption enforced by our Government will also, of course, have a most important effect in preventing strangers from entering village communities. Cases in which questions of pre-emption were involved could only have been of very rare occurrence under the Sikh rule, as the distinctions between the several classes of the community were then more marked, and the Hindu, for instance, would hardly have ventured to buy land in a village belonging to half-civilized Jats. I have therefore

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not been able to trace any precedent of similar rules having obtained at that period. In some towns, however, it has been at least customary for the *kardars* and authorities not to sanction the sale of houses to strangers without the concurrence of the villagers. *Pattidari* estates are not numerous; their origin may be traced almost in every instance to the founders of a village having been of different castes or tribes, and their descendants thus not having been able to amalgamate into a single community. Since annexation a few sales of land have also tended to introduce this tenure into some estates. I may observe, however, that perfect *pattidari* villages are not known. The *banjar*, and often a portion of the inundated land, is held in common throughout the district, whether the tenure of the cultivated portion be *bhayachara* or *pattidari*."

Statistics of village tenure 1874.

According to the Settlement Report of 1874 the villages of the district were distributed in the different *parganahs* as regards their form of tenure according to the accompanying statement :—

Name of Tahsil.	*Zamindari.*	*Pattidari.*	*Bhayachara.*	Total.
Gugera	295	151	108	554
Montgomery	320	44	128	492
Dipalpur	455	140	15	610
Pakpattan	411	35	66	512
Total ..	1,481	370	317	2,168

Many of the *zamindari* villages consisted of grants of waste land made to single individuals; while many of the *pattidari* villages were mere groups of wells in which those wells represent the shares.

In 1897 in the statement Table No. XV drawn up for Mr. Fagan's edition of the Gazetteer, tenures were classified as (1) *zamindari* and (2) *pattidari* and *bhaiachara* :—

	Zamindari.	Pattidar and bhaiachara.	Lease from Government without right of ownership.	Total.
Montgomery	39	218	8	265
Gugera (Okara) ..	44	275	8	327
Dipalpur	127	264	35	426
Pakpattan	142	181	61	384

It will be seen that from 1874 to 1897 the number of villages appears to have decreased. This was due to the fact that a large number of small plots and scattered wells which were originally held on lease or other forms of grants from Government, and which used to be treated as separate estates for the purposes of revenue record and agricultural statistics, had in the previous years for these purposes been amalgamated with larger units and the latter dealt with as estates. Such amalgamated estates were generally classed as *bhaiachara*. But as Mr. Fagan observes :—

> "The ordinary stereotyped classification into *zamindari*, *pattidari* and *bhaiachara* tenures is not very applicable to the classes of estates found in this district. Among the nomadic and pastoral tribes, who form the majority of the population, joint tenure of a village or villages by the family or clan was in all probability the original form of proprietary right so far as the germs of this existed under native rule. In some cases the separate possession which has been subsequently developed has been defined by ancestral or other recognized shares; in others it has depended on the number of wells sunk by the respective shareholders individually or in groups, together with the amount of area attached to such wells. Well sinking has in fact been, there is every reason to believe, at once

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the motive for the separation of joint interests and the measure of the extent of such interests. The shareholder or group of shareholders, who sank a well in the village waste, soon if not at once obtained a recognized right to its exclusive possession and to that of a reasonable area round it which it could irrigate, and such right subsequently developed into proprietorship under our rule. Among the more strictly agricultural tribes, such as Kambohs and Arains, it is probable that in the case of many estates there was no initial stage of joint tenure of the whole village area, but that from the first separate possession by families or groups obtained, consequent on separate well sinking. The construction of a well seems, in short, to have been the chief form of original separate appropriation of portions of the village area. In Sikh times the local officials would with a view to further development frequently allow outsiders to appropriate portions of the waste area of villages and to sink wells. It is common to find the same individual proprietors included in varying combinations or with varying shares in several joint holdings in one and the same estate. One reason for this, no doubt, is that the original settlers, where they form a body of agriculturists, or the descendants of the original single pastoral owner or group of owners, combined in different groups and in different shares to construct the several wells in the village area. The complication in some cases goes even further, and the proprietors who own the actual well cylinder form a group differing more or less from those who own the land attached to and irrigated by the well. Where separation has progressed far, the areas attached to individual wells are themselves owned in separate holdings. The process of the separation of interests by means of well construction may in some cases be seen in operation even now where an estate or sub-division of an estate recorded as held jointly by several shareholders has been in reality divided among them by the appropriation of separate portions of the joint area and the construction of wells thereon. On a formal partition taking place the wells would in most cases be allotted to the sharers who had sunk them so far as this was consistent with recorded shares."

In the Settlement of the Sutlej Tahsils (1919—22) 103 estates in the Dipalpur Tahsil were classed as *zamindari* and 97 in Pakpattan. The Settlement Report does not show how the other estates were classified, but it may be presumed that the vast majority of them were at that time *bhaiachara*. In 1929 in the Okara Tahsil all estates except 62 were found to be *bhaiachara* and the 62 *zamindari* estates were nearly all colony estates granted by Government to individual lessees which, though held by one person, were still the property of Government and could only be described as *zamindari* by courtesy. Sutlej Tahsils, 1919—22.

Now that the Ravi tahsils have been fully colonized, while the Sutlej tahsils are in process of colonization, the following remarks from the Montgomery Assessment Report, 1933, are probably more or less applicable to the whole district :— Present day.

> " In the proprietary area there is little difficulty ; estates are nearly all classed as *bhaiachara*. Possession by each individual is the measure of his right and he regulates his land revenue payments accordingly. In the colony area a considerable element of unreality is a necessary accompaniment of a settlement. Unless and until colonists have acquired proprietary rights, each estate should really be entered as entirely owned by Government and in such circumstances no question of land revenue can properly arise. It is, however, clearly impossible for Government to enter into a separate contract with each colonist as he acquires proprietary rights. It has been the custom in previous colony settlements to give the colonist a fictitious status as a potential proprietor and to assess his land revenue accordingly. In this way it was possible to ensure continuity throughout the period of settlement and to announce a more or less constant demand independent of whether the colonists exercised their option to acquire proprietary rights or not. Liability to pay land revenue is a feature of all statements of conditions on which Government is prepared to allot land in a colony. Consequently in the colony area also estates are normally entered as *bhaiachara*. When an entire estate is allotted to one grantee, the tenure is entered as *zamindari*."

The average size of a proprietary holding is very difficult to calculate—the same proprietor or proprietary groups being often combined in different ways in different holdings. In Holdings.

1897 Mr. Fagan gave the following figures for what they were worth :—

AVERAGE AREA IN ACRES OWNED OR HELD ON LEASE FROM GOVERNMENT PER PROPRIETOR AND LESSEE.

Tahsil.	All tribes.	Wattu.	Kharral.	Kathia.	Joya.	Siyal.	Biloch.	Kamboh.	Arain.	Arora.	Khatri.	Sayad.
Gugera ..	18	9	16	..	..	..	39	..	14	11	38	52
Montgomery ..	16	..	29	13	..	18	33	..	..	12	..	28
Dipalpur ..	55	60	..	..	..	..	..	35	30	52	90	92
Pakpattan ..	47	47	..	..	25	..	..	..	..	46	113	..

This statement shows that the area per proprietor, including under that term lessees holding from Government, was generally sufficient over the whole district and in the Sutlej tahsils ample. The area per proprietor was much smaller in Gugera (Okara) and Montgomery than in Dipalpur and Pakpattan but the Ravi tribes combined pasturage with agriculture far more than did those on the Sutlej side. In the Settlement of 1919—22 for the Sutlej tahsils it was still found that the size of holdings was not small ; though in the Bet Circle some of them were owned by a large number of proprietors jointly. At that time the average cultivated area per owner of the different tribes in the two tahsils worked out in acres as follows :—

	Dipalpur.	Pakpattan.
Wattus	19	28
Sayads	33	..
Jat (Muhammadan)	17	..
Kambohs	15	..
Mahtams	7	..
Qureshis	36	17
Pathans	83	..
Jat (Sikhs)	27	29
Khatris	45	67
Aroras	17	14
Joyas	..	4

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The Settlement Officer observes in this connection :—

"Thus the cultivated area per owner except the Mahtams and Joyas is sufficient. The different sets of Joya owners own land in more than one village in the Bet and thus the above given average per owner in their case is not quite a true one. They are more fond of cattle than of cultivation of land and a good many of them are addicted to cattle-lifting."

Investigations made in the course of the Lower Bari Doab Colony settlement showed that proprietary holdings in the Bet Circle had been still further sub-divided. It seems fruitless to endeavour to deduce any average acreage for proprietary holdings, the landholders being so numerous and so intermixed. It was found, however, in the Okara Tahsil that in proprietary lands the average per *khatauni* number worked out at 4 acres in the Bet Circle and 5 acres in the Gugera Branch Circle. Similarly in the Montgomery Tahsil the proprietors cultivating *khud kasht* held approximately 4 acres per head.

In the colonized areas as pointed out above proprietary holdings of any sort are as yet uncommon. Very few grantees even in the Lower Bari Doab Colony have so far acquired proprietary rights, while in the Nili Bar Colony the grantees have only just begun to qualify for rights of occupancy. The various types of grants in the two colonies are fully discussed in the Colony Manual and the information there provided need not be reproduced here. The normal unit of grant in both colonies is one rectangle per head in the case of immigrant colonists and 12½ acres per head in case of local colonists or Janglis in perennial irrigated areas. In non-perennial areas or where lands are given on condition of sinking wells, the grants are naturally larger.

(b) Land Revenue assessment. The Sikh revenue system.

During the Sikh monarchy this district was held either by important chiefs revenue-free, in return for certain feudal services rendered by them, or was farmed out to *ijaradars*. The latter paid a fixed sum to Government, and made their own arrangements with the villages included in their farm. The *ijaradar* either sub-let part of his farm to others, or managed the collection of the revenue himself through agents or *kardars*. Till Sawan Mal's time the system of *kan* or appraisement of the crop was the one generally followed. The calculation of the produce involved a good deal of haggling, and the amount entered was usually the result of a compromise. The produce due on account of revenue having been decided, it might be taken in cash or in kind. *Khalsa* revenue was invariably taken in cash. In other words, the cultivator had to buy from the Government agent the Government share of the

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The Sikh revenue system.

produce, commonly at something over the market price. *Jagirdars* very often took their share in kind. In the *kharif* harvest, money was generally taken, and grain in the *rabi*. The proprietors of a village were allowed a share of the Government produce as *inam*. The amount varied very much. It depended on the agreement made by the *kardar*. One yoke was released out of a number agreed on. If one yoke was released for every six existing, the proprietors got one-sixth of the Government grain as *inam jog*. Besides this, the proprietors got one or more wells or a share in a well, according to the size of the village, exempted from payment of revenue. This exemption was known as *inam-taraddudana*, and was a reward for exertion in the extension of cultivation. The conditions of the grant determined who was to enjoy it ; occasionally the tenants also got an *inam*, generally one-eighth of the Government share. The proprietors collected from the tenants either by actual division of the crop, or according to the Government demand, in kind or cash. And when it was customary to take *malikana*, they got it in addition. Fixed cash assessments on a whole village were not made, but sometimes a well would be leased for a fixed sum ; and isolated wells in the jungle were so leased, as a rule. The usual rate was Rs. 10 to Rs. 12 ; but a good well would pay Rs. 20. Sawan Mal very frequently practised *batai* or actual division of the crop. *Munshis* or *mutsaddis* under the *kardars* put *thapis* to watch the stacked grain of every 5 or 6 wells. If the *thapis'* seal was found broken the cultivator was fined. The crop was then divided, and Sawan Mal took the value of his share in cash. As far as can be ascertained, the system of *inams* has ceased now entirely. The land-owners who have taken the place of the Government have abandoned it. As regards Government, the *lambardari* allowance of 5 per cent. on the revenue represents the *inam* granted formerly to the proprietors.

Zabti crops.

Zabti crops paid so much per *kanal*, or were sold standing when the *kardar* took his share of the price ; or were treated as ordinary *nijkari* crops. The usual *zabti* rates were Rs. 8 per acre for tobacco, and Rs. 6 to Rs. 8 for the first year's cotton, and half that for the second year's crop from the same roots. It may be as well to say that these rates mean nothing, for if the fundamental principle of the Sikh system was, that the Government should take as much as ever it could, as often as it could, and wherever it could, the principle, that a spade should on no account be called a spade was only second in importance to it, and was much more rarely violated. The advantages of this were, that the people were made to believe that great favours were being bestowed on them, while they were being taxed as heavily as possible ; and that

the subordinate officials were able to plunder the Government to their heart's content, as no one knew what their accounts meant. Thus a man would be charged Rs. 6 for 6 *kanals* of cotton. The generous *kardar* remitted half as *inam*, and then added Rs. 4-1-6 on account of extra cesses. These extra cesses or *abwab* were levied both in kind and cash. The former class appears to have amounted to one-fourth or one-fifth of the Government share of wheat, and one-sixth of the inferior grains. The cash payments were generally according to a fixed scale. The more important of these extra cesses were the following: *nazar kanjan, sardar thanadar, topkhana, sarrafi, chilkan, ajamabandi* and *khurak*. The *nazar kanjan* was a tax of Rs. 2 on each *kámil* well and derives its name from the upper cross-beam of a well. A *kamil* well was one with 8 yokes of bullocks; and a proportionate allowance was made for every yoke wanting to make up this number. The cess for the *sardar thanadar* was levied at varying rates as the *kardar* saw fit. Of course, the *thanadar* did not get it. The cess *topkhana* was probably meant to aid in keeping up the Sikh artillery, it amounted to Rs. 2 per cent. on each *pakka* well. *Sarrafi* was levied at different rates, and was supposed to defray the cost of testing the money paid as revenue. *Chilkana* was a charge of one-half anna in the rupee on all cash payments except those made on account of *khurak, sarrafi* and *tirni*. The Sikhs had several sorts of rupees. The Nanak Shahi, struck in S. 1884-85, was the final standard coin. Sixteen English rupees were worth fifteen Nanak Shahi rupees. The other rupees were the Hari Singhia or Kashmir rupee, worth 8 annas in the rupee less than that of 1884-85; the rupee of 1887, worth one anna in the rupee less; the Moran Shahi rupee and that of 1860, worth Rs. 2 per cent. less, and the rupee of 1870 and 1872, worth 1 per cent. less. *Chilkana* was levied to make up the difference between the value of the standard and other rupees. It seems to have been taken on all kinds of rupees. The *jamabandi* was a charge for preparing the revenue roll. The *kardar* charged what he pleased. *Khurak* was a cess of 4 annas on each well, and was expended in feeding the *kachhus* or measurers. Besides these items, one-half anna was charged for each sheep or goat as *tirni*, but cows and buffaloes were not taxed. *Kama* was a cess levied on artisans and *ahtrafi* on shop-keepers; the rates varied from Re. 1 to Rs. 2-4-0 on each shop. The principal *abwab* levied in kind were *Akali, kharch Brahmin, moharana* and *chungi*. The first amounted to 6 *topas* per well, and seems to have been originally intended for the support of the Amritsar Akalis. The *Brahmin, moharana,* and *chungi* cesses amounted altogether to 5¼ *paropis* in each *man* of the Government share. It does not appear for what these were originally contrived nor what *moharana* means.

Abwab or extra cesses.

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The cultivators were allowed to grow green fodder as tenants are now. The *kardar* used to claim his *kanal* at each harvest per well; this was known as *khira*. He either took the *khira*, or made the cultivator give him grain in exchange at the rate of 16 to 20 *mans* per acre. The *kardar's man* consisted of 16 *topas*, of 2½ *sers* each. The *ser* weighed 92 rupees. Transit duties, called *laga*, were levied on merchandize coming in or going out of a town, whether sold or not. The rates varied, and were as a rule, fixed with reference to the carriage employed; so much for each camel-load, donkey-load, etc. The right to collect this duty was farmed. The *kardar* was not the *ex-officio* collector. But he sometimes managed to collect some thing for himself under this head from the cultivators. This tax corresponds to the present *chungi*.

Green fodder.

Transit duties.

Revenue of a well.

It is almost impossible to make out what the Sikhs really used to get from a well. But in settled tracts they seem to have been able to extract between Rs. 50 and Rs. 60 from an average well. Of course the Sikh *kardars* looked after the revenue in a very different way to that in which an over-worked *tahsildar* can, and the cultivators were assisted by the revenue officials much more than they are now. A man who did not exert himself got a very broad hint that if he did not cultivate as much land as was expected, he would have to make way for some one who would. If a man had more land than he could manage, the ruling power never hesitated about making a portion over to another, and gave no compensation. Then the people had to pay only a small amount when the season was bad and so managed to pull along under burdens which would break them down completely now.

(c) Settlements under British rule.

The first and second summary settlements are thus described by Captain Elphinstone in paras. 95 and 96 of his report:—

The first summary settlement.

> "The first summary settlement was based on the papers of the former Sikh *kardars*. Mr. Cocks, C. S., who superintended this work, having no other data to guide him, naturally fell into some errors as to the capabilities of the different villages. His assessment for the whole district amounted to Rs. 3,70,819,—a sum which could probably have been realised without difficulty from this district if it had been more equally distributed. But the Sikh returns, which formed the ground-work of his assessment, were eminently defective for this purpose, for the following reasons:—*1st*, a system of favouring certain villages and *zamindars* universally prevailed under

the Sikh rule; *2nd*, the authority of the Government in that portion of the district owned by the Jat tribes was by no means very secure, and the revenue demand was therefore not strictly enforced for political reasons; and *3rd*, the amount of produce obtained by *batai* on *sailab* lands in good seasons by no means represents the amount in cash which could be reasonably demanded from such tracts for a series of years. The sudden fall in prices also, which took place after annexation, and the scarcity of money occasioned by the constant remittances down-country of a large army of foreigners stationed in the Punjab, seriously affected the resources of the people. As, notwithstanding, all these adverse circumstances, the reductions given at the time of the second summary settlement were by no means very considerable, the *jama* of Mr. Cocks' Settlement may be said to have been rather moderate."

The first summary settlement.

"The second summary settlement was commenced by Major Marsden in 1852, and amounted altogether to Rs. 3,23,099-12-10, including *jagirs*. The collections and balances of this settlement form the chief basis of the present revised assessment. The data by which Major Marsden was guided were necessarily somewhat imperfect, but his local knowledge obtained by inspecting personally nearly every estate, and the reliable information he contrived to elicit from *zamindars* and former officials enabled him to adjust the demand with a considerable degree of fairness. In *parganah* Gugera, especially the relative equity with which the *jamas* had been distributed was very remarkable. Changes, however, subsequently took place which materially affected the condition of various parts of the district. In *parganah* Hujra the alterations on the Khanwah Canal reduced one circle of villages to about one half of their former cultivation, and greatly enhanced the prosperity of others, which previously had derived no benefit from the canal. In *parganah* Gugera, the *sailab* of the Ravi gradually diminished in the whole tract north of the *sadr* station; and in *parganah* Pakpattan a similar change occurred in a portion of the *sailab* land. *Jagir* estates were not brought under assessment, as the *jagirdars* continued to realise by *batai*.

Second summary settlement.

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Second summary settlement.

No modification was made in the assumed value at which they had been estimated at annexation. I mention this circumstance, because the reduction of *jama* now apparent in two *parganahs*, are in great part made up of alterations in the assessment of these *jagir* estates, their original or estimated values having been found without exception, far above their present capabilities. In addition to the returns of former collections and balances, Major Marsden was aided by rough measurements conducted through the agency of the *tahsildars* and *kanungos*. No attempt was made to record separate fields or other details of cultivation, and the whole process had very little pretension to accuracy, but it was, no doubt, often useful as a means of comparison with other sources of information."

The correct figures for the assessment of the first and second summary settlements, excluding *jagirs*, were as follows by tahsils :—

Tahsil.	First summary settlement.	Second summary settlement.
	Rs.	Rs.
Montgomery	76,144	60,309
Gugera	76,411	76,412
Dipalpur	1,75,571	1,33,068
Pakpattan	40,157	42,698
Total ..	3,68,283	3,12,477

The regular settlement.

In 1852, Mr. Vans Agnew was sent to Hujra to commence the regular settlement. He submitted a report on the assessment of tahsil Hujra, in which he proposed a fluctuating revenue for canal and *sailaba* lands.

Assessment of canal lands.

In the Sikh times the Khanwah and Lower (Kuhna) Sohag Canals supplied certain villages in this district with water. It was not till 1843 that any water-rate was levied. The rate then imposed was one anna per *kanal* on crops that came to maturity, and applied only to the Khanwah. Under English rule this rate

Assessment of canal lands.

was continued. At first a farm used to be given of this tax, and yielded on an average Rs. 9,000 to Rs. 10,000 annually. The charge was extended to the Lower Sohag. Mr. Vans Agnew in 1855 thus described his proposed method of fluctuating assessment :—

> "I have fixed two *jamas* for every village, the one upon all *kurwah* or well lands, which can be cultivated without the aid of inundation from the rivers or canals, to be *permanent*, and to be considered the fixed demand until the expiry of the period of settlement ; and the other upon all *sailaba* to be *variable* and under the name of *abiana* in canal lands, and of river *sailaba jama* in those subject to the influence of the Sutlej, to fluctuate with the uncertain inundation, and to be annually revised."

The variable rates proposed were, per acre, Re. 1-11-0 in Dipalpur, Re. 1-8-0 in Hujra, and annas 12 in Basirpur *chaks*. Along the river they ranged from Re. 1-10-0 to annas 6 per acre. This scheme was suggested on account of the uncertainty of the river inundations and canal water supply. As regards the canals, Mr. Vans Agnew wrote :—

> "The irrigation they afford is uncertain and constantly varying. Firstly in the aggregate annual volume of water they carry. Secondly, in the quantity of water they supply to each village. Thirdly, in the time when they yield that supply. Fourthly, in consequence of their being in a transition state fresh arrangements of the canal officers continually altering the direction of the water supply."

His proposals were unfortunately rejected. The Financial Commissioner, in 1856, thus laid down the principle to be adopted :—

> "In the river *sailab* lands a moderate assessment which the proprietors could be able to pay in ordinary years ; in the canal villages, a division of the demand between land rent and *abiana* in such proportion as to represent with proximate correctness their relative values, the assessment at the same time being fixed at so moderate an amount that no reduction of *abiana* should become necessary in ordinary years."

The principle, in short, apparently was that the *abiana* was to be remissible on failure of canals by the district officers on their

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own authority; the *mal* was to be collected whether the canals failed or not. Early in 1856, Captain Elphinstone was placed in charge of the settlement. He assessed the whole district. "From the estimated gross produce per acre, the proprietor's share, varying from one-half to one-sixth, was deducted, and after allowing 25 per cent. for extra expenses and 10 per cent. for the loss of conversion into cash, two-thirds of the remainder were assumed as the Government demand and entered as produce rates." Wells in tracts where cultivation mainly depended on them, were divided into three classes: "the 1st class consisted of *pakka* wells with six and eight yokes and an area of from 30 to 50 acres of well-land; the 2nd class of wells with four or five yokes and from 20 to 30 acres of well-land; and the 3rd class with a less number of yokes than four, and a very limited extent of irrigated area."

Assessment data.

Assessment circles or *chaks*.

The *parganahs* were divided into assessment circles or *chaks* chiefly with reference to "the nature of the irrigation, and, to some extent,* * * , the peculiarities of soil and productiveness which prevailed in different tracts."* As cash rents did not exist, the revenue rates were calculated in the following manner. The villages in each *chak*, which were generally admitted to have been fairly assessed, were selected; and the Settlement Officer satisfied himself that general opinion was correct. The cultivated area of these villages was divided into classes according to the prevailing mode of irrigation, as *sailaba*, *chahi*, *nahri*, and *barani*. The relative value of these classes was ascertained from the *zamindars*. In tahsil Gugera, *barani* was valued at one-half *chahi*, in Pakpattan and Hujra at not more than one-fifth or one-sixth. The total *jamas* were next distributed over the classes of land according to the ascertained relative value of the latter. The average rate per acre, thus obtained for each class in the standard estates, was applied to the same class in the other estates, and the *jama* thus obtained constituted the revenue rate *jama* of each village. Soil-rates were not fixed, partly because the returns of soils were inaccurate, and partly because productiveness depends but little here on the natural qualities of the soil itself. The fact of the soil being good or bad was, however, kept in view in assessing the individual villages. The villages irrigated by the inundation canals in the Sutlej tahsils were assessed in the prescribed manner. Captain Elphinstone described the process thus:—"In the canal villages the demand has been divided between land and water rent; and the relative value has usually been assumed as bearing to each other the proportion of 2 to 3."

Revenue rates.

Soil-rates.

Canal assessment.

*These assessment circles, with the rates adopted, are shown in a map attached to Mr. Purser's Settelment Report.

A few villages were exempted from the system of fixed *abiana* and in their case and in the case of land coming under irrigation subsequently to settlement the customary rate of 8 annas per acre was to be charged.

Financial result of the Regular Settlement.

The assessment of the regular settlement by tahsils was as follows :—

Tahsil.	*Assessment.*
	Rs.
Gugera	71,032
Montgomery	85,925
Dipalpur	1,34,578
Pakpattan	47,530
Total ..	3,39,065

This was inclusive of *abiana* and Rs. 24,198 and Rs. 580 cana *abiana* in tahsils Dipalpur and Pakpattan, respectively. Since the second summary settlement 20 villages paying a revenue of Rs. 4,082 had been transferred from Lahore to the Gugera District. Their *jamas* are included in the above total. The regular settlement did not work satisfactorily. The revenue imposed by it was not heavy ; but the settlement did not get fair play. It had been sanctioned for 10 years with effect from kharif, 1857, and at the end of that period the condition of part of the district was so bad that it was considered advisable to commence the revised settlement at once.

The principal changes in the circumstances of the district and their causes are noted below. The following table compares the number of villages and the areas of the regular settlement of 1857 with the state of things as ascertained at the revised settlement of 1871-72 :—

Name of Tahsil.		Number of villages.	Area in acres.								
			Muafi.	Barren or waste.	Culturable.	Lately thrown out of cultivation.	Cultivated.				Total. area.
							Irrigated.	*Sailaba.*	*Barani.*	Total.	
Gugera ..	1857 ..	370*	1,877	19,341	121,987	13,222	39,033	37,762	8,976	85,771	242,198
	1871-72 ..	549	819	26,387	144,514	20,659	36,852	21,471	8,056	66,379	258,758
Montgomery	1857 ..	271*	1,544	10,455*	100,701*	8,718	18,456	67,721	2,504	88,681	210,109
	1871-72 ..	493	1,287	16,506	130,591	16,882	16,646	41,850	1,134	59,630	224,896
Pakpattan ..	1857 ..	360*	1,002	22,804	136,694	32,281	38,737	13,499	6,144	58,380	251,161
	1871-72 ..	512	552	32,636	182,512	23,071	33,423	9,802	6,079	49,304	288,075
Dipalpur ..	1857 ..	452*	3,366	23,344	228,784	25,282	119,307	37,603	19,266	176,176	456,952
	1871-72 ..	612	2,053	47,699	229,526	33,689	170,645	9,289	9,629	189,563	502,530
District Total	1857 ..	1,453*	7,799	75,944	588,166	79,503	215,533	156,585	36,890	409,008	1,160,420
	1871-72 ..	2,166	4,711	123,228	687,143	94,301	257,566	82,412	24,898	364,876	1,274,259

*These figures are doubtful.

From this it appears that the number of villages had increased by one-half and the total area by 113,839 acres, or nearly 10 per cent. The irrigated area had increased by 42,033 acres, or 19·5 per cent. On the other hand, there had been a falling off of—

Financial result of Regular Settlement.

74,173 acres, or 47·4 per cent. in the *sailaba* cultivation;
11,992 acres, or 32·5 per cent. of *barani* cultivation and of
44,132 acres, or 10·8 per cent. of total cultivation.

The causes of these changes were :—(1) Grants of waste land and location of new estates on them; (2) Extension of the inundation canals; (3) Failure of the river inundations; (4) Bad seasons. The punishment inflicted in the Mutiny (see page 48) no doubt affected the prosperity of some of the villages; and particularly of the Joya estates on the lower Sutlej.

Changes in population.

Before considering these causes the changes in the population of the different tahsils may be noticed. The Census of 1854 showed the population to be 308,020. Adding 3,302 on account of villages received, and deducting 1,826 on account of villages transferred, there remain 309,496 persons as the former population. The following table shows its distribution and the subsequent changes :—

Name of Tahsil.	Population.		Increase.	
	Formerly.	By Census of 1868.	Number.	Percentage.
Gugera	81,067	95,410	14,343	17·7
Montgomery	72,940	76,453	3,513	4·8
Pakpattan	53,208	57,735	4,527	8·5
Dipalpur	102,281	129,839	27,558	27·0
District Total ..	309,496	359,437	49,941	16·13

The population remained stationary in the cis-Ravi-*sailaba* tracts of Montgomery, and in the well-irrigated Shergarh circle in Dipalpur; otherwise there was a general falling off in the *sailaba* tracts, and a considerable increase in the well-irrigated and canal circles. The increase in the parts of Dipalpur and Pakpattan irrigated by the canals was especially large. It was in these parts that most of the grants alluded to above had been made.

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Grants of waste lands. Injurious results.

These grants were allotments of Government waste lands. They were made either to men of the district or to outsiders who were supposed to have claims on Government. In the former case they were scarcely ever of large extent. The area allowed was 50 acres if the applicant proposed to sink a single-wheeled well, and 100 acres if a double-wheeled well was to be constructed. In the latter case, the grants were rarely small, but ranged from 500 to several thousand acres. Sinking wells was quite a secondary consideration here. These applicants would have turned up their noses at land where canal-irrigation was not available. What they wanted was a nice bit of low-lying land, with a *jama* of a few annas an acre, and as much canal water at 8 annas an acre as they chose; and they generally got it. Of course, they would not cultivate themselves, so they had to look out for tenants, and the simplest—indeed the only—way to get tenants was to decoy them away from the old established villages. To get an advance of money, to be under the protection of a man on good terms with the district officers, to have fine new land and lots of canal water with rent below the average, were great things for the tenants; and so he left his old landlord to shift for himself and settled with the grantee. No wonder things looked very well at first. There was an increase of revenue and an apparent increase of cultivation. It was not long, however, before the mischief that was being done was perceived. The migratory character of the tenant population has already been noticed at page 152. From the earliest days of our rule it had been a subject of anxiety to the revenue officers, and had repeatedly been brought to the notice of the authorities. Still grants were made, till in a district where barely one-third of the area within village limits was under the plough, about 113,000 acres more were added to the lands clamouring for cultivators to till them. When the injurious effect of these new grants on the older villages became clear, it was proposed to remedy them, not by stopping the grants, but by putting heavy burdens in the shape of revenue, and price of timber cleared away, on the lessees. But there was a mania for acquiring land in those days; and land anywhere near the canal would have been taken on any terms. So this plan had little success in stopping applications. It succeeded, however, in ruining the applicants. The supply of water in the canals was not unlimited; and the later comers found it more difficult to get any; the land near the canal had been appropriated, and more unfavourably situated plots had to be accepted. The little capital of the applicants was swallowed up in paying an exorbitant revenue, instead of being spent in sinking wells and making the land yield some return. In 1872, the Punjab Government directed that in

future grants should be made only in special cases and after reference to Government. On inquiry during settlement operations in 1874 it appeared that 182 estates were lying uncultivated, or more than one estate in every twelve. Of these, 102 were new grants. A few of the grants were then resumed on the lessees refusing to take up the new *jamas*. There were then 1,953 wells lying idle, which could have been brought into use at a small cost, and would have given employment to 9,765 cultivators and 11,718 yoke of bullocks.

Grants of waste lands, Injurious results.

The great demand for land was, no doubt, chiefly caused by the extension of the inundation canals, and the enormous profits made by those who were lucky enough to have land within the influence of the new supply of water thus provided, which was freely distributed at 8 annas an acre, no matter what crop was grown. While the Khanwah and the Upper Sohag Canals were being extended, and the people on their banks were, in most places, making their fortunes, the villages on the Lower (*Kuhna*) Sohag were being ruined. Their case is instructive, and shows how light *jamas* are no certain guard against deterioration. At the regular settlement, 26 villages on this canal were assessed at Rs. 3,613 *mal* and Rs. 1,209 *abiana*. The cultivated area was 9,363 acres. In 1860-61, Rs. 20 per cent. were taken off the *mal-jama* and added to *abiana*. This did no good. In 1866 the cultivated area had fallen to 2,652 acres, and a new assessment became necessary. The revenue was reduced 33 per cent. and the *abiana* made fluctuating. Even in 1874 many of these villages were in bad condition.

Extension of the inundation canals.

Failure of the Lower Sohag Canal.

It is, however, unlikely that the extension of the canals or the grants of waste lands would have done any serious mischief anywhere had the *sailab* not failed. Canal water is simply *sailab* under more or less control, with advantages and disadvantages due to this control. On the canal, as a rule, only autumn crops could be raised and brought to maturity with canal water; cultivators had to pay for this water and to assist in clearing out the watercourses. On the river they escaped the labour and payment, and could raise the more valuable spring crops. And in addition the lands along the river offered better grazing grounds than did the more inland tracts. In 1871, when the Khanwah failed, and there was an unusual amount of *sailab* on the river-banks, in the one village of Dipalpur 70 tenants abandoned their holdings and settled in river villages.

Failure of *sailab*.

The great rise in prices, which had taken place in this district as well as elsewhere, deserved the most attentive consideration. Where rents are not paid in cash, but in kind, without

Rise in prices.

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any reference to the money value of the share received by the landlord, the rise or fall in prices is even more important to the person fixing a money assessment than it is in tracts where cash rents are the rule. The period of 15 years, from 1842 to 1856, may be looked on as that the prices of which would have been regarded at the settlement of 1857; and the second period, from 1856—71, as subsequent to that settlement. The percentage of rise, in the second period, of average prices over those of the first period is as regards :—

Rise in prices.

	Per cent.
Cotton	37
Jowar	28
Rice	22
Kangni	39
China	37
Wheat	37
Gram	15

Landlord's share.

As regards the landlord's share of produce Mr. Purser wrote in 1874 :—

> "Another question which arises is, whether the landlord's share of the produce is larger or smaller now than it used to be. Of course, the decrease in cultivated area causes the actual income of the landlords to be smaller; but does the income in kind now enjoyed by the proprietors bear the same proportion to that they enjoyed at last settlement as the present cultivated area does to the area then cultivated? I think, if anything, it is less. More fodder has to be grown than formerly; for cultivation has to a great extent forsaken the rivers where natural fodder was abundant, and has increased in the inland part of Dipalpur, where pasturage is scanty. Again the productive powers of the land cannot have been improved by ten or twelve years' more cropping. And the new grants have tended to reduce the share of the produce obtained by the proprietors. No doubt, canal cultivation has to a considerable extent been substituted for *sailab* and *barani* cultivation. Probably the canal is superior to the *sailab*; though usually the *kharif* cannot hold its ground against the *rabi*; the change, as regards the *barani* cultivation is certainly for the better. In any case, as regards this matter, there is nothing to warrant an increase of assessment."

In 1868 the revised settlement was commenced under the superintendence of Mr. Roe, who assessed the Gugera and Montgomery tahsils. In 1870 Mr. Purser was put in charge, who completed the work, and reported upon it in 1874. Owing to the fact that the assessment was made by two different officers, and that changes were introduced during the operation in the system of settlement, the processes and results cannot be presented in as compact a form as is possible in the case of most other districts. But the following paragraphs, taken from the final report by Mr. Purser, give the most important facts. Pages 156 to 219 of that report contain most detailed accounts of the several assessment circles, of their condition at settlement, and of their past history, and of the basis and nature of the assessment of each.

Revision of settlement, 1868—1874.

The system of entirely fixed assessments was maintained in the Ravi tahsils at the revised settlement. The revenue rates on which the assessments were based consisted—

Ravi tahsils. Revenue rates.

(1) of a lump *abiana* per well in use which varied from Rs. 8 to Rs. 12 in different circles ; (2) a rate on all land under cultivation (*i.e.*, cropped at the time of measurement) which ranged from 8 annas to Re. 1 per acre ; (3) a rate on all new fallow of 4 annas or 6 annas per acre.

The table below shows Mr. Roe's assessment of tahsil Gugera. The initial demand shown in the last column was to be increased after ten years by Rs. 4,294. Taking the tahsil as a whole, there was an immediate reduction of Rs. 3,681 or 4.7 per cent. on the demand for 1870-71. Extra cesses reduced the decrease little more than one per cent. while the addition of local rates made the actual result an enhancement of the burden on the land—

Tahsil Gugera. Assessment.

Name of *Chak*.	*Jama* of 1870-71.	Estimates.				Proposed by Settlement Officer.	Fixed by Settlement Commissioner.
		Tahsildar's.	Produce.	Plough	Rate.	Initial.	Initial.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Bet Purana Gugera..	18,656	16,670	22,492	16,950	18,069	16,608	17,423
Bet Urar ..	12,873	13,306	14,538	13,122	11,645	11,948	12,697
Shumali Ganji ..	6,244	6,129	8,025	7,320	5,118	5,894	6,193
Total Cis-Ravi ..	37,773	36,105	45,055	37,392	34,832	34,450	36,313

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Tahsil Gugera Assessment.

Name of *Chak*.	*Jama* of 1870-71.	Estimates.				Proposed by Settlement Officer.	Fixed by Settlement Commissioner.
		Tahsildar's.	Produce.	Plough.	Rate	Initial.	Initial.
Bet Par ..	21,744	20,835	22,861	20,376	16,105	18,845	19,815
Deg ..	7,041	7,277	9,747	8,512	6,638	6,578	7,027
Chahi Par ..	4,595	5,037	6,255	4,536	3,875	4,300	4,540
Sandal Bar ..	477	480	457	450	399	397	430
Total Trans-Ravi..	33,857	33,899	39,320	23,874	27,017	30,120	31,812
Total ..	71,630	70,004	84,375	71,266	61,849	64,570	68,125
Scattered Wells.							
Bet Purana Gugera..	1,131	1,041	1,705	2,080	1,710	1,043	1,138
Shumali Ganji ..	1,823	1,689	2,537	2,148	903	1,548	1,625
Ganji Khas ..	165	60	50	64	45	150	160
Ganji Janubi ..	109	109	359	264	135	107	109
Deg ..	1,681	1,750	2,955	2,792	1,413	1,670	1,721
Chahi Par ..	149	160	292	174	200	159	160
Sandal Bar ..	1,343	1,372	1,997	2,770	960	1,286	1,312
Total Wells ..	6,401	6,181	9,895	10,292	5,366	5,963	6,225
Total *Parganah*	78,032	76,185	94,270	81,558	67,215	70,533	74,350

Tahsil Montgomery Assessment.

The table below shows Mr. Roe's assessment of tahsil Montgomery. Taking the tahsil as a whole, there was a decrease in the initial assessment of Rs. 6,219 or 7 per cent. which extra cesses reduced to 3·5 per cent. But the demand was to be increased by Rs. 4,677 after ten years :—

Name of *Chak*.	Demand of 1870-71.	Estimates.					New Initial.
		Tahsildar.	Extra Assistant Commissioner.	Plough.	Produce.	Rate.	
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1. Bet Nur Shah ..	30,067	30,137	28,270	22,787	33,545	24,794	28,461
2. Bet Chichawatni ..	4,999	5,310	5,300	8,469	6,384	6,476	5,357
3. Bet Harappa ..	17,340	17,622	20,020	25,200	24,310	19,284	18,597
4. Bet Par ..	26,035	23,914	20,377	23,598	15,987	14,858	19,814
5. Ganji Shumali ..	2,647	2,720	2,745	3,682	2,644	2,393	2,810
6. Ganji Janubi ..	509	543	480	678	640	375	540
7. Sandal Chahi ..	2,339	2,359	2,370	2,120	2,495	2,055	2,153
8. Ganji Khas ..	238	278	391	132	74	106	223
Total ..	84,174	82,883	79,953	86,666	86,079	70,341	77,955

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Before assessing the two Sutlej tahsils, Dipalpur and Pakpattan, in respect of the land revenue, it was necessary to decide the rates which were to be paid by the people for canal water, and the principles on which these rates were to be fixed and collected. The system adopted at the regular settlement described at pages 232 and 234 had not worked satisfactorily. The people had no object in economising water; and they wasted it. It was found that many villages were paying next to nothing for their water. The canal tracts were not bearing anything like a fair share of the public burdens. And the revenue credited to the canals was far from equalling the expenditure incurred in keeping them up. It was also known that the prosperity of the canal tracts depended entirely on the canals; and that if the canals were abandoned, the country would relapse into jungle. It was therefore only fair that the canal rates should be raised. A good deal of correspondence took place on the subject; and the result was the adoption of the main principle of Mr. Vans Agnew's scheme. Each village was to be assessed at a sum which would represent what it could fairly pay from its natural products, *barani* and well cultivation. This was to be fixed land revenue. Besides this fixed *jama*, villages taking canal water were to pay for it separately. The area irrigated was to be ascertained by annual measurements, and the rates of charge were to vary with the crops grown. If the crops did not come to maturity owing to the failure of the canal, no *abiana* was to be paid. In case of partial failure of crops, partial remissions might be made. Lands irrigated by lift were to pay half the rates fixed for lands irrigated by flow. The amount payable each year was to be announced to the *lambardars* by the canal officer. The proposed arrangement was sanctioned with some modifications. No portion of the fluctuating revenue was to be credited as proposed to the canal departments; but there were to be "three sub-heads under the general head of land revenue. Under the first of these sub-heads will be shown the fixed *barani* assessment, or the rate which would be leviable on unirrigated land; under the second the fixed assessment on lands irrigated by wells; while under the third sub-head will be shown the fluctuating revenue derived from lands irrigated by canals. This last will be the amount which the irrigation department will be entitled to show in their administration departmental accounts as the financial result of the canals under their charge." The rates adopted are given below.

Assessment of canal lands in the Sutlej tahsils.

Jagirdars were to receive the whole revenue of their villages credited under the first two sub-heads, and one-half of that shown under the third sub-head, the other half representing approximately what would elsewhere be separately charged as water-rate. As

Assignments of canal revenue.

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regards cesses, it was decided that the people in this tract should only pay at half the ordinary rates for the—

Extra cesses on canal revenue.

(1) *Patwari's* cess,

(2) *Lambardar's* cess,

(3) *Ala lambardar's* cess,

(4) *Zaildar's* cess,

and that Government should contribute out of land revenue an amount equal to that paid by the people. Formerly only the *patwari's* cess was realized on the *abiana jama*, fixed or fluctuating. Subsequently the local cess also was charged on the fixed *abiana*. This rule was to apply to *jagir* villages also. The other authorized cesses were to be paid on, and over and above, the entire Government demand by the occupants of land.

Water-rates.

The rates sanctioned in 1874 were for five years only, revised rates were sanctioned by the Government of India with effect from the *kharif* crop of 1880, and continued in force up to *Kharif* 1897; they were as follows:—

Class.	Crop.	Rate per acre.	Class.	Crop.	Rate per acre.
		Rs. A. P.			Rs. A. P.
I	Rice ..	3 0 0	III — *concld.*	*Kangni* ..	1 2 0
	Gardens ..			*China* ..	
	Chillies (red pepper)			*Sowank* ..	
II	Cotton ..	2 0 0		*Mash* ..	
	Melons ..			*Moth* ..	
	Sugarcane ..			Indigo ..	
	Til			Turmeric ..	
	Hemp			All other *kharif* crops not otherwise mentioned	
III	Indian corn (*makkai*)	1 2 0	IV	All *rabi* crops ..	0 14 0
	Bajra			Plantations ..	
	Munj			Vegetables ..	
	Jowar		V	Fallow land ..	0 10 0
	Charri ..			Lands ploughed but not sown.	
				Grasses ..	

NOTE.—The above rates were for *flow* irrigation. Irrigation by *lift* was charged at half the above rates.

As a rule, the *rabi* crops could get only one watering which was not sufficient to bring them to maturity, and recourse was had to well irrigation ; on this account the rate was fixed low. On the same principle the light rate on sugarcane was explained.

In actual practice remissions for failed crops were allowed only in the *kharif* ; the canals not being responsible for the ripening of the *rabi* crops.

Revised Settlement Sutlej Tahsil.

The Revised Settlement of the Sutlej tahsils was commenced concurrently with that of the Ravi by Mr. Roe in February 1868. Mr. Purser who succeeded him in 1870 assessed both the Sutlej tahsils under the supervision of Mr. Lyall as Settlement Commissioner. The main feature of the re-assessment was the new system of assessment adopted for canal-irrigated lands, which at that time were, with the exception of a limited tract in north-east of Pakpattan, confined exclusively to the Dipalpur tahsil. The system adopted consisted of—

(*i*) A fixed assessment on the *banjar* or culturable waste area and *barani* and well-irrigated cultivation. The assessment rates for the *banjar* and for the *barani* cultivation were 1 anna and 8 annas per acre, respectively, while for the well-irrigated cultivation lump rates were fixed varying in different assessment circles from Rs. 20 to Rs. 30 per single-wheeled well and from Rs. 40 to Rs. 50 per double-wheeled well.

(*ii*) A fluctuating assessment at crop rates per acre of crop irrigated with canal water and ripened. These rates included all charges for land revenue, water advantage or owner's-rate, and water or occupiers' rates. Crops receiving both well and canal water were charged with the fluctuating rates in addition to the fixed well assessment.

In the non-canal-irrigated tracts of the Sutlej Tahsils, comprising nearly the whole of Pakpattan and the Bar and Bet tracts of Dipalpur, the same system of wholly fixed assessment and the same kind of revenue rates were adopted as in the Ravi Tahsils. The rates were :—

(1) A lump *abiana* of Rs. 10 per well in use in all circles except in one in Pakpattan where it was Rs. 12.

(2) A rate on all land under cultivation (*i.e.*, crop) at the time of remeasurement, which ranged from 6 annas to 12 annas 9 pies per acre in different circles.

(3) A rate on all new fallow of 4 annas per acre in all circles.

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Proposals were made for putting all *sailab* lands in the riverain of both Tahsils under fluctuating assessment, but they were not accepted.

Final result of assessment.

The actual result of the assessment of the four tahsils is given below. As regards the Ravi tahsils, the decrease refers to the rent-roll of S. 1927 (A. D. 1870-71); as regards Pakpattan, to that of S. 1929 (A. D. 1872-73); and the increase, as regards Dipalpur, to that of S. 1930 (A. D. 1873-74) :—

Name of tahsil.	Former jamas.	New jamas.	Initial decrease.	Initial increase.	Progressive income after			Kamil jamas.	Final decrease.	Final increase.
					5 years.	10 years.	15 years.			
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Gugera ..	78,027	74,450	3,577	..	773	3,521	..	78,744	..	717
Montgomery..	84,174	77,955	6,219	..	627	4,050	..	82,632	1,542	..
Pakpattan ..	52,125	50,353	1,772	..	184	968	..	51,505	620	..
Dipalpur ..	1,09,415	1,16,031	..	6,616	391	3,659	76	1,20,157	..	10,742
Total ..	3,23,741	3,18,789	11,568	6,616	1,975	12,198	76	3,33,038	2,162	11,459

The result was an initial net decrease of Rs. 4,952 with a final net increase of Rs. 9,297. The new *jama* fell at the rate of annas 14 per acre on the cultivated area as shown in the completed returns. The *jama* of the regular settlement, as given in the printed report, was Rs. 3,03,520 exclusive of *abiana*. This fell at the rate of annas 11-9 per acre on the cultivated area of 409,059 acres given in the same statement.

Period of settlement.

The assessments of the Gugera and Montgomery tahsils were sanctioned for a term of 20 years, from Kharif 1871-72. Mr. Roe stated that he considered the assessments "decidedly high as they had been fixed, not on present cultivation, but on what it was hoped that cultivation would be." The assesments of the Dipalpur and Pakpattan tahsils were sanctioned for a term of 20 years, from Kahrif 1873-74.

Introduction of fluctuating assessment into Ravi *tahsils*.

Shortly after the introduction of the revised settlement changes in river inundation began to take place in the Ravi tahsils. Early in 1879, the Financial Commissioner marched through part of the Ravi riverain. He found widespread distress due to the failure of *sailab* and to the consequent desertion of tenants, and many estates expressed a wish for the introduction of fluctuating assessments. In October 1879, Mr. Purser was deputed to the district to frame proposals for the introduction of a system of

Introduction of fluctuating assessment into Ravi tahsils.

fluctuating assessment in the Ravi riverain villages. After some modification of his proposals the system sanctioned by Government in 1880 was as follows :—

(*a*) A fixed assessment at from 1 to 1½ annas per acre on all cultivated and culturable land.

(*b*) An *abiana* of Rs. 10 per well in use during the year.

(*c*) Fluctuating crop rates as under :—

(1) Jhallari crop Re. 1-10-0 per acre.

(2) All crops on lands newly brought under cultivation for the first two years, 12 annas per acre.

(3) All other crops Re. 1-8-0 per acre.

Crops irrigated by wells were in addition to the *abiana* to pay rates (2) or (3). Subsequently the *abiana* was reduced to Rs. 6 or Rs. 7 per well according to the depth of water level. In Gugera 17 and in Montgomery 50 estates accepted the above system of fluctuating assessment in the early part of 1880. Between that year and 1885 modifications were constantly introduced. Early in 1881, Sir James Lyall while marching through the tracts found that the *abiana* rate in some cases pressed heavily on the wells, and that the uniform crop rates of Re. 1-8-0 per acre pressed unduly on the inferior kharif crops. Consequently in 1882 Government sanctioned the abolition of the *abiana* rate and the adoption of the following revised rates :—

	Per acre.		
	Rs.	A.	P.
Dofasli	2	4	0
Chahi and Jhallari	1	10	0
Sailaba	1	8	0
New cultivation, and *til*, *moth*, *mung*, *mash* and *rawan*	0	12	0

It was also directed that when more than one-third of a crop sown on flooded or unirrigated land failed, a proportionate remission should be given.

In 1883, on the recommendation of the Financial Commissioner, Government santioned the reduction of the fixed charge on cultivated and culturable areas in villages paying *tirni* to a rate from 9 pies to one anna per acre ; the *chahi* and *jhallari*, and the *sailab* rates being at the same time reduced to Re. 1-8-0 and

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Introduction of fluctuating assessment into Ravi Tahsils.

Re. 1-6-0 per acre, respectively. It was also directed that half rates were to be charged on crops irrigated by new wells for five years, and by old wells restored for two years, from the date of the starting of the well. In 1884, the Financial Commissioner (Colonel Davies) after marching through the Ravi riverain, authorized the reduction of the rate for the fixed assessment of the culturable area to 9 pies per acre and sanctioned the following reduced crop rates for the fluctuating assessment :—

	Per acre.		
	Rs.	A.	P.
Chahi and jhallari	1	4	0
Sailaba	1	0	0
Dofasli	2	0	0
New cultivation	0	8	0

In February 1887, it was decided that the fixed assessment on cultivated and culturable area should be abolished, that all new cultivation should be charged at 8 annas per acre for the first two years, and all other cultivation at one rupee per acre ; that all crops harvested or cut for fodder should be charged, *dofasli* crops were to be exempted. Crops, if irrigated by new wells, were to be assessed at half rates for five years, if by old restored wells, for two years. This system was to be applied to all estates then under fluctuating assessment, with a discretion to extend it to any other estates which might apply thereafter for its application to them. Up to and inclusive of 1885-86, 67 estates in the Ravi tahsils were under fluctuating assessment. In subsequent years their number was as follows up to 1892-93, the end of the term of the revised settlement :—

Year.	Number of estates under fluctuating assessment.
1886-87	120
1887-88	152
1888-89	252
1889-90	257
1890-91	262
1891-92	262
1892-93	264

Introduction of fluctuating assesement Ravi tahsils.

The relief given by the system of fluctuating assessment as finally adopted may be gauged from the following figures :—

Tahsil.	Number of estates under fluctuating assessment in 1892-93.	Fixed assessment of revised settlement.	Average annual fluctuating assessment, 1889-90 to 1892-93.
		Rs.	Rs.
Gugera	99	33,163	14,857
Montgomery ..	165	52,161	16,306
Total ..	264	85,324	31,163

Excluding the 264 estates mentioned above, in the remainder of the Ravi tahsils the system of wholly fixed assessment was maintained up to the expiry of the revised settlement in 1892-93. Collections appear to have been difficult and remissions fairly frequent. Their assessment in 1892-93 stood as follows :—

Tahsil.	Fixed.	Fluctuating.	Total.
	Rs.	Rs.	Rs.
Gugera	45,856	18,860	64,716
Montgomery	32,838	24,067	56,905
Total ..	78,694	42,927	1,21,621

Changes in the Sutlej tahsils.

In the Sutlej tahsils the new Sohag Para Colony established in the years 1888-91 was, except for the payment of a fixed *malikana* of Re. 1 per 10 acres, placed under wholly fluctuating assessment. Consolidated land revenue and canal water-rates per acre of crop were sanctioned by the Government of India in 1887. They were as follows :—

Crop.	Land revenue.	Water-rate.	Total.
	Rs. A. P.	Rs. A. P.	Rs. A. P.
Canal irrigated. Rice ..	0 4 0	3 0 0	3 4 0
Canal irrigated. Other *kharif* crops	0 4 0	1 12 0	2 0 0
Canal irrigated. All *rabi* crops ..	0 12 0	1 0 0	1 12 0
All crops not irrigated by the canal	0 12 0	..	0 12 0

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For crop failures in the *kharif* harvest proportionate remissions of the above rates were to be given ; as regards the *rabi* rates it was decided in 1890, that in holdings provided with wells remissions might be given if the *rabi* crops failed entirely, and remissions in proportion to outturn in seasons of decided failure of winter rains. *Rabi* crops receiving irrigation from new wells were to be charged 6 annas in place of 12 annas per acre land-revenue. The average annual demand for land-revenue assessed on the colony during the five years ending 1895-96 under the above system was Rs. 16,986 after deducting the remissions of half *rabi* rates on crops irrigated by new wells. The demand for water-rates and *malikana* during the same period averaged Rs. 44,654 and Rs. 6,518, respectively. The assessment of the Sutlej tahsils immediately before revision was as follows :—The fixed assessments are those of 1896-97 and 1897-98 for Dipalpur and Pakpattan respectively ; the fluctuating is for 1897-98 :—

Tahsil.	Fixed.	Fluctuating.	Total.
	Rs.	Rs.	Rs.
Dipalpur	1,32,386	2,748	1,35,634
Pakpattan	65,973	21,752	87,725
Total ..	198,859	24,500	2,23,359

For a detailed account of the progress of the district during the term of the revised settlement reference may be made to the assessment reports and the final settlement report.

Revision of settlement, 1892-99 : Ravi tahsils.

In the original plan of operations under which the next revision of the settlement of the district was carried out it was decided that the district should be dealt with piecemeal ; the two Ravi tahsils being taken up first and on their completion those on the Sutlej. The re-settlement of the Ravi tahsils was commenced at the end of 1891, under the superintendence of Mr. Douie, Deputy Commissioner. He left the district in February 1892. In November of the same year Mr. Kennedy, as Deputy Commissioner, took charge of the settlement, and carried out the re-assessment of the two Ravi tahsils. Only a very partial re-measurement of the tract was considered necessary.

Assessment circles.

The Montgomery tahsil was divided into three assessment circles, *viz.*, the Bet, or riverain tract, and the Sandal and Ganji Bar circles to the north and south of the riverain tract, respectively. In the Gugera tahsil the riverain tract was divided into

two circles, the Bet Urar on the south and the Bet Par on the north of the Ravi; there was also a Sandal Bar and a Ganji Bar circle as in Montgomery; and in addition the tract traversed by the Deg Nala, between the Sandal Bar and the Bet Par circle, was formed into the Deg circles.

System of assessment.

For the Bet circles the system of assessment adopted was to impose a fixed demand on wells and the lands attached to them, and fluctuating rates on mature crops grown outside well areas. In the Bar and Deg circles the assessment was wholly fixed except that crops irrigated from the Deg canal were put under fluctuating assessment. A certain amount of fixed demand was imposed on the waste in all circles except the Deg. It was also decided that in all circles the fixed assessment on wells which should become unfit for use should be remitted, and that new wells should be assessed after certain periods of exemption.

New assessment.

The new assessment imposed by Mr. Kennedy from Rabi 1894 is compared below with the previous one; which in the case of the Bet circles was the average of the four years, 1889-90 to 1892-93, and in the others that of 1892-93 :—

Tahsil.	Assessment circle.	Previous assessment.	New Assessment.			Increase.	Percentage of increase.
			Fixed.	Fluctuating (estimate)	Total.		
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
MONTGOMERY.	Bet ..	45,697	36,050	37,703	73,753	28,056	61
	Sandal Bar ..	932	1,175	..	1,175	243	26
	Ganji Bar ..	1,543	1,728	..	1,728	185	12
	Total ..	48,172	38,953	37,703	76,656	28,484	59
CUGERA.	Bet Urar ..	19,285	16,605	14,723	31,328	12,043	62
	Bet Par ..	21,350	21,114	14,061	35,175	13,825	65
	Total Bet circle	40,635	37,719	28,784	66,503	25,868	63
	Deg ...	9,700	12,520	972	13,492	3,792	39
	Sandal Bar ..	1,701	1,881	..	1,881	180	10
	Ganji Bar ..	8,769	10,592	..	10,592	1,823	21
	Total ..	60,805	62,712	29,756	92,468	31,663	52
	Total Ravi tahsils	1,08,977	1,01,665	67,459	1,69,124	60,147	55

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Revision of new assessments.

The announcement of Mr. Kennedy's assessments produced considerable discontent in the Gugera and Montgomery tahsils, and led to a certain amount of agitation. In October 1894, it was decided that so far as the Bet circles were concerned, they should be revised by Mr. Fagan, who had succeeded Mr. Kennedy, as Deputy Commissioner, and was also in charge of the settlement of the Sutlej tahsils. The revision was completed in January 1896. It was decided that the system originally adopted should, as far as possible, be adhered to. The fixed assessments on the well areas were reduced and revised on the basis of the area of crops, which it was estimated that the wells of individual estates could mature in the year without the aid of river water; any area of mature crops actually grown on well areas in excess of such estimated area being liable to fluctuating assessment at a rate uniform for all crops, which varied in different tracts from Re. 1 to Re. 1-4-0 per acre. A purely fluctuating assessment was retained for crops outside well areas; such crops were divided into three classes; the rates for which were, respectively, Re. 1-8-0, Re. 1-2-0 and Re. 0-12-0 per acre; superior crops, such as rice, cotton, *til*, wheat, were put in the first class, medium crops, *jowar*, maize, barley and gram in the second, and others in the third. The fixed assessments on waste were retained, but were considerably reduced. The results of the revision as compared with those of Mr. Kennedy's assessment were as follows:—

1	2	3	4	5	6	7	8	9	10	11
			Mr. Kennedy's assessment.			Assessment as revised.			Increase or decrease.	
			Announced.							
Tahsil.	Assessment Circle.	Average demand of previous four years, 1889-90 to 1892-93.	Fixed.	Fluctuating (estimate).	Total.	Fixed.	Fluctuating estimated on areas of 1894-95.	Total assessment.	Column 9 on column 3 with percentage.	Column 9 on column 6.
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
Gugera.	Bet Urar	19,285	16,605	14,723	31,328	12,448	19,213	31,661	+12,376 +64%	+333
	Bet Par	21,350	21,114	14,061	35,175	15,053	11,422	26,475	+5,125 +24%	—8,700
	Total ..	40,635	37,719	28,784	66,503	27,501	30,635	58,136	+17,501 +43%	—8,367
Montgomery.	Bet	45,697	36,050	37,703	73,753	22,391	37,761	60,152	+14,455 +32%	—13,601
	Total two tahsils ..	86,332	73,769	66,487	1,40,256	49,892	68,396	1,18,288	+31,956 +37%	—21,968

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Revision of settlement 1892—99, Sutlej tahsils.

Assessment circles.

The re-settlement of the Sutlej tahsils was commenced at the beginning of 1894, and lasted till February 1899. It was conducted by Mr. Fagan. Though only a very partial re-measurement had been contemplated in the original plan of operations it was in practice found needful to re-measure and re-map every estate in both tahsils.

Each tahsil was divided into four assessment circles which followed generally the existing natural sub-divisions; they were (*i*) a *bar* or upland circle; (*ii*) the canal-irrigated tract divided into two circles, *viz.*, the Khanwah and the Sohag in Dipalpur and the Khanwah-Sohag and Sohag-Para in Pakpattan; (*iii*) a Bet or riverain circle.

Half-net assets.

The theoretically estimated half-net assets of the two tahsils are shown in the following table:—

DIPALPUR.		PAKPATTAN.		BOTH TAHSILS.	
Assessment circle.	Half net-assets.	Assessment circle.	Half net-assets.	Tract.	Half net-assets.
	Rs.		Rs.		Rs.
Bar	9,065	Bar	9,274	Bar ..	18,339
Khanwah ..	91,335	Khanwah-Sohag ..	13,256		
Sohag	1,20,103	Sohag-Para ..	43,542		
Sohag-Para colony ..	5,095	Sohag-Para colony ..	49,849	Canal..	3,23,180
Total Sohag circle ..	1,25,198	Total Sohag-Para circle	93,391		
Bet	31,456	Bet	73,773	Riverain	1,05,229
Total ..	2,57,054	Total ..	1,89,694	..	4,46,748

System of assessment adopted.

The main features of the system of assessment adopted for the Sutlej tahsils were as follows:—(*i*) A fixed assessment was imposed on each estate based on the average area of well-irrigated and *barani* cultivation. In cases where the waste area was large a certain amount of fixed demand was imposed on it also; (*ii*) all lands which received canal-irrigation were to be charged harvest by harvest with occupiers' rates on the mature crop area, the rates varying with the class of crops and being liable to quinquennial revision. Such lands were also to be assessed with a canal-advantage land-revenue rate on the area sown without reference to the success or failure of the crop, *dofasli* area being exempt. Both

occupiers' rates and canal-advantage rate were to be assessed whether the land received well-water in addition to canal-irrigation or not. The occupier's rates introduced from Rabi 1898, were—

System of assessment adopted.

Crops.	Rate per acre. Rs.	A.	P.
Rice, gardens, pepper	3	4	0
Cotton, sugarcane, melons, *til*, hemp ..	2	4	0
All other *kharif* crops	1	4	0
All mature *rabi* crops, plantations, vegetables ..	1	0	0
Failed *rabi* crops and grasses	0	8	0

The canal-advantage (land-revenue) rate varied from assessment circle to assessment circle, the limits being 7 annas and Re. 1 per acre in Pakpattan, and 8 annas and 12 annas in Dipalpur; (*iii*) all *sailab* and *abi* (*jhallari*) cultivation which did not receive well irrigation was to be subject to a fluctuating assessment imposed on the area of crops matured. The rates sanctioned for this assessment were as follows :—

Tahsil.	Assessment circle.	Class of cultivation.		Rate per acre. Rs.	A.	P.
Dipalpur ..	Bet ..	Sailab	Superior ..	1	6	0
			Inferior ..	0	14	0
		Abi ..		0	12	0
Pakpattan ..	Bar ..	Sailab	Superior ..	1	8	0
	Sohag Para ..		Inferior ..	0	14	0
	Bet ..	Abi ..		0	14	0

Superior crops were rice, *til*, cotton, wheat and tobacco; inferior crops comprised all others. *Dofasli* crops were not charged except that if a superior crop followed an inferior one as *dofasli*,

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the difference between the superior and inferior rates was assessed on the former. The occasional cultivation which took place on small areas in the Khanwah and Sohag circles of Dipalpur on the Ganji and Mokal spills from the Lahore district were to be assessed on area sown, whether the crop matured or failed at Re. 1 per acre for *sailab* and 8 annas per acre for *abi* cultivation. *Sailab* and *abi* cultivation in all circles, if irrigated by wells under fixed assessment, was exempted from fluctuating assessment.

System of assessment adopted.

New assessment.

The following table exhibits the results of the re-assessment of the Sutlej tahsils :—

Name of tahsil.	Name of assessment circle.	Revenue prior to revision.		Demand at sanctioned rates.	Revenue actually assessed.					Increase on revenue before revision.		
		Amount.	Incidence per acre on cultivated soil area by new measurement.		Initial.	*Fixed.* Deferred on protective well leases.	*Fixed.* Total.	Estimated fluctuating.	Total assessment.	Incidence per acre on cultivated soil area by new measurement.	Amount.	Percentage.
		Rs.	Rs. A. P.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs. A. P.	Rs.	Rs.
Dipalpur.	Bar ..	7,707	0 7 9	9,108	7,681	479	8,160	811	8,971	0 9 0	1,264	16
	Khanwah ..	52,866	0 8 1	74,049	36,170	2,160	38,330	36,631	74,961	0 11 6	22,095	42
	Sohag ..	53,269	0 6 9	96,506	4,546	4,544	50,090	46,476	96,566	0 12 0	43,297	81
	Bet ..	21,792	0 10 10	26,833	9,629	1,355	10,984	16,063	27,047	0 13 5	5,255	24
	Total ..	1,35,634	0 7 9	2,06,496	99,026	8,538	1,07,564	99,981	2,07,545	0 11 10	71,911	53
Pakpattan.	Bar ..	5,988	0 6 10	7,619	5,659	127	5,786	2,824	8,610	0 9 11	2,622	44
	Khanwah-Sohag	8,333	0 7 4	10,630	5,042	288	5,330	6,043	11,373	0 10 0	3,040	36
	Sohag-Para ..	35,745	0 6 9	73,212	18,076	5,034	23,110	52,868	75,978	0 14 5	40,233	113
	Bet ..	37,659	0 10 11	57,788	13,840	1,018	14,858	44,029	58,887	1 1 1	21,228	56
	Total ..	87,725	0 8 2	1,49,249	42,617	6,467	49,084	1,05,764	1,54,848	0 14 5	67,123	76
	Total two tahsils	2,23,359	0 7 11	3,55,745	1,41,643	15,005	1,56,648	2,05,745	3,62,393	0 12 10	1,39,034	62

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New assessment.

The revenue prior to revision is, in the case of Dipalpur, that of 1896-97 except as regards the Sohag-Para colony (included in the Sohag-Para circle) for which it is that of 1897-98, amounting to Rs. 2,748 ; in the case of Pakpattan it is that of 1897-98. With the exception of the colony the new assessments were introduced into the Dipalpur tahsil with effect from Rabi 1898 and into Pakpattan from the following *kharif*. In the colony they were introduced from Rabi 1899. A good deal of opposition to the new assessments was shown in Dipalpur, but practically none in Pakpattan. In both cases they were certainly moderate. Special care was taken not to press too heavily on well-irrigated cultivation.

Results of re-assessment for the whole district.

The results of the re-assessment for the whole district were as follows :—

Tahsil.	Revenue in years prior to revision.	Revised assessment					Increase.	
		Fixed.			Estimated fluctuating	Total assessment	Amount.	Percentage.
		Initial.	Deferred on wells.	Total.				
	Rs.	Rs.	Rs	Rs.	Rs.	Rs.	Rs.	Rs.
Gugera ..	64,716	49,993	2,362	52,355	30,635	82,990	18,274	28
Montgomery ..	56,905	23,971	923	24,894	37,761	62,655	5,750	10
Dipalpur ..	1,35,634	99,026	8,538	1,07,564	99,981	2,07,545	71,911	53
Pakpattan ..	87,725	42,617	6,467	49,084	1,05,764	1 54,848	67,123	76
Total district .	3,44,980	2,15,607	18,290	2,33,897	2,74,141	5,08,038	1.63,058	47

In the case of the Rabi tahsils the revenue prior to revision is that of 1892-93, the revised fixed assessment is as it stood in 1897-98, and the fluctuating assessment is that estimated at Mr. Fagan's revision in 1894-96.

Periods of settlement.

The new assessments were introduced from the dates and for the periods shown below, the periods being announced subject to modification by further orders :—

Tahsils Gugera and Montgomery all circles, except the Bet, from Rabi 1894, for 20 years ; Bet circles from Kharif 1895, for 10 years.

Tahsil Dipalpur, except the Sohag-Para Colony, from Kharif 1898, for 20 years.

Tahsil Pakpattan, except the Sohag-Para Colony, from Kharif 1898, for 20 years.

The Sohag Para Colony, from Rabi 1899, for 10 years.

Later it was decided that the period of settlement for the whole of the Ravi tahsils should be fixed at 10 years. The final result there fore was that the assessment of the Ravi tahsils and of the Sohag-Para Colony should run for 10 years and that of the remainder of the Sutlej Tahsils for 20 years from the date of introduction.

Periods of settlement.

Miscellaneous revenue.

The Government rent-roll for the district included a considerable sum derived from crown lands, forests, etc. Over 2,400 square miles of Government waste land (unclassed forests) were under the control of the Deputy Commissioner, while the area in charge of the Forest Department was 847 square miles, of which 760 square miles were unclassed forests and 87 square miles reserved forests. The principal items in the income from these areas were *tirni* assessment and *kasht barani* assessment for single harvest cultivation. Apart from the *kasht barani* or single harvest leases over 75,000 acres in the district (excluding the Sohag-Para Colony) were leased by Government for long terms. These leases were taken into consideration in the course of the 1898 settlement. Purchase on favourable terms was allowed in a few cases, but generally the leases were renewed with or without modifications. The Government waste area in which *kasht barani* cultivation might be permitted or long leases given was at that time very much restricted in view of the possibility of the future extension of irrigation from Government canals to the district.

Tirni.

Tirni or grazing tax was an inheritance from the Sikhs, and the object of it appears to have been to make professional cattle-breeders, who did not otherwise contribute to the expenses of the State, share in the burdens of the rest of the population. Agricultural cattle were exempt from taxation, and so were cows and buffaloes, the property of *bona fide* cultivators. Sheep and goats were, however, always taxed. Up to 1857 only camels, buffaloes, sheep and goats paid *tirni* in this district. Captain Elphinstone recommended that cows should be taxed. They were taxed. The main excellence of the Sikh system, that the cattle of cultivators were exempted from taxaton, was lost sight of. In process of time even agricultural bullocks came to be taxed. In 1857-58 the *tirni* income amounted to a little under Rs. 32,000. In 1872-73 the income was Rs. 1,08,009, of which sum about one *lakh* was due to *tirni* proper, and the rest to leases of *kokanber*, grass, *munj* and *sajji*, which were formerly shown separately. In 1881-82 it amounted to Rs: 1,48,000. The system in force up to 1870-71 involved periodical counting of the cattle of all the villages of the district. But only those villages whose cattle actually grazed in the Government jungle paid *tirni*. If, however, any cattle

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of non-*tirni*-paying villages were found in the jungle all the cattle had to pay double rates. In 1870-71 the Government waste lands were divided into blocks or *tirni mahals* which were leased annually, and farmers were left to make their own arrangements with people grazing cattle in their blocks. The farmers were allowed to charge at certain fixed rates for each head of cattle grazing, *viz.* :—

	Rs.	A.	P.
Male camel	1	0	0
Female camel	1	8	0
Male buffalo	0	8	0
Female buffalo	1	0	0
Cow	0	8	0
Sheep or goat	0	1	0

Plough bullocks no longer paying *tirni*. These rates were by no means excessive, considering the great profits yielded by cattle. But it was found that this system led to so much oppression and extortion, and the contractors became so obnoxious to the people, that their lives were hardly safe when they ventured among the grazing community to enumerate the cattle. Consequently in 1879 the system of employing contractors was discontinued, and fees were collected by Government officials on the enumeration of cattle effected for each village or locality, the rates remaining unchanged. In 1882 it was found that the *tirni zaildars* gave little or no assistance, and all were dismissed, save a very few of the best men. In that year the Afghan war drew about 7,000 camels from the district ; the enumeration was purposely not made too strictly ; and the numbers thus arrived at were under orders of Government ; and in order to avoid annoyance caused by annual enumeration, accepted for a period of five years. This, of course, only applied to the inhabitants of the district, and not to nomad tribes or to people from neighbouring districts, whose only object in coming was probably to evade paying *tirni* dues in their own villages. Some of the large stock-owners were very independent, and almost always evaded enumeration of their animals by distributing them among dependants, or by driving them across the boundary of the district. The total *tirni* demand for the year 1885-86 was Rs. 1,54,979, but of this Rs. 27,731 was remitted and Rs. 24,871 was suspended. In 1886-87 the Multan system of *tirni* assessment in a modified form was introduced into the district. The main feature of the system was that each *tirni*-paying village or grazing hamlet (*rahna* or *jhok* of the *bar*) contracted to pay a

Tirni.

fixed annual sum as *tirni* for a period of five years. The assessment of this sum was made by the Deputy Commissioner for each village or grazing hamlet and was based on the application of certain rates to the number of *tirni*-chargeable cattle belonging to the village as ascertained partly by estimate and partly by enumeration carried out in 1885-86. The rates used were those in force previously, except that cows were charged 6 annas instead of 8 annas per head. Bullocks were exempted. A few estates which had not paid *tirni* before were assessed at half rates, and a good many which had no Government waste available for grazing near them were exempted from assessment. The *tirni* demand for the year 1886-87 under the new assessment was Rs. 1,12,188; and the average annual demand for the five years was estimated at Rs. 1,13,000. It was intended that the fixed *tirni* assessment of each village should be distributed each year over all the cattle of the village at rates for each class of animal proportionate to the rates which were used in framing the assessment.

Even before colonization started there seems to have been a very considerable reduction in *tirni* receipts as compared with the quinquennial assessment made in 1891 under which approximately Rs. 1,40,000 were brought in annually. In the four years 1909-10 to 1912-13 the average demand for the whole district was only Rs. 40,000 of which about Rs. 17,000 came from the Ravi tahsils and Rs. 23,000 from the Sutlej tahsils. As a result of colonization the Ravi tahsils in 1913-14 yielded only Rs. 6,050 and only Rs. 4,000 in the following year. Now *tirni* in the Ravi tahsils has ceased to be claimed altogether. While in the Sutlej tahsils by reason of colonization in the Nili Bar the only relic of *tirni* is a cattle grazing contract in a plot No. 19 in the Pakpattan tahsil which is auctioned annually by the Colonization Officer, Nili Bar. This brought in Rs. 2,100 in 1931-32 and Rs. 1,000 in 1932-33.

When colonization started in the Ravi tahsils and later in the Nili Bar, in each case proof of having paid *tirni* to Government was generally considered presumptive evidence that the payer (*Tirni Guzar*) was entitled to consideration for a grant of land in the new colony. Unfortunately it was possible for a man who did not depend on grazing cattle for a living to get *tirni* receipts merely by keeping a few cows and letting them wander in the neighbourhood of his residence, say in Montgomery or Pakpattan. But it was not difficult generally for a Colonization Officer to distinguish the genuine grazier of the Bar from the man for whom intermittent grazing for his cows was merely a convenience. And on the whole approved *Tirni Guzars* have turned out to be some of the best of the local colonists.

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Reassessment of Sutlej tahsils, 1919—22.

The re-assessment of the Sutlej tahsils was taken up in 1919, the Settlement Officer being Nawab Malik Mohammad Hayat Khan Noon. He observes that the only change that had occurred up to that time in the system of assessment introduced by Mr. Fagan was that in the Sohag-Para Colony the canal advantage rate was raised in 1910 from Re. 1 per acre sown to Re. 1-2-0 per acre matured. The working of Mr. Fagan's settlement is described by the Nawab as a success. The demand had been paid with ease and the contingency of suspensions and remissions of land revenue on a large scale had never arisen.

Assessment circles.

The Nawab found that both tahsils fell into three natural divisions—the Bar on the north and north-west, of which a large portion was Government waste land, the *nahri* tract between the Bar and the Bet served by inundation canals, and the Bet or riverain tract liable to floods from the river. In the Pakpattan tahsil he set up three assessment circles following these three natural divisions. In this he modified the circles adopted in the previous settlement in which the Sohag-Para Colony was dealt with in a separate assessment report. In the Dipalpur tahsil he set up 4 assessment circles, Bar, Khanwah, Sohag and Bet. In this tahsil one combined *nahri* circle including irrigation from the Khanwah and the Sohag canals would, in his opinion, have been unmanageable.

Method of assessment.

He introduced certain modifications in the methods of assessment adopted at the previous settlement :—

(1) *Barani* assessment was made fluctuating ;

(2) revenue rates for all classes of cultivation were to be worked out on matured areas and not on sown or cultivated areas. Formerly canal advantage rate was leviable on sown areas.

(3) Assessment on the crown waste was abandoned.

Thus *chahi* and *chahi sailab* assessment was fixed, *chahi Nahri* assessment partly fixed and partly fluctuating, while all other classes of cultivation were subject to a fluctuating assessment. Pure *nahri* crops paid only *Nahri* fluctuating rates. *Chahi nahri* crops paid in addition a certain fixed assessment on the well. No exemption was made in favour of double cropping except on *sailab* land ; but if a superior *sailab* crop followed an inferior one, the difference between the higher and lower rates was payable. It was decided that in future fixed assessment on a well would be remitted with effect from the first Rabi harvest in which the well fell out of use and would be re-imposed, subject to such rules about protection as might be approved, with effect from the first harvest.

whether Kharif or Rabi in which it was set to work again. It was anticipated that this rule would give considerable relief in respect of a number of wells in the Bet circle which in seasons of scanty rainfall and inadequate floods were liable to go out of use.

The following table gives the net results of the assessment of the Pakpattan tahsil. Results Pakpattan Tahsil.

The net enhancement on the average assessment of the selected cycle of years is Rs. 71,319 which works out at 47 per cent. Out of the total assessment about 35 per cent. was fixed *chahi* assessment and 65 per cent. fluctuating :—

TOTAL ASSESSMENT, TAHSIL PAKPATTAN.

Name of circle.		Assessment.			Percentage of jama on half-net assets.	Percentage of enhancement on the average jama of selected cycle of years.	Percentage of enhancement on 1893-99 jama.
		Fixed.	Fluctuating.	Total.			
		Rs.	Rs.	Rs.			
Bar ..	Proposed and sactioned ..	10,311	14,469	24,780	71	+36	+59
	Announced ..	10,829	14,469	25,298	72	+38	+63
Sohag Para	Proposed ..	42,530	95,602	1,38,132	62	+49	+65·8
	Sanctioned ..	46,500	91,193	1,37,693	62	+49	..
	Announced ..	45,779	91,193	1,36,972	61	+48	+65
Bet ..	Proposed ..	..	62,401	62,401	65	+51	+6
	Sanctioned ..	21,719	39,779	61,498	64	+49	+4
	Announced ..	21,401	39,779	61,180	63·5	+48	+3·9
Total Tahsil	Proposed ..	52,841	1,72,472	2,25,313	64	+48	+43
	Sanctioned ..	78,530	1,45,441	2,23,971	63	+47	+42
	Announced ..	78,009	1,45,441	2,23,450	63	+47	+42

The new assessment was sanctioned from Kharif 1921.

The table below will show the results in the Dipalpur tahsil. The assessment announced gives an increase of Rs. 1,01,003 on the average assessment of the selected cycle of years and thus the Dipalpur tahsil.

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enhancement works at about 46 per cent. Out of the total assessment, about 46·3 per cent. would be under fixed *chahi* assessment and 53·7 per cent. under fluctuating assessment :—

Dipalpur Tahsil.

TOTAL ASSESSMENT OF DIPALPUR TAHSIL.

Name of circle.		Assessment.			Percentage of jama on the half-net assets.	Percentage of enhancement on average jama of selected cycle of years.	Percentage of enhancement on 1898-99 jama.
		Fixed.	Fluctuating.	Total.			
		Rs.	Rs.	Rs.			
Bar ..	Proposed and sanctioned..	11,823	5,615	17,438	64	+67	+97
	Announced ..	11,369	5,240	16,609	60·8	+58·9	+85·1
Khanwah ..	Proposed and sanctioned..	49,261	49,558	98,819	63	+34	+32
	Announced ..	49,819	49,618	99,437	63·1	+34·4	+32·6
Sohag ..	Proposed and sanctioned..	73,652	92,594	1,66,246	61	+49	+72
	Announced ..	72,660	98,878	1,65,538	60·3	+48·5	+71·4
Bet ..	Proposed and sanctioned..	17,190	24,465	41,655	65	+60	+46
	Announced ..	16,597	24,700	41,297	64·8	+58·9	+52·7
Total Tahsil	Proposed and sanctioned..	1,51,926	1,72,232	3,24,158	62	+46	+56
	Announced ..	1,50,445	1,72,436	3,22,881	61·7	+45·5	+55·5

The new assessment was introduced from Kharif 1922.

Crown leases.

As regards Government land on lease it was found that in the Sohag-Para Colony the lessees had acquired proprietary rights in most of the areas leased to them. Special reports were submitted as regards the other leased areas. Plots of unappropriated crown waste were still leased by the Deputy Commissioner for single harvests.

Tirni.

At this time *tirni* was not a fixed charge. The right to collect fees for grazing in Government land was auctioned annually and

the contractor realized the prescribed fee from the graziers. The rates were as follows :—

Tirni.

	Rs.	A.	P.
Camels	1	4	0
Buffaloes	0	14	0
Cows	0	6	0
Goat, sheep, pony or donkey	0	1	0

Abiana.

New rates of *abiana* (occupier's rate) in the areas irrigated by the Upper Sutlej inundation canals were introduced in 1917 and were as follows :—

Class.	Name of crop.	Per acre.					
		Flow.			Lift.		
		Rs.	A.	P.	Rs.	A.	P.
I	Rice, Garden, Pepper, Sugarcane	3	8	0	1	12	0
II	Cotton, Melons, Til and Hemp..	2	12	0	1	6	0
III	All other Kharif crops ..	1	12	0	0	14	0
IV	Grasses and failed Rabi crops..	0	8	0	0	4	0
V	All other crops (Rabi) ..	1	4	0	0	10	0

A special series of rates for the three inundation canals known as the Mehdi Khan, Kitchin and Irving canals were sanctioned in 1918. Up to that time irrigation from these canals had been classed as *sailab* and the land revenue on them was charged at *sailab* rates. In this settlement these lands are all classed as *nahri*. The special *abiana* rates were as follows :—

Classes.	Name of crops.	Per acre.					
		Flow.			Lift.		
		Rs.	A.	P.	Rs.	A.	P.
I	Rice, Gardens, Pepper ..	3	4	0	1	10	0
II	Cotton, Sugarcane, Hemp, Til Melons	2	4	0	1	2	0
III	All other Kharif crops ..	1	4	0	0	10	0
IV	All matured Rabi crops, plantations and vegetables ..	1	0	0	0	8	0
V	Grasses	0	8	0	0	4	0

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Increase in the demand.

As the Settlement Officer points out the total increase in the demand shown in the above statements does not imply a corresponding increase in productivity per acre previously assessed, because in the period between this settlement and the last there had been a very considerable increase in cultivation. He indicates that the actual enhancement amounted to about 28 per cent. in the Dipalpur tahsil and about 20 per cent. in Pakpattan.

Sutlej Valley Project.

At the time this settlement was completed work on the Sutlej Valley Canal Project was about to start. Colonization in the Sutlej tahsils (Nili Bar) opened in 1924, and has entirely changed the situation. But before proceeding to discuss the present assessment arrangements in these tahsils, it is necessary first to discuss the progress of colonization in the Okara and Montgomery tahsils in so far as this effected land revenue arrangements.

Lower Bari Doab Colony, Mr. Fagan's Settlement in practice.

With one important modification the assessment arrangements made by Messrs. Kennedy and Fagan remained in force in the the Ravi tahsils until colonization started. In 1896-97 it was found necessary to give extensive suspensions of the fixed demand, which in the Montgomery Bet amounted to over 1/3rd of the total. Failure of *sailab* combined with the attractions of cultivation on the Chenab Canal drew away the cultivators from the wells, while the waste yielded little or no profit. It was decided in 1899-1900 to abolish fixed well assessment in those estates of the Bet circle in which the proprietors desired the step and to introduce an entirely fluctuating system. It appears that all the Bet villages south of the Ravi in the Montgomery tahsil took advantage of this option. In the Okara tahsil up to the time of the Lower Bari Doab Colony settlement there were still 20 villages outside the irrigation boundary which paid a fixed assessment for wells or waste or both.

Fixed *versus* fluctuating in the Ravi tahsils.

In the ordinary course there should have been a general reassessment of the Ravi tahsils in 1904 but none took place. As early as 1901 the propriety of substituting a purely fluctuating system of assessment in the Bar circles of the Gugera and Montgomery tahsils was discussed. A report was called for by Government in Mr. Diack's letter No. 57, dated the 19th February 1902. In that letter it was remarked that the Lieutenant-Governor doubted whether it was necessary to proceed at once with the re-assessment of this tract and that he hoped that it might be possible to leave the Montgomery district alone for some years to come. For some reasons unexplained the full report on these matters was not submitted to Government until 1909 when Government agreed

Re-assessment postponed to 1914.

generally with the views * of Mr. Douie, Financial Commissioner. These may be summarised as follows :—

Montgomery and Gugera Bet circles.—Complete fluctuating assessment had been accepted by a large number of villages. The average incidence of the present demand was not higher than the incidence when Mr. Fagan revised Mr. Kennedy's assessment. It was probably lower. The people were satisfied and there was no need to force complete fluctuation on the few estates which did not want it.

Re-assessment postponed to 1914.

Bar circles.—The assessments were in the circumstances not unduly severe. The area was to be irrigated by the Lower Bari Doab Canal. No change was required till irrigation began.

In general there was no need to undertake any re-assessment in Montgomery till irrigation from the Lower Bari Doab Canal began or was about to begin, *i.e.*, till about the year 1914. The term of the ten years settlement had expired in 1904. The actual term would therefore be twenty years.

Again postponed.

But in 1914 by which time colonization had started, it was again decided to postpone the assessment. The reasons for this decision were† that if the policy normally adopted in districts under colonization was followed, the re-assessment would only apply to the wholly unirrigated villages. Cultivation in the riverain was already depressed. Colonization of the Bar might lead to loss of cultivators and the abandonment of wells and cultivation. Evidently therefore nothing could be gained by re-assessment. Again in view of the still operative but incomplete effects of extensive adjacent colonization in the Bar and because the area and the number of estates concerned and the amount of land revenue involved were comparatively small, the Financial Commissioners desived and Government agreed ‡ to postpone the re-settlement of the Ravi riverain estates in the Montgomery district lying outside colony limits for a further period of five years from 1918. Re-settlement was again postponed in 1923 and was eventually started in 1927.

Colony assessment.

When colonization started, it became necessary to introduce a fresh system of assessment for the land coming under irrigation

*Letter No. 530, dated the 3rd December 1909, from the Senior Secretary to the Financial Commissioners, to the Chief Secretary to Government, Punjab.

†Letter No. 311-S., dated the 14th July 1914, from the Junior Secretary to the Financial Commissioners, to the address of the Revenue Secretary to Government, Punjab.

‡Letter No. 91-623-B-2, dated the 6th June 1918, from the Senior Secretary to the Financial Commissioners, to the address of the Revenue Secretary to Government, Punjab.

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from the new canals. Government generally accepted the proposals in this behalf made by Mr. Joseph, the first Colonization Officer. A copy of the rules issued is attached to the letter from the Junior Secretary to the Financial Commissioners, dated the 14th July 1914, quoted above. There was to be a fluctuating flat rate of Rs. 2 per matured acre throughout the canal irrigated area. Wherever irrigation was extended to any part of a pre-existing village, the whole assessment was to become fluctuating forthwith. All land not assessed to canal rates in any village wholly or partly within the irrigation boundary was to pay at the rate of Rs. 1-2-0 per acre of matured crops whether grown *sailab*, *barani* or *chahi*. In the Bet circles estates entirely outside the irrigation boundary continued to pay at settlement rates. The old fixed assessment in the Ganji Bar came to an end as from Kharif 1914. As was noted above in Mr. Fagan's time the advent in due course of canal irrigation in the Lower Bari Doab was anticipated and, as a consequence, waste land leases were very sparingly given or renewed. Such leases as were in existence at the time of colonization were considered on their merits and the lease holders were given such grants of canal irrigated lands in the Bar as were justified by their fulfilment of the conditions on which the original leases were given. This class of lessee was generally described as *Tahudkwah*, the principal condition of the lease having involved as a rule sinking of one or more wells. The reserved forests and unclassed forests ceased to exist as such, while *tirni* also became a thing of the past. Mr. Fagan had remarked " when colonization does take place fairly liberal allotments should be made to the inhabitants of the district both on grounds of equity and expedience ". This view was accepted by the authorities responsible for the colonization scheme which included liberal allotments to the old inhabitants of the district whether cultivators or graziers.

Colony assessment.

Malikana.

In addition to the land revenue charge of Rs. 2 per acre of matured crops, an additional charge of Re. 1 per acre assessed, *viz.*, half the land revenue, was levied as *malikana* in the case of all lands granted by Government pending the acquisition of proprietary rights by the grantee.

Abiana and agency for assessment.

This land revenue charge was deliberately fixed low to suit the conditions of the new colony. A far heavier charge payable by the cultivator is the *abiana* or occupier's rate, which represents the cost of canal water supplied by Government. A staff of Zilladars and Patwaris is maintained by the Canal Department for the purpose of assessing occupiers' rate ; and on grounds of convenience this Canal staff at the same time enters up the Government demand for land revenue, *malikana* and cesses throughout the

irrigated area. Outside the irrigated area the revenue patwari's *Khasra Girdawri* was still the basis of assessment and there the rules for remissions for failed crops drawn up by Mr. Fagan at settlement still applied. Remissions for failed crops in the canal irrigated area are discussed under the head " Irrigation " in Chapter II, part A, Section (*h*).

Abiana and agency for assessment.

Nili Bar Colony.

Before showing the financial effects of these arrangements together with the new arrangements introduced by the recent settlement of the Lower Bari Doab Colony, it will be well to return to the Sutlej tahsils and show what modifications were introduced there by reason of colonization in the Nili Bar.

In the orders governing the assessment of the Sutlej tahsils passed at settlement, provision was not made for a revision following on the introduction of perennial canal irrigation. While therefore a new rate could be fixed for Crown lands coming under perennial irrigation for the first time, the rate charged on proprietary lands could only be brought up to the same level by the imposition of a canal advantage, or owner's rate in addition to the land revenue charge assessed at settlement. This was effected by making the extension of perennial irrigation to such lands conditional on the owners undertaking to pay this extra charge. It has been observed above that the rates fixed at the beginning of the Lower Bari Doab Colony were deliberately fixed low to suit the conditions of the new colony. Unfortunately the years preceding the colonization of the Nili Bar were years of soaring agricultural prices, with the result that those who fixed the assessment to be levied in that Colony were impressed with the advisability of fixing rates at a level commensurate with the profits then accruing on canal lands. The land revenue charge was therefore fixed at Rs. 3-8-0 per acre for perennial land, while in addition the charge for *malikana* was Rs. 3 per acre, assessed not on the matured area but on the total area allotted. Rates on ' non-perennial ' land were half of those on perennial. The charge on non-perennial proprietary land remained as assessed at settlement ; the owner's rate levied, as mentioned above, on proprietary land receiving perennial irrigation was Rs. 2-8-0 per acre, which brought the combined charge up to approximately the same as the land revenue paid on Crown land. The Colonization Officer was given power to lower this rate, in the case of ' inferior *kallar* land ', to Rs. 2-8-0 and Re. 1-8-0 on perennial and Re. 1-4-0 and Re. 1 on non-perennial land. The assessment was to be maintained for ten years with effect from Rabi 1927. These orders are contained in Punjab Government letter No. 1235-R.(S.), dated 4th October 1926.

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Malikana.

When the agricultural depression made its effects felt, the *malikana* charge in particular was found to be too heavy, and the assessment was shifted from 'allotted' to 'matured' acreage, and, according to present orders, is at the rate of Re. 1-8-0 per matured acre in the perennial zone and 12 annas in the non-perennial; these orders are, however, temporary, and the permanent rate is still to be decided.

Abiana.

Occupiers' rate is, of course, charged in addition, according to the schedules in force from time to time on the different canals.

Acreage rate.

Acreage, or construction rate, which is a charge made on colonists to recoup the cost of construction of water-courses and culverts, was also levied at a rate of Rs. 3, if made in a single payment, or eight half-yearly instalments, totalling Rs. 4-4-0. The rate was modified to meet the case of proprietary villages, and collection of the charge has in fact been suspended in consequence of the depressed economic conditions.

Tahudkhwah.

In the Nili Bar, as in the Ganji Bar, there were, before colonization, a number of waste land leases known as Tahudkhwah, and these were mostly converted into Colony tenures on the same basis as in the Lower Bari Doab Colony.

Lower Bari Doab Colony Settlement.

It remains to give an account of the recent settlement in the Lower Bari Doab Colony. The system in force when this settlement started has been described above. Settlement operations opened in October 1927 and proceeded until March 1931, when they were interrupted owing to the collapse in prices of agricultural produce which had begun in 1930, and by 1931 had become so serious that Government found it impossible to adopt a scale of commutation prices bearing any relation to the probable course of prices for any future period. By March 1931, measurement work had been completed and records-of-rights prepared for all estates in the Colony. An assessment report for the Okara tahsil had been drawn up and material for the compilation of similar reports for the Montgomery and Khanewal tahsils had been collected. Government decided to resume operations in the summer of 1933 and the new assessments were eventually announced in the spring of 1934.

Cycle of years selected for statistical purposes.

The cycle of years adopted for the preparation of cultivation figures and other statistics for the purposes of this settlement, was the quinquennium from 1922-23 to 1926-27. The average annual land revenue demand in the Colony for this period was as follows :—

	Rs.
Okara tahsil	6,24,906
Montgomery tahsil	7,82,953
Total ..	14,07,859

No classification of soil has been attempted in the record-of-rights except in so far as a distinction has been drawn between the mode of irrigation employed, that is to say, the various fields have been classified as *nahri, jhallari, chahi, abi, sailab* or *barani*. The term *jhallari* has been reserved for land irrigated by lift from a canal distributary or water-course and *abi* for land irrigated by lift from a river cut or other natural expanse of water. Soil classification.

Generally in both the tahsils concerned, the assessment circles have followed the natural physical divisions of the tract. In each tahsil, there is a Beas circle comprising the area between the Beas *dhaya* and the *khushk* Beas and a Ganji Bar Circle comprising the upland area between the two *dhayas*. In the Okara tahsil, the Bet Circle comprises a narrow strip of proprietary villages near the river, some of which are partially irrigated from the Gugera Branch, while the Gugera Branch circle comprises all the villages wholly within the irrigation boundary of that branch. In the Montgomery tahsil, the Bet circle comprises all villages between the Ravi and the Ganji Bar circle. When settlement operations started, a large number of proprietary villages in this riverain area were wholly unirrigated. But now, owing to extension of irrigation from the Gugera Branch and the development of the Wahab minor taking off from the main line near Harappa, irrigation has been taken nearly up to the river. Assessment circles.

A report on prices to be adopted for commutation purposes was submitted in July 1928 and the scale of prices approved by the Financial Commissioners was communicated to the Settlement Officer in January 1929. These were as follows :— Prices.

Kharif.

Cotton American	150 annas (Rs. 9-6-0) per maund.
Cotton Desi	124 annas (Rs. 7-12-0) per maund.
Rice	44 annas (Rs. 2-12-0) per maund.
Sugarcane or Gur	80 annas (Rs. 5) per maund.
Pulses : Moth, Mash, Mung, &c. ..	56 annas (Rs. 3-8-0) per maund.
Fodder (Chari, Maize, Jowar, Bajra and Gowara)	Rs. 30 per acre.

Rabi.

Wheat	58 annas (Rs. 3-10-0) per maund.
Wheat, Straw	4 annas per maund.
Barley	36 annas (Rs. 2-4-0) per maund.
Gram	44 annas (Rs. 2-12-0) per maund.
Toria	88 annas (Rs. 5-8-0) per maund.
Other oil seeds : Taramira, Sharshaf, Linseed, &c.	Rs. 40 per acre.
Tobacco	Rs. 60 per acre.
Rabi fodders : Turnips, Gowara, Lucerne, Senji, Methra, China (Zaid Rabi), Oats, Shaftal and Charal	Rs. 35 per acre.
Vegetables	Rs. 100 per acre.

It may occasion some surprise that maize, jowar and bajra in the Kharif and oats in the Rabi were classed as fodders, but these crops are almost entirely grown as such in the Colony. These prices were, at the time they were approved, extremely conservative. The published prices for all produce in the previous ten years had been very considerably over these rates. The economic cataclysm which was in store was then outside the scope of the most fevered imagination. But within 18 months it was evident that assessment could not fairly be made on these prices and eventually, as indicated above, the impossibility of prophesying the course prices were likely to take in future, led to the postponement of settlement operations. On their resumption in 1933, a new provisional scale of prices was approved by Government and published for criticism under section 15 of the Assessment Rules, 1929. After the receipt and consideration of numerous objections the following scale of prices for commutation purposes was eventually approved :—

	Per maund. Rs. A. P.		*Per acre.* Rs.
Rice ..	2 4 0	Sugarcane ..	100
Desi Cotton ..	8 0 0	Kharif fodder ..	15
American cotton ..	9 0 0	Oilseeds other than Toria ..	20
Pulses ..	2 10 0	Tobacco ..	40
Wheat ..	3 0 0	Rabi fodder ..	20
Bhusa ..	0 4 0	Vegetables ..	40
Barley ..	1 14 0		
Gram ..	2 2 0		
Toria ..	4 0 0		

If consideration be had to the course of prices in the last 20 years, these prices were very conservative. But since the settlement was expected to be for 10 years only, Government was reluctant to pitch them higher. In fact in view of current prices Government did not propose to demand as much as even these prices would justify at first (see below).

The following table shows in maunds per acre the outturns assumed to be normal in the various assessment circles :— Outturns.

	Rice.	Cotton.	Pulses.	Wheat.	Wheat straw.	Barley.	Gram.	Toria.	REMARKS.
Okara.									
Bet ..	20	5	5	11	14	10	7	5	Wheat and Bhusa in the Bet circle, *chahi* 12 and 15 maunds, *sailab* and *abi* 8 and 10 maunds, respectively.
Gugera Branch	23	5	5	12	16	10	8	6	
Ganji Bar ..	20	5	5	12	16	10	8	6	
Beas ..	20	4	5	11	14	10	7	5	*Sailab* gram in the Bet circle—6 mds.
Montgomery.									
Bet ..	15	4	5	12	15	12	7	5	*Abi and sailab* wheat in the Bet circle 8 maund with 10 maund Bhusa.
Ganji Bar ..	18	4	5	12	15	12	8	5	
Beas. ..	18	4	5	13	16	13	8	5	

As it had been decided that the assessment was to be on a fluctuating basis throughout, it was necessary to calculate the permissible rate of land revenue per acre in each class of soil and each assessment circle by distributing the $\frac{1}{4}$ nett assets over the normal acreage matured annually. The result is displayed in the following table :— Nett assets.

	Nahri.	Chahi.	Abi.	Sailab.	Barani.
	Rs.	Rs.	Rs.	Rs.	Rs.
Okara Tahsil.					
Bet	2 14 0	1 1 0	1 14 0	1 8 0	0 12 0
Gugera Branch ..	3 3 0	1 0 0	..	..	0 12 0
Ganji Bar.. ..	3 8 0	1 1 0	..	..	0 14 0
Beas	3 0 0	1 3 0	..	..	1 0 0
Montgomery Tahsil.					
Bet	3 2 0	1 10 0	1 8 0	2 3 0	1 1 0
Ganji Bar.. ..	3 4 0	..	..	..	..
Beas	3 2 0	..	..	..	1 3 0

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Land Revenue.

Distribution of demand.

The distribution of the *nahri* demand was a matter of some complexity. In nearly all circles the canal irrigated area is subject to extreme variations in quality of soil, while the revenue paying capacity of the cultivator is also affected by almost equally wide variations in agricultural ability. It was obviously desirable to differentiate rates between villages in accordance with these variations. But such differentiation was also found to be necessary in many cases even within villages. Consequently a very large proportion of the time spent on assessment work was devoted to careful village inspections. Every village was visited by either the Settlement Officer or the Extra Assistant Settlement Officer and the soil in each circle has been distributed over a number of classes. In each circle an endeavour was made by personal inspections and local inquiries to form an idea of the standard average soil in the circle. Soils which appeared to be better or worse than the average were placed in higher and lower classes, respectively. It was recognised that too much attention to detail was to be avoided, that differentiation was an unfortunate necessity and that, wherever possible, it was better to place an entire village in one class. In classifying the land it was obviously not possible to go entirely on the quality of the soil, more particularly, as neither the Settlement Officer nor the Extra Assistant Settlement Officer had either the time or the ability to perform any scientific analysis of soils. The cropping figures, the evidence of the percentage of the sown area normally matured annually, the apparent prosperity of the cultivators, the number of cattle maintained, the use or neglect of improved methods of agriculture, were all factors which entered into this classification.

Sanctioned rates.

The rates as finally sanctioned by Government were as follows :—

OKARA TAHSIL.

	Rate per matured acre. Rs. A. P.
Chahi	1 0 0
Barani	0 12 0
Other non-nahri	1 8 0

Nahri land.

Assessment Circle.	Class of soil.	Rate per matured acre. Rs. A. P.
Bet circle	I	3 2 0
	II	2 14 0
	III	2 4 0

Assessment Circle.	Class of soil.	Rate per matured acre. Rs.	A.	P.
Gugera Branch	I	3	12	0
	II	3	4	0
	III	2	8	0
	IV	1	8	0
Ganji Bar	I	4	0	0
	II	3	12	0
	III	3	8	0
	IV	3	0	0
	V	2	0	0
Beas	I	3	12	0
	II	3	8	0
	III	3	0	0
	IV	2	0	0
	V	1	8	0

MONTGOMERY TAHSIL.

Barani and other non-nahri land.

	Rate per matured acre. Rs.	A.	P.
Barani	1	0	0
Other non-nahri	1	8	0

Nahri land.

Assessment Circle.	Class of soil.	Rate per matured acre. Rs.	A.	P.
Bet	I	3	8	0
	II	3	0	0
	III	2	0	0
Ganji Bar	I	4	0	0
	II	3	8	0
	III	3	4	0
	IV	2	8	0
	V	1	8	0
Beas	I	3	8	0
	II	3	1	0
	III	2	8	0
	IV	1	8	0

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Land Revenue.

Sliding scale.

If the cultivation records of the selected cycle 1922-23 to 1926-27 be adopted, the annual demand brought out by the sanctioned rates would involve a very large enhancement over the demand existing before settlement. As indicated above, the annual demand during this cycle was about 14 lakhs. On the same cultivation figures, the annual demand at the new rates would have been something in the neighbourhood of 23¾ lakhs. The commutation prices adopted for this settlement, if consideration be had to the course of prices in the past 20 years, were undoubtedly very conservative. Had it not been for the fact that the settlement was likely to be for a 10 year period only, Government would have been justified in pitching the commutation prices somewhat higher, but in fact the prices assumed were in some cases more than the zamindars had been realising in the years immediately preceding the announcement of the new demand and for this reason it appeared desirable that Government should remit during the period of low prices some portion of the demand brought out each harvest by the rates proposed. Government, therefore, decided to revolutionize previous settlement policy and to introduce at this settlement a sliding scale system of land re-revenue assessment. The orders of Government in this connection were as follows :—

"The theoretical demand for each harvest on each holding will be calculated at the rates sanctioned per matured acre for that holding, and in no circumstances will rates, in excess of those sanctioned, be applied, whatever may be the course of prices. So long as prices remain substantially below those assumed for assessment purposes, Government will grant remission each harvest in accordance with the scheme described below, it being understood that the scale of remissions will be in units of 5 per cent. that is to say, they will be 5, 10, 15, 20, etc., per cent. on the demand for each holding as calculated in accordance with the sanctioned rates. The amount of remission will depend on the variation between the general level of prices as calculated on the assumed commutation prices, and the general level of prices as calculated on market prices. The market prices on which the second calculation is made, will be, however, the market prices of the year previous to that in which the demand is made. The reason for this is that instalments of land revenue are realised before the marketing of the crop has been completed, and it is, therefore, impracticable to work out the scale of remissions on the prices prevailing for the current year. The general level of prices will be estimated in accordance with the method described in paragraph 18 of the Assessment Report,* the index on the approved

* Okara Tahsil assessment report.

commutation prices being 2,979, which, for purposes of comparison, will be scaled down to 100. Since the new assessment will come into force with effect from rabi 1934, the first remission announced will be for one harvest only, and it will be determined by the prices that prevailed for the rabi and kharif harvests of 1933. Thereafter, the remission to be given for the agricultural year will be decided by the Financial Commissioners in October each year, when prices prevailing in the past year are known. The percentage remission will be uniform throughout the area now brought under settlement, and will be applied to all cultivation, and not merely to canal irrigated areas. Unless there are good reasons to the contrary, the figures shown in columns 2 and 3 in the statement given in paragrpah 18 of the Assessment Report will be taken for the purpose of annual calculation of remissions, so that the only factor subject to variation in the calculation will be the price factor. While Government impose on themselves a maximum demand represented by the sanctioned rates, they do not propose to impose any maximum on the amount of remissions that may be given, this being determined by the course of prices. In deciding what prices were current in the year previous to the grant of remissions, they will ascertain the average daily prices actually prevailing in certain Mandis during the following periods :—

Cotton	.. ..	.. November-February inclusive.
Gur	.. ..	.. December-March inclusive.
Toria	.. ..	.. January-February.
Wheat	.. ..	.. May 15th-September 15th.
Gram	.. ..	.. April 15th-August 15th.

" From the average daily price thus obtained, the following amounts in annas per maund will be deducted on account of transport and marketing charges :—

	Transport.	Marketing.	Total.
	Rs. A. P.	Rs. A. P.	Rs. A. P.
Cotton	0 5 0	0 4 0	0 9 0
Gur	0 3 0	0 1 6	0 4 6
Toria	0 3 0	0 1 6	0 4 6
Wheat	0 3 0	0 1 0	0 4 0
Gram	0 3 0	0 1 0	0 4 0

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Land Revenue.

"The revenue establishment, in calculating the demand on each holding for a particular harvest, will first calculate the demand at sanctioned rates; will deduct therefrom the sanctioned amount of remission; and will show the difference as the net demand to be realised.

"It will be observed that the system explained in the preceding paragraphs involves a change of great importance in the practice of land revenue assessment. Its object is to adjust previous principles and practice to a period of low prices, in regard to which it is impracticable to forecast, with any certainty, the future course of prices. World factors which are now in operation, may cause an unexpected rise in the value of agricultural produce; on the other hand, forces which cannot, at present, be foreseen, may cause a further collapse in these values. In order to ensure that Government will obtain a fair share of the additional assets accruing from a reasonable rise in prices, the commutation prices adopted for assessment, and on which sanctioned rates are based, have been taken at a level considerably in excess of what current prices alone would justify, but which, nonetheless, is much below what Government could legally have assumed. At the same time, Government have no intention of taking the full demand brought out by the sanctioned rates, unless and until prices, as a whole, approximate to those which have been assumed for commutation purposes. They will give to the land revenue payer, harvest by harvest, an amount of remission which takes fully into account the price factor, although, for reasons already stated, the adjustment will have to be on the prices not of the year current, but of the previous year. The Governor in Council has no doubt that the adoption of a system which involves a revolutionary change in methods of assessment, will give the relief which variations in prices may render desirable, and that it will be heartily welcomed by the land revenue payers concerned".

In accordance with this system it was ordered that in respect of rabi 1934, the first harvest of the new assessment, the percentage remission in land revenue collections throughout the colony should be 30 per cent.

It was ordered that the irrigation staff should continue to be the agency for assessment within the irrigation boundary, and the revenue staff outside, the former carrying out the assessment in estates which are partly within and partly outside that boundary.

Agency for assessment.

No attempt had been made at any urban assessment in the Ravi Tahsils, except in the case of Montgomery town, until colonization started. The town of Montgomery was founded in about 1872 when the headquarters of the district were removed from Gugera in order that they should occupy a site on the railway line between Lahore and Multan. Some further building sites in the town were sold between 1890 and 1895. Though these sites and the sites previously occupied have never been permanently exempted from land revenue, and though a land revenue demand was actually drawn up after the second regular settlement, collections have always been waived, and in respect of the recent settlement it was decided that all sites falling under these categories should be exempted from land revenue as heretofore during the currency of the new settlement. Sites sold after 1895 were assessed to land revenue from the start and these are still assessed. On colonization, new towns were set up at Okara and Chichawatni. For these towns as for the sites assessed to land revenue in Montgomery, the following rates were laid down :—

Urban assessment.

	Per marla.		
	Rs.	A.	P.
I.—Shops in mandis and main streets ..	1	0	0
II.—Shops in minor bazars	0	8	0
III.—Shops in smallest bazars	0	4	0
IV.—Residential sites	0	4	0
V.—Factory sites	0	2	0
VI.—Menials' quarters	0	1	0
VII.—Bungalows (with compounds) in civil lines	0	1	0

After the close of the recent settlement operations in rural areas, an urban assessment report was drawn up proposing rates for urban sites in the three towns mentioned differentiated so as to bring the demand as far as possible into accord with the ascertained value of the various types of site. The rates proposed for shop sites varied from Rs. 10 per marla in respect of the most valuable sites at Okara, to Re. 0-8-0 per marla for the less valuable of the sites in Chichawatni. The rates proposed for resi-

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dences in the towns proper varied from Re. 1-8-0 per marla for residences in the most popular blocks in Okara to Re. 0-2-0 per marla for residences in the less popular blocks in Chichawatni. For factory sites Rs. 40 per acre was proposed at Okara and Montgomery and Rs. 20 per acre at Chichawatni. No orders have yet been passed on these proposals.

Malikana.

Malikana is a term used for the sum which Government takes from Crown tenants over and above the contribution which for purposes of convenience is termed land revenue. Government has an entirely free hand in assessing what this sum is to be and is not restricted in such assessment by land revenue law. When colonization in the Lower Bari Doab Canal area started, *malikana* was fixed at Re. 1 per acre matured, which amounted to half the land revenue rate then fixed for *Nahri* lands in the colony. At the recent settlement, Government decided that in the present circumstances, it was not justifiable to increase the *malikana* rate, and *malikana* has been fixed as before at Re. 0-8-0 in the rupee of the land revenue. But at the same time, Government has retained full liberty to increase the rate if and when they see fit.

Cesses.

Cesses are only two, Lambardars' *pachotra* and local rate which is assigned to the District Board. These are respectively a surcharge of 5 per cent. and 12½ per cent. on the land revenue, however assessed. The land revenue rates on which these cesses are calculated are of course the actual rates demanded after such deduction has been made as may from time to time be authorised on the sliding scale system.

Abiana.

Occupiers rate or *abiana* is levied by the Canal Department on a scale varying for each crop. The higher rate of *abiana* charged is Rs. 12 per acre irrigated in the case of sugarcane, the lowest is Re. 1 per acre irrigated in the case of village plantations or for a single watering for grass or with a view to ploughing the soil not followed by a crop in the same or succeeding harvest. *Abiana* rates have been notified in the Gazette and may be varied by Government from time to time. They have been in fact varied recently as a result of the report of a special committee set up in pursuance of the recommendation of the Punjab Legislative Council to consider *abiana* rates generally. The variations made have resulted in the lowering of the rates for sugarcane, rice, cotton, wheat and maize and an increase in the rate for fodder. These variations are temporary. They apply not only to the Lower Bari Doab Colony, but also to most of the important canals in the province including the Sutlej Valley canals in the other two tahsils of the district.

The existing system of assessment in the Dipalpur and Pakpattan Tahsils explained at pages 262—266 and 269 above yielded the following demands under land revenue, water advantage rate and *malikana* in the year 1932-33 :—

District Land Revenue demand.

Tahsil.	Description of demand.	Harvest.	Sub-heads.	Total demand.	Details of recoveries and balances.		
					Realised.	Remitted.	Outstanding.
				Rs.	Rs.	Rs.	Rs.
Dipalpur.	Fixed Land Revenue.	Kharif 1932..	Land Revenue	906	906	..	..
		Rabi 1933 ..	Ditto	2,703	2,317	386	..
	Fluctuating Nahri Land Revenue.	Kharif 1932..	Land Revenue	41,930			
			W. A. R. ..	59,982			
			Malikana ..	9,614	1,08,334	3,192	..
		Rabi 1933 ..	Land Revenue	87,975			
			W. A. R. ..	89,000			
			Malikana ..	8,595	1,85,181	389	..
	Fluctuating Non-Nahri.	Kharif 1932..	Land Revenue	1,547	1,547	..	..
		Rabi 1933 ..	Ditto ..	21,759	21,759	..	..
			Total ..	3,24,011	..	..	..
Pakpattan.	Fixed Land Revenue.	Kharif 1932..	Land Revenue	1,692	1,692	..	..
		Rabi 1933 ..	Ditto ..	2,237	2,134	103	..
	Fluctuating Nahri Land Revenue.	Kharif 1932..	Land Revenue	1,83,171			
			W. A. R. ..	1,40,580			
			Malikana ..	23,196	3,46,912	35	..
		Rabi 1933 ..	Land Revenue	2,67,393			
			W. A. R. ..	64,173			
			Malikana ..	81,093	4,12,659	..	..
	Fluctuating Non-Nahri.	Kharif 1932..	Land Revenue	1,049	1,049	..	..
		Rabi 1933 ..	Ditto	30,751	27,466	..	3,285
			Total	7,95,335	..	..	..

As regards the Lower Bari Doab Colony in the two harvests immediately preceding the introduction of the new assessment, *i.e.*, Rabi 1932-33 and Kharif 1933, the demand for land revenue

Abiana, malikana and cesses in the Montgomery and Okara Tahsils is displayed in the following table :—

1	2	3	4	5	6	7	8	9	10	11
TAHSIL.	Harvest.	LAND REVENUE.				Abiana.	Remitted.	Malikana	Remitted.	Cesses.
		Fixed.	Fluctuating.	Total.	Remitted.					
		Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
MONTGOMERY	Rabi 1933 ..	3,402	4,68,528	4,71,930	15,242	10,01,414	10,726	1,80,137	..	81,541
	Kahrif 1933 ..	3,118	3,82,071	3,85,189	5,551	10,24,326	5,740	1,71,325	..	70,478
	Total ..	6,520	8,50,599	8,57,119	20,793	20,25,740	16,466	3,51,462	..	1,52,019
OKARA ..	Rabi 1933 ..	3,052	3,25,987	3,29,039	13,232	6,87,840	2,460	1,09,123	..	56,259
	Kharif 1933 ..	2,657	2,56,016	2,58,673	3,322	7,56,212	2,161	1,15,298	..	52,051
	Total ..	5,709	5,82,003	5,87,712	16,554	14,44,052	4,621	2,24,421	..	1,08,310

The anticipated demand at standard rates under the terms of the new settlement for the first two harvests, namely Rabi 1933-34 and Kharif 1934 has been calculated as follows :—

—	Okara.	Montgomery.	Total.
	Rs.	Rs.	Rs.
Rabi 1933-34 ..	6,50,027	8,70,000	15,20,027
Kharif 1934 ..	4,32,876	5,96,000	10,28,876
Total ..	10,82,903	14,66,000	25,48,902

As indicated above an all round remission of 30 per cent. on these rates was sanctioned for the first harvest of the new settlement, and while prices remain low, remissions will be ordered year by year in accordance with the system already explained.

Section D. Miscellaneous Revenue.

Tirni. &c.

As already pointed out in part C of this Chapter various sources of revenue which existed in pre-colony days, *e.g.*, *tirni* (grazing tax), fuel and grass in reserved forests, sale of rights to extract *kankar* or manufacture Sajji in the crown waste, etc., have now practically disappeared. The income from *tirni* in 1931-32 was 2,001 which fell to Rs. 1,000 in the following year. Sale of fuel realized Rs. 1,118 in 1931-32 and Rs. 2,675 in 1932-33.

Excise.

The Deputy Commissioner is *ex-officio* Collector under the Excise Act and the Revenue Assistant is Excise Officer.

An Excise Inspector with two Excise Sub-Inspectors and a clerk are employed for this branch of the administration. The riverain tract of the Sutlej river is specially notorious for illicit distillation and vigorous measures are necessary to control the Mahtam and other Sikhs of this tract as regards the Excise law.

The cultivation of poppy is forbidden in this district. There is no distillery here and liquors, country or foreign, have to be imported. A statement showing the revenue collections and

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Miscellaneous Revenue.

incidence in respect of opium, drugs and excise in the Montgomery District for 1932-33 is given below :—

No.	Name of article.	Amount of revenue.	Net collection.	Incidence (per 10,000 of population).
		Rs.	Rs.	
1	Opium	92,273	76,790	768·07
2	Drugs	11,273	11,023	110·02
3	Excise	29,062	28,287	282·83

Stamp Department.

The Deputy Commissioner is the *ex-officio* Collector under the Stamp Act and the Treasury Officer is the officer in charge. The Excise Inspector and Excise Sub-Inspectors inspect the stamp vendors' registers and deal with refund applications as also with papers concerning deficiency of stamps.

The treasurer and sub-treasurers are *ex-officio* Stamp Vendors and six Branch Postmasters and 30 non-officials have been licensed to sell stamps not exceeding Rs. 110 court-fee, and Rs. 100 non-judicial to any one person. Stamps of the values exceeding Rs. 110 are sold by the Treasury and Sub-Treasury Officers. The rate of discount allowed to licensed vendors is :—

In the case of non-judicial stamps and Hundis sold by the Stamp Vendors at a place where there is a Treasury or Sub-Treasury at the rate of Rs. 3-12-0 per cent.

In the case of non-judicial stamps and Hundis sold at other places, Rs. 5 per cent.

In the case of court-fee stamps sold at any place Re. 0-8-0 per cent.

In the case of Notarial Stamps Rs. 2 per cent.

In the case of non-judicial stamps sold by Branch Postmasters, Re. 1-9-0.

The income from sale of stamps and court-fees during the years 1931-32 and 1932-33 is as follows :—

	1931-32.			1932-33.		
	Rs.	A.	P.	Rs.	A.	P.
Court-fees	1,99,807	0	0	2,21,617	2	0
Other general stamps including notorial.	76,132	0	0	74,284	0	0
Hundi	254	12	0	127	0	0

The Income Tax Department is under the District Income Tax Officer. His establishment comprises two Inspectors besides the clerical and menial staff. He may be given an Assistant Income Tax Officer from time to time as occasion arises. He is the chief assessing officer for all taxable income excluding income from salaries and pensions, and interest on Government securities (which are dealt with in the following paragraph). Appeals from his orders are heard by the Assistant Commissioner of Income Tax, Lahore. Assessment figures for the years 1931-32 and 1932-33 are given below :—

Year.	Number of Assessees.	Income-tax assessed.
		Rs.
1931-32	1,234	1,30,169
1932-33	2,062	1,59,297

The increase is due to the lowering of the assessable limit from Rs. 2,000 to Rs. 1,000 per annum.

Income from salaries and pensions as also from interest on Government securities, is assessed at the source and credited to the Government accounts by deduction from the bills and the Treasury Officer as also other drawing officers are responsible to see that there is no leakage of this revenue. Government servants who enjoy taxable incomes from sources other than salaries are assessed by the Income Tax Officer, Central Circle, Lahore. Collections as credited into the local treasury during the two preceding years are given below :—

Year.	Amount.
	Rs.
1931-32	33,414
1932-33	30,146

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Miscellaneous Revenue.

The decrease is due to the transfer of headquarters and the abolition of several divisions of the Irrigation Department.

Incidence of income-tax works out at three annas per head of population. Montgomery district is chiefly inhabited by people whose main source of income is agriculture (not assessable to income-tax) and this accounts for the low rate of incidence on this score. The main body of assessees in the District is the money-lending community, whose profits have naturally been much curtailed by the recent economic depression.

Section E.—Local and Municipal Government.

District Board.

The Montgomery District Board consists of 36 members of whom 27 are elected. The 9 nominated members include the Deputy Commissioner, Civil Surgeon, District Medical Officer of Health, and District Inspector of Schools, *ex-officio*. The last election to the District Board took place on the 3rd October 1932. Local rate is the principal direct source of income to the District Board. As shown in Punjab Government notification No. 257, dated the 30th March 1925, this has been fixed at Rs. 12-8-0 per cent. of the land revenue demand. The nett collections and incidence per head of the rural population during the last five years were as follows :—

Year.	Income.	Incidence.
	Rs.	Rs. A. P.
1928-29	2,70,173	0 6 2
1929-30	3,04,980	0 6 11
1930-31	3,10,043	0 7 0
1931-32	2,49,810	0 5 5
1932-33	3,12,835	0 6 7

A further source of income to the District Board is the Haisiyat tax, a tax on professions other than agriculture. This was originally introduced in 1925. But when in 1927-28 it was found by the Lahore High Court that a similar tax imposed by the District Board in the Sialkot District was illegal and *ultra vires*, being a form of income-tax the imposition of which required the sanction of the Governor-General, the charge was temporarily abandoned. The Haisiyat tax was again introduced with the

sanction of the Governor-General in Council in 1930-31 (*cf.*, Punjab Government notification No. 24767, dated the 1st August 1929). A Tax Inspector for the assessment of this tax was appointed by the Board in each Tahsil and objections against assessment are heard and disposed of by the Tahsil Committee consisting of the members of the District Board residing in each Tahsil. Subsequently the assessment list is confirmed by the Deputy Commissioner from whose order there is a further appeal to the Commissioner of the Multan Division. The tax is collected in two instalments along with the land revenue through the lambardars assisted by the Tax Inspectors. The lambardars are paid a remuneration not exceeding 5 per cent. of the tax collected by their own efforts. The income from Haisiyat tax and the expenditure on assessment and collection of the tax during the last 5 years was as given below :—

Year.	Income.	Expenditure.
	Rs.	Rs.
1928-29	7,173	2,493
1929-30	9,036	2,434
1930-31	12,400	6,530
1931-32	29,434	7,119
1932-33	33,542	7,523

Urban Committees.

The urban committees existing in the District with their constitution and date of origin in each case are shown in the following table :—

	Elected.	Nominated.	Total.	Proportion of elected to nominated members.	Date of origin.
Montgomery Municipal Committee	12	3	15	4 : 1	1886
Pakpattan Municipal Committee ..	..	9	9	..	1886
Okara Notified Area Committee ..	..	7	7	..	1893
Chichawatni Notified Area Committee	..	7	7	..	1916
Arifwala Notified Area Committee	..	5	5	..	1925
Renala Khurd Notified Area Committee	..	3	3	..	1926*

* Committee not actually set up till 1919.

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The last appointment of elected members to the Montgomery Municipality dates from 22nd September 1930. There is a proposal pending to introduce the elective system to the committees of Pakpattan and Okara.

The incidence of taxation in each committee is given below :—

	Taxation per head. Rs. A. P.
Montgomery Municipal Committee ..	1 3 0
Pakpattan Municipal Committee ..	1 10 2
Okara Notified Area Committee ..	4 2 0
Chichawatni Notified Area Committee ..	5 3 0
Renala Khurd Notified Area Committee	No tax is levied as yet.
Arifwala	6 10 3

Electric power in the Montgomery Municipality has been supplied by a Company since 1932. A drainage scheme for the town has been sanctioned and work has begun. The Montgomery Mandi already enjoys the benefits of systematic drainage.

Okara town lacks a proper drainage or water-works scheme as yet ; but such schemes should come into operation shortly. The Okara Committee also intends to introduce electric power. The Committees at Pakpattan and Chichawatni are not sufficiently well endowed with funds to supply any important amenities to their constituents.

The Arifwala Notified Area Committee consisted originally only of the Colonization Officer, Nili Bar and the Colony Naib-Tahsildar for Arifwala. The Assistant Colonization Officer, the Sub-Divisional Officer, Public Works Department, and the local Sub-Assistant Surgeon were added later on. The income of this Committee is derived from terminal tax and leases from temporary cultivation. Under their declared policy in connection with new colony towns Government have undertaken to provide funds up to 4½ lakhs for expenditure on necessary works. Out of such works a dispensary, school, serai, dhobighat and bathing tanks have been supplied. Roads both inside and outside the market have been metalled. Drainage and water supply schemes have not yet been carried out.

The Notified Area Committee at Renala is as yet more or less a formal body constituted in view of the proposal to set up a new Mandi at that place.

Section F.—Public Works.

(a) Irrigation Branch. Ravi Tahsils.

The District includes parts of three Canal circles. The Ravi Tahsils are covered by two divisions of the Lower Bari Doab Canal

circle and part of the third. (1) The Balloki Division with headquarters at Balloki comprises the Gugera sub-division, which being concerned with the Gugera Branch includes parts of the Okara and Montgomery Tahsils extending to a point to the north of and between Kohlwala and Dad Fatiana, and the Headworks sub-division, which apart from the headworks itself, includes responsibility for the Renala lift area (1 A. L. Distributary). (2) The Montgomery Division—including the Renala, Montgomery and Ganji Bar sub-divisions. (3) The Chichawatni sub-division of the Khanewal Division. This sub-division includes a few estates on 7 E. R. Distributary which are in the Khanewal Tahsil.

Sutlej Tahsils.

The Sutlej Tahsils are covered by two divisions of the Ferozepore circle and two divisions of the Nili Bar circle of the Sutlej Valley Project. The two divisions of the Ferozepore circle are the Khanwah Division (Headquarters at Ferozepore) of which the Hujra sub-division and part of the Najabat sub-division are in the Montgomery District, and the Suleimanke Division which includes the Headworks sub-division at Suleimanke (partly in the Ferozepore District) and the Tahar and Para sub-division. The two divisions of the Nili Bar circle are the Pakpattan Division which comprises the Pakpattan, Joya, Jiwanshah and Sheikh Fazal sub-divisions, and the Bar Division which comprises the Dallin, Sechanwala, Wanwala and Qutabpur sub-divisions. Part of the Sheikh Fazal sub-division and most of the Joya sub-division is in the Multan District, while of the Bar Division only about half the Dallin sub-division is in the Montgomery District, the rest of the Division being in the Multan District.

Staff.

Each circle is in charge of a Superintending Engineer. The Superintending Engineers for the Lower Bari Doab Canal and Nili Bar Circles have their headquarters at Montgomery, and the Superintending Engineer, Ferozepore Canal Circle at Ferozepore. Each division is in charge of an Executive Engineer. The headquarters of the divisions of the Lower Bari Doab Canal are at Balloki, Montgomery and Khanewal; those of the two divisions mentioned above in the Nili Bar circle are at Pakpattan, while those of the two divisions mentioned above in the Ferozepore Circle are at Ferozepore and Suleimanke.

An irrigation map showing divisional and sub-divisional boundaries will be found at the end of this volume.

(5) Buildings and Roads Branch.

Public Works in the way of buildings and roads were up to 15th of January 1926, as far as Montgomery district is concerned, entrusted to the Multan Provisional Division of the

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Public Works Department. On that date the "Nili Bar communications division" was set up to carry out programmes of road making and construction work generally connected with the Nili Bar Colony. This division is now called the Montgomery Provincial Division. An Executive Engineer of the Public Works Department is in charge. He is assisted by a Sub-Divisional Officer with headquarters at Montgomery. Apart from roads this division has put up a number of Government buildings, mostly schools, hospitals and residences for Government officials. The Government High School which was built at Montgomery in 1917-18 cost Rs. 76,000. Other buildings of some importance are the Colonization Officer's court and residence at Pakpattan which between them cost nearly Rs. 90,000, buildings for the Agricultural Farm at Montgomery and the Seed Farm at Fatna, a combined godown and rest-house for the Archæological Department at Harappa, and a police station, sarai, civil rest-house and hospital at Arifwala.

Section G.—Army.

Administration.

Montgomery was transferred to Ferozepore Brigade Area on the suspension of the Multan Brigade in February 1932; but movements of political and military importance are still communicated to the Officer Commanding, Multan, as well as to the Brigade Commander, Ferozepore.

Camping grounds.

Encamping grounds have been reserved at the following places :—

(1) Renala Khurd.
(2) Okara.
(3) Qadirabad.
(4) Montgomery.
(5) Harappa.
(6) Chichawatni.
(7) Kassowal.
(8) Dipalpur.
(9) Hujra.
(10) Pakpattan.

Cantonment and recruiting.

Before the war and until the year 1917 Montgomery was the headquarters of the 55th and 56th Camel Corps, recruited from the Baloch tribe who inhabited the old Ganji and Nili Bars. On the disbandment of the corps they were granted somewhat inadequate grants of land in the colony by which they still subsist with difficulty.

During the War a recruiting campaign was started in 1916 and the demand was chiefly for Sarwans and muleteers. Of these 182 and 167 were supplied rapidly. Some of these were found unsuitable and were replaced by suitable men.

In the beginning of 1917 it was decided to recruit a double Company of South-Western Punjabis for the 2/56th Punjabi Rifles. There was some hesitation at first, but through the influence of local officers a beginning was made, though until February 1918

the results were not encouraging. The quality of the men was better than that of those obtained from other districts in the division but the numbers were disappointing. One hundred and eighty-one men were obtained for this unit.

In the summer of 1917 the Depot of the 1/124th Baluchistan Infantry was posted to Montgomery. Between December 1917 and April 1918, 335 recruits were supplied to this unit. The unit was removed from Montgomery in 1921 and the only traces of it now left are the kacha houses situated on the north-west of the Civil Station, together with the stables now used by the Horse Breeders' Association.

Section H.—Police and Jails.

(a) Police administration and establishment.

The Editors are indebted to Mr. R. C. Jeffreys, Superintendent of Police, Montgomery, for the following note on Police administration :—

The Superintendent of Police is subordinate to the Deputy Inspector-General, Central Range. He is assisted by an Assistant Superintendent and two Deputy Superintendents, one of the latter residing at Pakpattan since 1928.

Due to the rapid development of the district during the last twenty years, the strength of Police maintained has considerably increased during that period, as shown by the following figures of sanctioned strength :—

Year.	Inspectors.	Sub-Inspectors.	Assistant Sub-Inspectors.	Head Constables.	Mounted Constables.	Foot-Constables.
1910	6	24	..	58	5	387
1920	5	29	..	73	3	438
1930	3	34	21	88	..	585

The rank of Assistant Sub-Inspector has only recently been introduced. Mounted Police is now unnecessary due to the development of road communications.

Police Stations.

The number of Police Stations has similarly increased from 16 to 23 from 1910 to 1930 despite the transfer of Sayedwala and

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Bucheki to District Lyallpur in 1913 and of Kamalia to the same district in 1930. The existing police stations with their dates of opening are as follows :—

Police Stations for which no date is given were in existence before 1913.

Montgomery, Okara, Gugera, Chuchak, Harappa, Chichawatni, Arifwala, Dipalpur, Hujra, Atari, Haveli, Pakpattan, Maluka, Kassowal (1915), Burjwala (1915), Nurshah (1915), Renala Khurd (1915), Shahkot (1920), Dera Rahim (1920), Shahbore (1926), Ghazaibad (1926), Malka Hans (1927), Ahmadyar (1929).

Dera Rahim, Burjwala, Arifwala, Ghazaibad and Maluka were originally situated at Sillanwali, Katorwala, Kabir, Nathuwala and Tibbi, respectively. They were moved to their present sites between 1926 and 1929 as in some cases the original site was considered unsuitable and in some cases colonization had developed on different lines to that originally anticipated. Even the present sites are not permanent due to the same reasons and consequently the following buildings are only temporary structures of mud bricks : Shahbore, Burjwala, Dera Rahim, Ghazaibad, Shahkot, Ahmadyar, Maluka and Malka Hans. The transfer of Burjwala and Maluka to still other sites and the creation of new Police Stations at Chak Bedi, Gaggo and Trikhni is under consideration.

There are rural outposts at Suleimanke Head and Gaggo and town posts in Montgomery, Okara and Pakpattan. A temporary Additional Police Post has been imposed on village Lai Bala due to the misconduct of the inhabitants. There are Municipal Police Posts in Chichawatni, Renala and Arifwala, under the control of the District Police.

Personnel.

The ranks show a preponderance of natives of other districts. The " Janglis " of this district do not join the Police or military and the colonists often give their residence as that of their district of origin. 55·16 per cent. of the constables recruited from 1931 to 1933 inclusive claimed to be residents of other districts. Recruits are easy to obtain and the standard of education obtainable is rising very fast ; matriculates are now quite common and even University educated men are being recruited. The recruits are trained at headquarters in accordance with the provincial orders and trained men go through a month's refresher course annually.

Railway Police.

The railway police are responsible for the prevention and detection of crime in railway stations, on the track and on moving

stock. There are Railway Police Stations at Montgomery and Pakpattan. The latter was created out of the Kasur Railway Police Station in 1924.

Crime. Crime principally consists of cattle theft and burglary. The rivers flowing along the North and South boundaries of the district provide excellent means of disposing of stolen cattle. Much stolen cattle also passes through the district from the districts lying to the north to the Indian States on the south. Among the "Janglis" theft is regarded as a pastime and as a means of redressing private grievances and they rarely invoke the aid of the police when their property is stolen. Many of the leading zamindars patronize the game for the sake of profit and influence.

Other offences which contribute substantially to the crime are abductions, assaults and riots. Murders are frequent and are usually the climax of sexual intrigues. Dacoities occasionally take place along the Kasur border.

The following figures show the proportion of burglaries, cattle thefts and murders :—

Year.	Total cases.	Burglaries.	Cattle thefts.	Murders.
1931	2,477	752	338	61
1932	2,564	759	320	44

Prevention of crime. With the help of villagers extensive 'Nakabandi' is carried out at strategic points on dark nights. Patrolling along the river is also organized during the monsoon months when cattle theft and burglary is most rife. Voluntary patrolling is carried out in most villages. This has a marked deterrent effect on this type of crime.

Detection of crime. The Police Station staff is assisted in investigation by the records of the *modus operandi* system which was introduced in 1928. The full details of offences against property are noted and offences are grouped according to the methods adopted by the offenders.

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In this way the work of certain gangs and habitual criminals can be detected and information obtained regarding their associates, resorts, recognitions, etc.

The Criminal Investigation Agency which was started in 1927 consists of a number of officers of special detective ability. They are entrusted with the investigation of cases likely to lead to other cases outside the Police Station, cases requiring travel to other districts, cases likely to require long investigation and individual concentration and other complex cases.

The incidence of cattle theft has produced many expert trackers in this district who can track cattle or persons to great distances. In 1931 a tracking party from Police Station Kamalia in District Lyallpur tracked certain stolen cattle to Convillepur near Montgomery and there lost the tracks. A local tracker was summoned. He picked up the trail and after going a few miles pointed to a casual passer by as one of the thieves. The man was interrogated and the case was brought to a successful conclusion. Tracking has become very difficult since the construction of metalled roads from 1926 onwards. All thieves make for the nearest metalled road and the trail is lost there.

Finger Print System.

A record of the finger impressions of all persons convicted of offences against property and certain other specified offences is maintained in the district office and also at the Finger Print Bureau at Phillaur. This is an almost infallible method of detecting previous offenders. A trained proficient controls the district records.

(b) Criminal Tribes.

Mr. Jeffreys, the Superintendent of Police, has also contributed the following note on the Criminal Tribes in this District :—

The Criminal Tribes population consists of 2,964 settled and 645 wandering members. Of the former 1,531 are restricted to specified areas while 1,433 have been exempted from the order of restriction ; for the latter the corresponding figures are 304 and 341, respectively.

The Mahtams are the principal tribe. They occupy nine complete villages in Police Station Atari.

Of these tribes only the Mahtams give any real trouble. They commit every type of crime possible, burglary, cattle theft, murders, rioting, assault, sexual offences, coining, illicit distillation, manufacture of arms, etc. The other tribes are engaged in peaceful agriculture or labour.

In addition there are nine Criminal Tribes Settlements in the district :—

No.	Situation.	Police Station.	Date of establishment.	In charge of	Population.
		AGRICULTURAL.			
1	Chak 39-3 R. Islamgarh ..	Okara ..	1918	Anjuman-i- Islamia, Lahore.	457
2	Chak 27-2 L. Ahmadian ..	Shahbhore	1919	Ahmadia Anjuman-Ishat-i-Islam, Lahore.	480
3	Chak 53-5 L. Krishenkot ..	Burjwala..	1919	Sanatan Dharam Sabha, Lahore.	618
4	Chak 119-84 L. & 1-A-14 L.	Kassowal..	1920	Salvation Army, Lahore	368
5					420
6	Chak 47-3 R. (Chak Sarkar)	Okara ..	1920	Government ..	383
7	Chak 109-9 L. (Arampur)	Dera Rahim	1922	Do. ..	543
		INDUSTRIAL.			
8	Kotla Jinda Ram ..	Chichawatni	1920	Government ..	183
9	Chichawatni ..	Do.	1920	Do. ..	249

The residents of the Industrial Settlements at Chichawatni and Kotla Jinda Ram are employed in the Government Irrigated Forest Reserve. Each settlement is in charge of a Superintendent except that at Kotla Jinda Ram, which is controlled by an Assistant Superintendent to the Superintendent at Chichawatni.

Note on the Settlements.

As regards criminal tribes settlements in the District the following note supplied by Sardar Bahadur Sardar Hari Singh, Deputy Commissioner for Criminal Tribes, will be of interest.

" Since the year 1918, 7 agricultural and 2 Industrial Settlements have been established in the Montgomery District.

In the Agricultural Settlements 551 comparatively well-behaved criminal tribes members have been allotted land on conditions published with Punjab Government notification No. 11429, dated the 28th of April 1919, and are residing with their families and children bringing the total population of these Settlements to 3,716 according to the figures supplied at the close of the year 1932. The unit of allotment in these settlements

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is 10 acres and the grant is made subject to the condition of good behaviour. The average yield, which in good years, when rates of agricultural produce were sufficiently high, ranged from Rs. 360 to Rs. 598 has fallen, during these years of agricultural depression, between Rs. 154 and Rs. 245 per unit.

Each Settlement has a Boys', Girls' and Night School attached to it and 654 children and 181 youths are receiving education up to the Primary standard.

To improve the financial condition of the settlers and to check their borrowing tendencies Co-operative Credit and Supply Societies have been established in each Settlement and their total assets now amount to Rs. 74,300. In Chak 53-5 L., which is a Settlement of wandering tribes no less than Rs. 16,911 are the savings of the tenants, which are deposited in the Central Co-operative Bank, Montgomery.

Out of their own earnings the inmates at Chak Nos. 39-3 R., and 27-2 L., have been able to build mosques and the inmates of Chak 53-5 L., have built a mandar with a large Preaching Hall. This is a special feature of these Settlements and there are few villages in the Montgomery Districts with far better resources which have been able to set up similar institutions for the benefit of their families and children.

The two Industrial Settlements at Chichawatni and Kotla Jinda Ram are of a temporary nature and are meant for the supply of labour to the Chichawatni Forest Plantation. The total population of these two Settlements according to the figures supplied at the close of the year 1932 was 447 souls. The earnings of the the inmates vary according to the nature of the work provided, but almost all the inmates are able to maintain themselves and their dependents out of the proceeds of their labour. These Settlements have also their Co-operative Societies and are also equipped with schools. The total number of children and youths attending the schools at the close of the year was 61 and 31, respectively.

(c) Jails.

There is a Central Jail at Montgomery which also discharges the functions of a District Jail. It receives prisoners of all classes from the District and long term habitual prisoners from all over the province. It has accommodation for 1,396 prisoners while a daily average of over 2,000 prisoners is usually confined therein.

This jail is renowned for its manufactures particularly woollen carpets, rugs, blankets, cotton durries, and piece goods. The products are mainly supplied to jails and other departments

of Government in the province, the remainder being sold to the public. Its annual profits amount to over Rs. 50,000, sometimes a lakh, while expenditure on the maintenance and guarding of prisoners amounts to about 2 lakhs.

It has a very large farm attached to it where the prisoners work and learn modern methods.

(d) Reformatories.

There is no reformatory in the district, but the prisoners who are to be released conditionally for employment in the Nili Bar Colony, under the Good Conduct Prisoners' Probational Release Act are collected in the farm attached to the Montgomery Central Jail and made over to the Reclamation Department.

Section I.—Education and Literacy.

(a) Literacy.

The 1931 Census Report shows the standard of literacy in the District to be as follows :—

	Population.		Literates.		Percentage illiterates.	
	Males.	Females.	Males.	Females.	Males.	Females.
Montgomery ..	181,205	140,890	13,938	2,201	92	99
Okara	121,588	98,620	8,409	1,074	93	99
Dipalpur ..	119,003	101,453	5,686	401	95	99
Pakpattan ..	130,660	106,353	7,984	714	94	99
District ..	552,456	447,316	36,017	4,390	93·5	99

For the following information regarding education in the District the Editors of the Gazetteer are indebted to Chaudhri Ahmad Hassan, M.A., P. E. S., District Inspector of Schools, Montgomery.

About 70 per cent. of the population of the District is Musalmans and these are more backward educationally than the other classes, especially in respect of female education. The old Ravi tribes are particularly backward. Some of them have still a preference for cattle-lifting and theft generally. The depressed classes may be educated up to the primary standard, but rarely go any further. Anglo-vernacular education is making slow progress among the original inhabitants of the district, but most of

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Education and Literacy.

the colonists appreciate the value of higher education and make full use of such facilities as the District can afford to provide. The script employed in 90 per cent. of the schools is Urdu; elsewhere Punjabi and Hindi are used, Punjabi predominating. There is practically no indigenous education. Instruction is imparted almost everywhere by teachers trained in the system approved by the Education Department. Occasionally in temples and mosques boys and girls may be seen learning in the old way from Pandits and Mullahs.

(b) Education system.

There is no provision for University education in the District, although the establishment of an Intermediate College at District headquarters has been mooted. The following types of schools are maintained :—

(1) *Branch School.*—In this school instruction is given up to the first and second standard. It is intended for very small children who cannot be expected to walk the two or three miles distance to a full fledged primary school. This school usually has only one teacher, while arrangements for housing, watering, and sweeping are generally made by the village.

(2) *Primary School.*—In this school the pupils are taught reading, writing and arithmetic with a little local geography. Pupils run up to ten years of age. There are four classes and the boys of the fourth class have to pass a test held by an inspecting officer at a convenient centre before they can qualify for promotion to the fifth class. This type of school generally has two teachers.

(3) *The Lower Middle School.*—This school has six classes and three to four teachers. The pupils learn the rudiments of geometry, mensuration, hygiene, geography a certain amount of history and Urdu composition. Boys who have passed the 6th class can be considered to be permanently literate. Examination to qualify for a passage from the 6th to the 7th class is held by the inspecting officers of the Educational Department.

(4) *The Vernacular Upper Middle School.*—This is the highest type of vernacular school. Boys who have completed their education up to the 8th class are examined every year under arrangements made by the Education Department at convenient centres and having passed are qualified to seek employment as village school masters, patwaris, Pinsal

navis, octroi moharrirs, etc. In some of these schools, where it is locally desired, optional English classes are attached, and boys who pass the English test in the vernacular final examination are eligible for admission to the 9th class in the High School. The Headmasters of the Middle Schools are well up in mathematics, general knowledge, hygiene, elementary science, Persian and Urdu. These Schools generally have good buildings and play grounds.

(5) *The High School.*—The High School has ten classes and gives instruction up to matriculation and the school-leaving certificate examination of the Punjab University. The Headmaster is an experienced graduate of the Punjab University and his assistants have generally adequate academic qualifications. In subjects such as history and geography instruction is carried out in Urdu while in mathematics, science, physiology and hygiene instruction is carried out in English. English is a compulsory subject in a high school. The following statement shows the number of schools and scholars and the average daily attendance for the last two years :—

GENERAL STATEMENT OF SCHOOLS, SCHOLARS AND AVERAGE DAILY ATTENDANCE FOR THE YEAR 1931-32 AND 1932-33, MONTGOMERY DISTRICT.

	Number of schools on			Number of scholars on			Average daily attendance for the year.		
	31st March 1932.	31st March 1933.	Increase or decrease.	31st March 1932.	31st March 1933.	Increase or decrease.	1931-32.	1932-33.	Increase or decrease.
Schools for Boys.									
(i) High	8	8	..	3,498	3,552	+54	3,284	3,236	—48
(ii) Upper Middle { Anglo-Vernacular	1	1	..	232	256	+24	225	230	+5
(ii) Upper Middle { Vernacular ..	36	36	..	8,624	8,847	+223	6,949	7,101	+152
(Vernacular with optional English classes)	3	3	..	867	860	—7	719	718	—1
(iii) Lower Middle { Anglo-Vernacular	1	1	..	118	122	+4	109	112	+3
(iii) Lower Middle { Vernacular ..	123	123	..	15,836	15,845	+9	12,563	12,725	+162
(iv) Primary	219	217	—2	15,145	15,216	+71	12,084	12,414	+330
Total ..	391	389	—2	44,320	44,698	+378	35,933	36,536	+603
Schools for Girls.									
(i) High	1	1	..	299	273	—26	259	231	—28
(ii) Middle .. { Anglo-Vernacular	..	..	..	..	..	..	..	..	..
(ii) Middle .. { Vernacular ..	1	1	..	101	106	+5	98	100	+2
(iii) Primary	38	39	+1	2,635	2,872	+237	2,020	2,076	+56
Total for girls schools ..	40	41	+1	3,035	3,251	+216	2,377	2,407	+30
Grand Total Boys and Girls	431	430	—1	47,355	47,949	+594	38,310	38,943	+633
(a) Adult schools { for males ..	10	3	—7	216	75	—141	185	58	—127
(a) Adult schools { for females ..	..	..	..	..	..	..	..	..	..
(b) Unrecognised schools. { for boys ..	127	129	+2	2,235	2,252	+17	1,819	1,827	+8
(b) Unrecognised schools. { for girls ..	121	120	—1	2,031	2,037	+6	1,399	1,382	—17
(c) Branch schools included in recognised schools above—									
Attached to Boys Schools ..	175	164	—11	7,114	6,295	—819	5,416	4,735	—681
Attached to Girls Schools ..	..	..	..	..	..	..	..	..	..

All the Board and Government schools are open to all classes and communities alike and no restrictions are imposed upon the admission of depressed classes or untouchables. The District Board awards each year 8 middle school scholarships of the value of Rs. 4 per mensem each to the children of depressed classes as an encouragement to education. The Board has also remitted fees to members of the depressed classes in primary schools. In the areas attached to 147 schools in the District, the Compulsory Education Act is operative and no fees are charged from the boys reading in primary classes between the age of 6 and 11 years. Female education in rural areas is still backward. In urban areas, there are schools for girls of some importance at Pakpattan, Arifwala, Renala Khurd, Okara and Chichawatni; while there is a very good high school for girls at Montgomery. The girls primary school has 5 classes instead of 4, it being considered desirable that girls in such schools should be instructed in the rudiments of domestic economy, hygiene, cooking and sewing in addition to reading writing, arithmetic and geography. The number of girl schools in the District is shown in the statement appended to Section (*b*) above.

(c) Special classes and females.

The most important educational institutions in the District are the Government high schools at Montgomery, Pakpattan and Renala Khurd, the District Board high schools at Dipalpur and Haveli and the Notified Area Committee high schools at Okara and Chichawatni. These are all well-attended and have good hostels for the entertainment of students from distant places. These institutions are well distributed over the district.

(d) Important Educational Institutions.

A reference has already been made to the Government High School for girls at Montgomery. The present building was put up in 1931. The grounds are extensive and are enclosed by a high wall. This wall was constructed at the request of the local Muslims who wanted their girls to be able to maintain *purdah* while at school. The Muslim element in the school is on the whole satisfactory and is improving. The outlook for female education in the District generally is bright. The curriculum includes house-keeping, cooking, sewing, knitting and embroidery in addition to the ordinary subjects.

There is also at Montgomery a Government Industrial school where wood work and blacksmith's work are taught in addition to the ordinary subjects. Technical education of this sort is much appreciated and will help to solve the problem of unemployment. This school is intended to combine literacy with handicraft. Literate carpenters and smiths are reported to prove better workmen than illiterate, and it is probable that more

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such schools will be opened in future. The products of the handicrafts taught are available for sale in a show room attached to the school and their superiority over the ordinary bazaar-made article is marked.

(e) Expenditure on education.

The total annual expenditure on education in the Montgomery District for the year 1932-33 is shown in the following table :—

	Government funds.	Board funds.	Municipal funds.	Fees.	Others.	Total.
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
FOR MALES.						
Direct	3,70,786	1,28,652	31,451	87,614	4,829	6,23,332
Indirect	28,215	24,663	5,011	1,836	3,330	63,055
Total ..	3,99,001	1,53,315	36,462	89,450	8,159	6,86,387
FOR FEMALES.						
Direct	19,002	6,223	11,264	1,891	4,717	43,097
Indirect ..	311	11	1,725	..	5,895	7,942
Total ..	19,313	6,234	12,989	1,891	10,612	51,039

(f) Printing Presses.

The following presses have been declared under Section 4 of Act XXV of 1867 :—

Name of press.	Location.	Name of keeper.	What the press can print.	REMARKS.
1. Golden Press ..	Montgomery	Muhammad Afzil and Muhammad Tufel.	English, Urdu, Gurmukhi and Landa.	Hand and machine, drawn by foot power.
2. Iqbal Press ..	Ditto	Iqbal Singh ..	Ditto.	Ditto.
3. Lahore Printing Press.	Ditto	Gul Sher Muhammad Khan.	Ditto.	Ditto.
4. Loyal Machine Press	Ditto	Daulat Ram ..	Ditto.	Ditto.
5. Public Printing Press	Ditto	Dr. Ganpat Rai	Ditto.	Machine worked by electric power.
6. Cyclostyle machine	Okara ..	Nand Lal ..	Urdu ..	Cyclostyle.

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Publications.—The following newspapers and periodicals exist now :—

Name.	Language of publication.	(1) Place or publication and (2) Press at which printed.	Daily, weekly or otherwise.	Annual subscription.	Approximate circulation.
				Rs. A. P.	
1. The "Islah"	Urdu	(1) Montgomery .. (2) Diwan Printing Press, Circular Road, Lahore.	Weekly ..	2 8 0	500
2. The Market Report, Okara.	Urdu	(1) Okara .. (2) Cyclostyled at Okara.	Published on any day when there is change in market rates.	Free	80 or 100
3. The Weekly "Aftab."	Urdu	(1) Montgomery .. (2) Muslim Printing Press, outside Akbari Gate, Lahore.	Weekly but not issued regularly.	2 8 0	500
4. The Pakpattan.	Urdu	(1) Pakpattan .. (2) Lahore Printing Press, Montgomery.	Ditto	2 4 0	100
5. The "Risala Petition-writer."	Urdu	(1) Montgomery .. (2) Public Printing Press, Montgomery.	Monthly but not issued regularly.	1 8 0	Not issued so far.
6. The "Hamdard"	Urdu	(1) Montgomery .. (2) Public Printing Press, Montgomery.	Weekly ..	2 8 0	250
7. *The "Nili" ..	Urdu	(1) Pakpattan .. (2) Hamayat Islam Press, Brandyth Road, Lahore.	Weekly but not issued regularly.	3 0 0	Not yet issued.

*Honorary Editor S. Muhammad Shah, Pleader, Pakpattan, intended to do for the Nili Bar Colony what the "Islah" is doing for the rest of the District.

Section J.—Medical.

(a) Hospital and dispensaries.

The medical staff at headquarters consists of the Civil Surgeon with one Assistant Surgeon incharge of the Male section and one Female Sub-Assistant Surgeon incharge of the Female section of the Civil Hospital, Montgomery.

In the district each dispensary has a Sub-Assistant Surgeon in charge.

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The medical institutions in the charge of the Civil Surgeon are :—

No.	Name.	Indoor or outdoor.	Number of beds.
	Provincial Hospitals.		
1	Civil Hospital, Montgomery ..	Both	40
2	Police Hospital, Montgomery, under the charge of Assistant Surgeon, Montgomery..	„	15
3	Tahsil Headquarters Hospital, Dipalpur	„	12
	Municipal Committee Hospital.		
1	Pakpattan	Both	20
	Notified Area Committee Hospitals.		
1	Okara	Both	35
2	Arifwala	„	8
3	Chichawatni	„	10
	Canal Dispensaries.		
1	Naiwala	Outdoor	*Nil.*
2	Okanwala	„	„
3	Gamber	„	..
4	Renala Khurd	„	..
5	Jiwan Shah	„	..
6	Tahar	„	..
7	Sheikh Fazal	„	..
8	Pakpattan	„	.
9	Montgomery	„	..
	Criminal Tribes Settlement Dispensaries.		
1	Chak No. 109-9/L.	Outdoor	..
2	Kassowal	„	..
	District Board Civil Dispensaries.		
1	Haveli	Both	6
2	Hujra	„	6
3	Boyleganj	„	14
4	Gugera	„	10

No.	Name.	Indoor or outdoor.	Number of beds.
	District Board Rural Dispensaries.		
1	Nurshah	Both	4
2	Burj Jiwe Khan	,,	4
3	Satghara	,,	4
4	Kohla	,,	4
5	Attari	,,	4
6	Gobindpur	,,	4
7	Mirshank	,,	4
8	Jaboka	,,	4
9	Chak No. 45/12-L.	,,	4
10	Chak No. 77/5-R.	,,	4
11	Kabir	,,	4
12	Kassowal	,,	4
13	Kueki Bahawal	,,	4
14	Harappa	,,	4
15	Kulliana	,,	4
16	Dhulliana	,,	4
17	Beli Delawar	,,	4
18	Kamand	,,	4
19	Gaggoo	,,	4
20	Chak No. 8/11-L.	,,	4
21	Jandraka	,,	4
22	Shah Yakka	,,	4
23	Malka Hans	,,	4
24	Shergarh	,,	4
25	Muhammadpur	,,	4
26	Pir Ghani	,,	4
	Private Aided Female Mission Dispensary, Montgomery.		
1	Female Mission dispensary under the charge of American Lady Doctor ..	Both	25

The total number of patients treated in 1932 at these institutions were :—

Outdoor	577,011	Daily average ..	2,510·19
Indoor	7,181	Ditto ..	197·41

Detailed statistics are as follows :—

No.	Dispensaries.	Daily average.	
		Outdoor.	Indoor.
1	Civil Hospital, Montgomery ..	190·26	26·41
2	Dipalpur	164·65	16·75
3	Pakpattan	120·95	6·83
4	Okara	144·55	26·33
5	Arifwala	63·55	7·24
6	Chichawatni	139·36	13·95
7	Haveli	138·51	2·79
8	Hujra	105·97	26·08
9	Boyleganj	43·05	3·18
10	Gugera	116·27	10·13
11	Naiwala Canal	40·12	..
12	Okanwala Canal	39·13	..
13	Gamber Canal	66·42	..
14	Renala Khurd Canal	88·32	..
15	Nurshah Rural	94·20	4·65
16	Burj Jiwe Khan	45·06	·56
17	Satghara	55·42	2·22
18	Attari	48·37	1·85
19	Gobindpur	25·94	·42
20	Mirshank	48·18	1·56
21	Jaboka	55·83	1·54
22	Chak 45-12-L.	50·11	2·27
23	Chak 77-5-R.	65·89	2·26
24	Kabir	26·50	·35
25	Kassowal	48·86	1·62
26	Kueke Bahawal	39·80	3·01
27	Harappa	64·45	4·57
28	Kalliana	31·30	2·72
29	Dhulliana	51·65	2·81
30	Beli Dilawar	16·32	0·38
31	Kamand	31·00	2·92
32	Gaggoo	50·18	3·74
33	Chak 8/11-L.	39·82	1·68
34	Jandraka	45·20	1·56
35	Shah Yakka	36·85	2·58
36	Malka Hans	78·72	2·42
37	Shergarh	59·20	2·03
38	Mohammadpur	63·90	4·09
39	Pirghani	47·39	1·08
40	Kohla	62·47	4·70
	Total ..	2,743·71	199·23

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The total number of operations for the year 1932 was 16,439 of which 1,406 were classed as selected.

The total income and expenditure for dispensaries amounted respectively to Rs. 1,20,986 and Rs. 1,19,939. The main sources of income were Government contribution Rs. 79,763, Local Fund contribution Rs. 20,392, Municipal contribution Rs. 20,758, Subscriptions Rs. 5 and Miscellaneous Rs. 58.

(b) Vaccination.

The District Medical Officer of Health, Dr. Jaimal Singh, has contributed the following note on vaccination.

Vaccination is compulsory throughout the district except in Renala town. The Vaccination Act was enforced in the town of Montgomery in 1916, in Pakpattan in 1917, in Chichawatni in 1921, in Okara in 1922, in Arifwala in 1927 and in the District Board area in 1932. Renala has been recently brought under the control of a Notified Area Committee. Steps are being taken to enforce the Vaccination Act there as early as possible.

As will be seen from the following table the annual cost of the vaccination department has gone up from Rs. 5,381 in 1923-24 to Rs. 15,513 in 1932-33. It is due to the fact that since the re-organization of the Public Health Department in this Province (in 1923) the strength of the vaccination staff has been gradually increasing. At present we have got one vaccinator in each Police Station, one Superintendent of Vaccination in the district and one Assistant Superintendent of Vaccination in each Tahsil.

Year.	Total cost of Vaccination Department.	Cost per successful vaccination.	Average of column 3 from 1923-24 to 1931-32.
1	2	3	4
	Rs. A. P.	Rs. A. P.	Rs. A. P.
1923-24 ..	5,381 3 10	0 5 1	
1924-25 ..	6,094 7 0	0 4 8	
1925-26 ..	6,847 7 3	0 3 7	
1926-27 ..	8,116 0 0	0 4 4	
1927-28 ..	11,258 0 0	0 5 7	
1928-29 ..	10,400 13 0	0 4 10	0 4 10
1929-30 ..	11,728 8 10	0 5 6	
1930-31 ..	11,701 8 6	0 5 1	
1931-32 ..	13,208 8 1	0 4 11	
1932-33 ..	15,513 3 7	0 1 7	

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Thus the average cost of each successful vaccination has been Re. 0-4-10 from 1923-24 to 1931-32. In 1932-33 when the number of vaccinations went up exceptionally high due to the severe and widespread epidemic of small-pox, the cost of each successful vaccination came down as low as Re. 0-1-7 only.

As the following table shows about 5 per cent. of the population has been vaccinated every year from 1923-24 to 1931-32. Last year 22·72 per cent. of the population was vaccinated due to the following reasons :—

(1) Small-pox broke out in a severe and widespread epidemic form and went on spreading like wild fire throughout the vaccination season. By sparing the vaccinated and causing a havoc in the non-vaccinated persons, the disease made it abundantly clear even to the most ignorant and illiterate rural masses that vaccination was a very simple and sure remedy against small-pox.

(2) Mr. F. L. Brayne, the Commissioner, Multan Division and Mr. F. W. G. LeBailly, Deputy Commissioner of the District, took a special interest in this work. Strict orders were issued by the Deputy Commissioner to the Zaildars that they should render their best assistance to the vaccination staff in their jurisdiction. Each zaildar was expected to go round with the vaccinator and get at least 4,000 vaccinations done in his own zail. Several zaildars and lambardars especially of Tahsil Montgomery and Tahsil Okara faithfully complied with the orders of the Deputy Commissioner who was keenly watching the progress of vaccination throughout the vaccination season.

(3) Extensive propaganda was carried out in favour of vaccination by the Public Health and Education staff and most of the members of the Public Health Staff exerted their level best to push vaccination as far as possible. Bh. Sohel Singh, District Sanitary Inspector, delivered no less than 54 magic lantern lectures and vaccinated as many as 7,403 persons

at the infected villages where vaccination was being resisted.

Population.	Year.	Primary.	Revaccinations.	Total vaccinations.	Percentage of population vaccinated.	Average percentage of population vaccinated from 1923-24 to 1931-32.
713,786 (1921 census)	1923-24	17,753	2,187	19,940	2·79	
	1924-25	21,064	1,509	22,573	3·16	
	1925-26	27,839	6,620	34,459	4·82	
	1926-27	28,273	6,275	34,548	4·83	
	1927-28	30,815	5,179	35,994	5·04	
	1928-29	30,772	11,981	42,753	5·98	4·73
	1929-30	33,285	5,580	38,865	5·44	
999,772 (1931 census)	1930-31	37,038	4,679	41,717	4·17	
	1931-32	40,602	23,313	63,915	6·38	
	1932-33	51,979	175,218	227,197	22·72	

There has been a steady increase in the number of Primary vaccinations every year from 1923-24 to 1931-32. So far as re-vaccination is concerned this district has remained extremely backward till 1931-32. It appears that the original natives of this district—Jangli Tribes—had never even heard of revaccination before. They were under the impression that vaccination was meant only for small children and was to be done only once in life. Their surprise therefore knew no bounds when they were told that revaccination was very essential every seven years and whenever the village was infected with small-pox.

Moreover they dreaded the operation so much that most of them invariably got panic-stricken and ran to their fields as soon as they heard of the arrival of the vaccinators at the village and did not return until they were sure that the "enemy" had left. Several times the vaccination staff had to chase their "Masters" in the fields and protect them against small-pox by means of vaccination. It is hoped that with the spread of education at the schools, extensive propaganda in favour of

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vaccination by the Public Health and Education Staff, co-operation of the official and non-official rural leaders and free contact with the people of more advanced districts in the province, who have recently settled in this district, the Jangli Tribes will also become wiser and fully realise the value of vaccination in a few years to come.

The number of revaccinations was fairly satisfactory in 1931-32 and quite satisfactory in 1932-33.

(c) Village sanitation; sale of quinine in villages.

The District Medical Officer of Health notes as follows :—

"The sanitary condition of the old villages in this district is very unsatisfactory. No conservancy staff exists to clean up the villages. Filth is heaped up inside or quite close to the human habitations until it is thoroughly fermented. Then it is removed to fields and used as manure. Drains to remove the sullage water of houses are seldom found and there is none to flush them where they exist at all. Drinking water is derived from unprotected shallow wells which are always liable to contamination. Storm water channels are found nowhere with the result that rainwater collects in ponds and depressions near the human dwellings. The houses of villagers are generally made up of mud and are seldom properly lighted and ventilated. There is no law with the help of which the sanitary condition of villages could be improved. Sanitary regulations were framed by the District Board in 1928 and were confirmed by the Punjab Government (Ministry of Local Self-Government) in their Notification No. 10765, dated 21st March 1929. But they could not be enforced in any village so far as regulation No. 11 compelled the District Board to appoint at least one sweeper in each village where these regulations were applied. Due to financial strigency the District Board was not in a position to employ a single sweeper anywhere. These regulations had to remain a dead letter until regulation No. 11 was deleted. I, therefore, proposed some alterations and additions to the existing regulations, with a view to bring them in line with the model ones referred to in Secretary to Government, Punjab's (Transferred Departments) letter No. 25173-L. S. G., dated 27th August 1930, to all Commissioners in the Punjab. The amended sanitary regulations were approved by the Assistant Director of Public Health, Multan Circle, and the District Board, Montgomery, and were published for objections in the district at the end of the year 1931. As no objections were received from the public, the District Board passed the amended regulations and submitted them on 29th June 1932 to the Punjab Government through the Commissioner, Multan Division, for favour of confirmation and publication

in the *Government Gazette*. Unfortunately they have not been approved by Government so far.

Colony villages.

The sanitary condition of the newly set up colony villages is much better. The Director of Public Health, Punjab, issued detailed instructions to the Colonization Officer, Nili Bar, in 1931,* with regard to the village sites, general lay-out, water supply, drainage and house hygiene, so as to secure sanitary conditions in the new chaks of the Nili Bar. The Colony Authorities have been doing their best to follow these instructions as far as possible. The result is that villages are located on relatively high ground and away from the main canal or its branches. The general lay out is on the whole suitable. Sufficient land is reserved as an open space around the village abadi. It is not allowed to be cultivated but is only utilised for communal purposes, *e.g.*, school play grounds, cattle ponds and manure pits, etc. The cattle ponds, brick kilns and graveyards are situated away from the human habitation. No borrow pits are allowed to be dug in the common or in residential sites.

Wells, pits and ventilators.

The wells are shallow and unprotected but in most cases have got good parapets and platforms. Water is drawn from the well by means of a rope and a bucket, as due to the present economic depression very few villages have provided persian wheels for the purpose. The streets and lanes are sufficiently wide and the houses are also better than those in the old villages. Thousands of manure pits have been dug and hundreds of ventilators have been provided to houses during the last two or three months. No new house is approved by the colony authorities until it is properly provided with ventilators. Mr. Brayne, Commissioner, Multan Division,† has made these matters his special care."

Sale of Quinine‡.—Quinine worth about Rs. 2,000 is distributed by the District Board every year free of cost to cases of malaria, through the Public Health Staff and the head teachers of all the District Board schools in the district. Besides hundreds of cases are treated free of charge every year by the Medical Department at 49 dispensaries in the district. Last year quinine worth Rs. 170 was also sold by the District Board at cost price to those who could afford to purchase. Quinine is also sold by the Government through Post Offices.

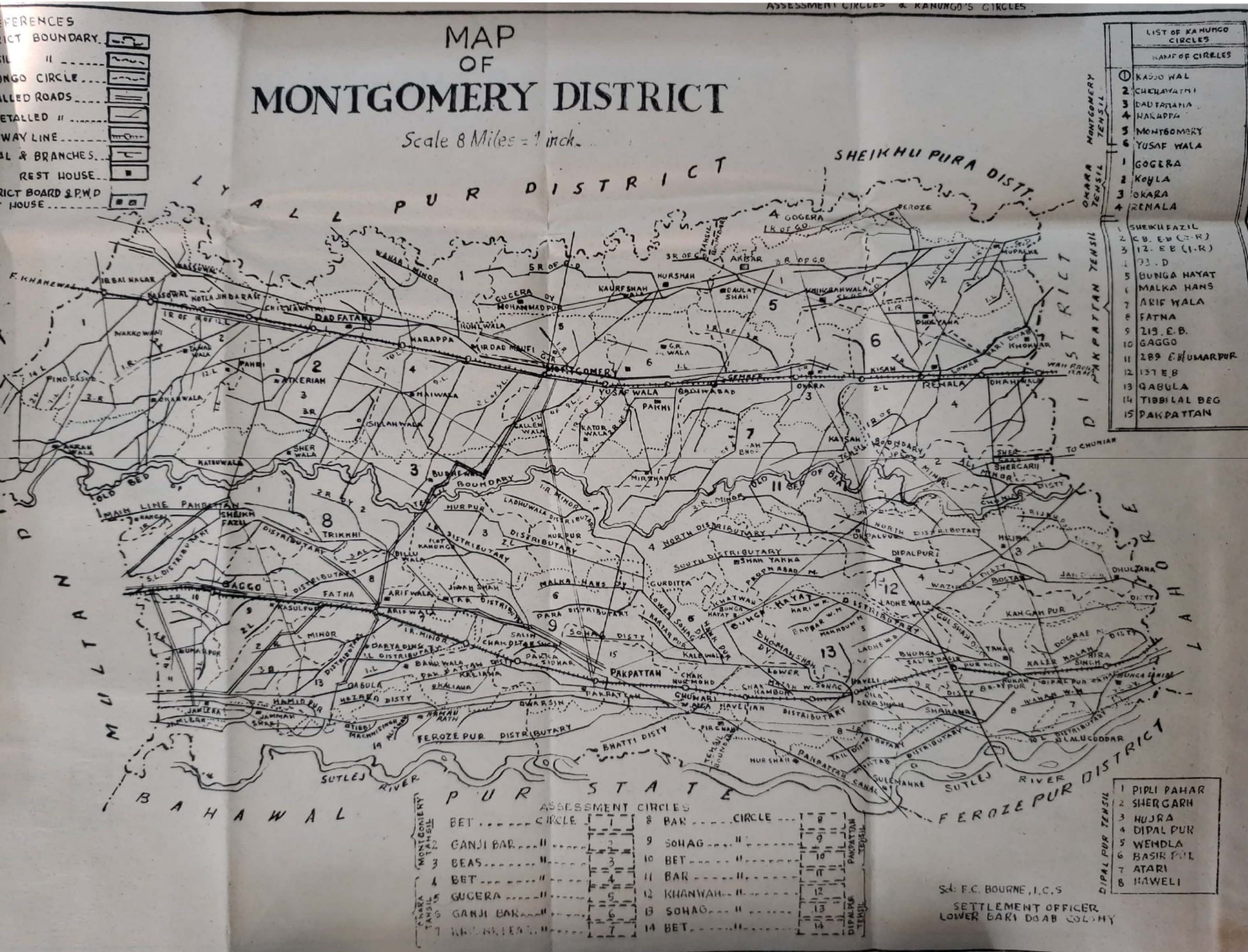
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*Most of the villages had been sited, designed and laid out by this time.—Editors.

†Now Commissioner for Rural Reconstruction.

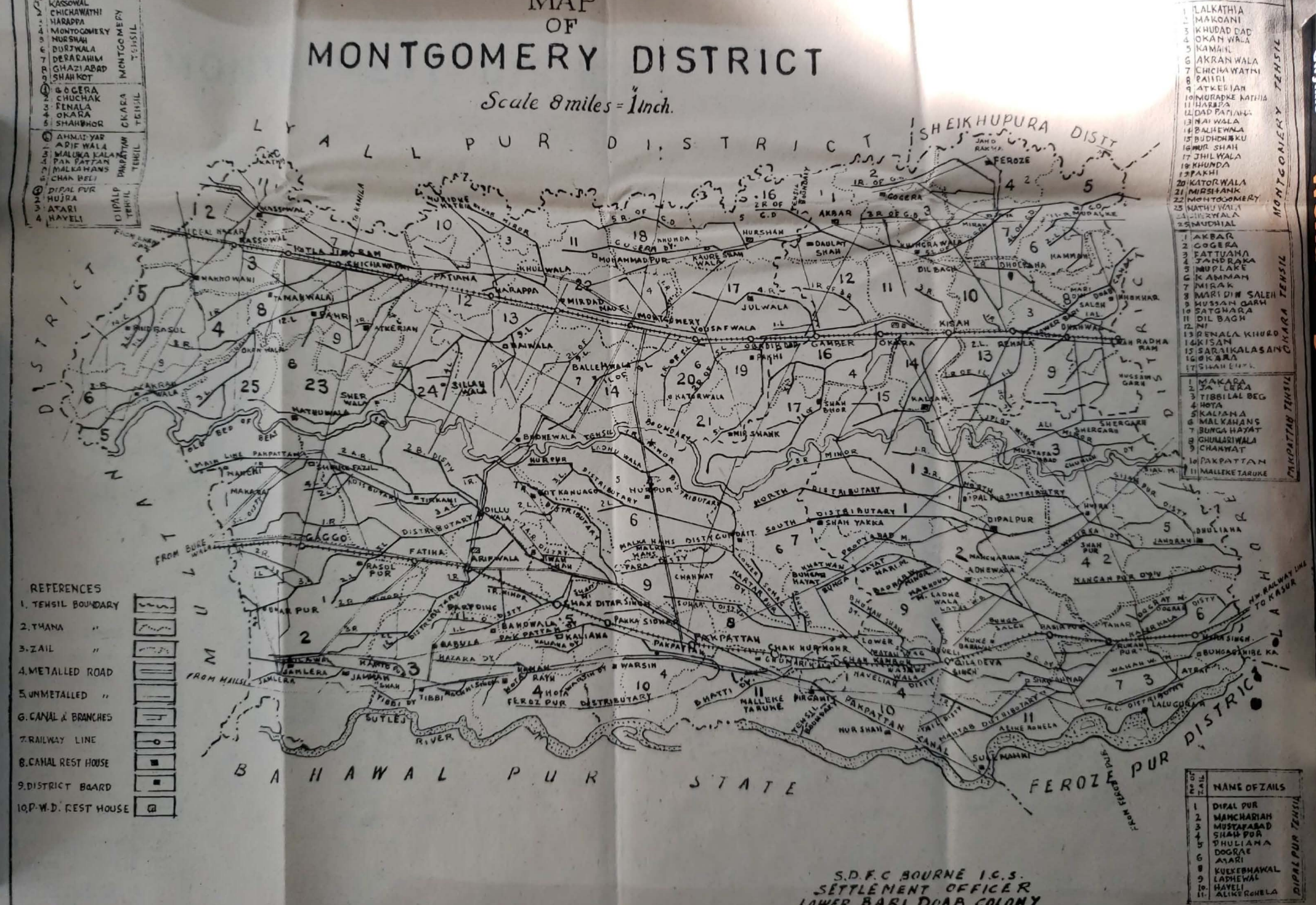
‡This matter has now been taken up and developed by the Commissioner for Rural Reconstruction.

Printed by : New Star Printing Press.
Urdu Bazar, Lahore.


ASSESSMENT CIRCLES & KANUNGO'S CIRCLES
MAP
OF
MONTGOMERY DISTRICT
Scale 8 Miles = 1 inch.
LYALLPUR DISTRICT
SHEIKHUPURA DISTT.
JHANG DISTRICT
MULTAN DIVISION
BAHAWALPUR STATE
FEROZEPUR DISTRICT
SUTLEJ RIVER
MONTGOMERY
YUSAF WALA
PAKPATTAN
DIPALPUR
KAMRA TENSIL
MONTGOMERY TENSIL
PAKPATTAN TENSIL
DIPALPUR TENSIL
REFERENCES
DISTRICT BOUNDARY
TENSIL "
KANUNGO CIRCLE
METALLED ROADS
UNMETALLED "
RAILWAY LINE
CANAL & BRANCHES
REST HOUSE
DISTRICT BOARD & P.W.D "
LIST OF KANUNGO CIRCLES
NAME OF CIRCLES
1 KADDO WAL
2 CHICHAWATNI
3 DAULATANA
4 HARAPPA
5 MONTGOMERY
6 YUSAF WALA
1 GOGERA
2 KOYLA
3 OKARA
4 RENALA
1 SHEIKHUPAZIL
2 C.B. E.B (L.B.)
3 12. E.B (L.B.)
4 93. D
5 BUNGA HAYAT
6 MALKA HANS
7 ARIF WALA
8 FATNA
9 219. E.B.
10 GAGGO
11 289 E.B ULMARDUR
12 137 E.B
13 GABULA
14 TIBBI LAL BEG
15 PAKPATTAN
ASSESSMENT CIRCLES
MONTGOMERY TENSIL
1 BET
2 GANJI BAR
3 BEAS
4 BET
5 GUGERA
6 GANJI BAR
7 KHANEWAL
PAKPATTAN TENSIL
8 BAR
9 SOHAG
10 BET
11 BAR
12 KHANWAH
13 SOHAG
14 BET
DIPALPUR TENSIL
1 PIPLI PAHAR
2 SHERGARH
3 HUJRA
4 DIPAL PUR
5 WENDLA
6 BASIR PUR
7 ATARI
8 HAWELI
Sd. F.C. BOURNE, I.C.S
SETTLEMENT OFFICER
LOWER BARI DOAB COLONY

MAP OF MONTGOMERY DISTRICT

Scale 8 miles = 1 inch.



MAP OF MONTGOMERY DISTRICT

Scale 8 Miles

