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Sudan No. 1 (1932)

REPORT  
on the  
Finances, Administration  
and Condition of the  
Sudan in 1931

*Presented by the Secretary of State for Foreign Affairs  
to Parliament by Command of His Majesty*

LONDON

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## REPORT ON THE FINANCES, ADMINISTRATION AND CONDITION OF THE SUDAN IN 1931.

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*Sir P. Loraine to Sir John Simon.—(Received August 9.)*

Sir,

*Ramleh, July 30, 1932.*

I HAVE the honour to transmit to you herewith a copy of a despatch from the Governor-General of the Sudan, forwarding his Excellency's annual report on the administration, finances and condition of the Sudan for the year 1931.

2. In common with the rest of the world, the Sudan was in 1931 faced with a serious economic crisis, the acuteness of which was intensified by the direct dependence of the country on the cotton crop. The figures quoted by Sir John Maffey in Chapters I and IV of his report show only too clearly how disastrously the finances of the Sudan were affected by the bad cotton seasons in 1929-30 and 1930-31, and the statistics given in Chapter V prove to how great an extent the trade of the country has suffered. No comment could be more eloquent than the figures themselves. As explained by the Governor-General, energetic steps have been taken by the Sudan authorities to deal with the situation and to restore the finances of the country to a more healthy state. Drastic measures of retrenchment and economy have been introduced and every effort is being made to re-establish financial equilibrium. Heavy burdens have of necessity been imposed on the population in general and on the Government officials in particular and some considerable time must inevitably elapse before the present difficulties can be overcome. The further efforts of the Sudan Government to deal with the situation will, I am confident, receive your sympathetic consideration, and you will no doubt share the Governor-General's satisfaction that the latest cotton crop has been so successful and that the fears which were at one time expressed regarding the progressive deterioration of the soil in the Gezira have been belied.

3. I may call your attention to the fact that, despite the difficult circumstances of the last year, the policy of administrative devolution has been carried on smoothly and satisfactorily.

4. You will observe from Chapter II of the report that, in contradistinction to the excellent relations which were maintained throughout the year between the Sudan and the Belgian Congo, Eritrea and French Equatorial Africa, the position on the Abyssinian-Sudan frontier was unsatisfactory. As you are aware, the situation in this respect has, unfortunately, not improved during 1932, and during the first six months of this year, at least, three, if not four, cases have occurred where the Sudan frontier has been violated by Abyssinian subjects for highly condemnable purposes. A particularly

serious incident took place in March last when some 600 Gila Anuak from Abyssinia raided the Beir tribe in Upper Nile Province. As the result of this raid seventeen men were killed, twenty-seven women and fifty-five children captured and over 2,000 head of cattle and sheep seized.

5. As Sir John Maffey points out, these frontier incidents are due mainly to the conditions prevalent in Abyssinia, to the lack of administrative control by the Ethiopian Government and to the latter's inability to restrain their subjects from breaking the peace. The existing state of affairs is no doubt equally distasteful to the Ethiopian Government, who, indeed, have recently shown a commendable readiness to settle the claims of the Sudan Government in respect of the Gila Anuak raid. The fact remains, however, that these frequently recurring raids by Abyssinian subjects are a constant source of danger to the population of the Sudan and of embarrassment to its Government.

I have, &c.

PERCY LORAINÉ,  
*High Commissioner.*

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Enclosure.

*Sir J. Maffey to Sir P. Lorainé.*

Sir,

*Khartum, July 15, 1932.*

I HAVE the honour to submit for your Excellency's information a report in duplicate on the finances, administration and condition of the Sudan in 1931, including an annex relating to the Lee Stack Indemnity Fund.

I have, &c.

J. L. MAFFEY,  
*Governor-General of the Sudan.*

*Report on the Administration, Finances and Condition of the  
Sudan in 1931.*

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## GLOSSARY.

Ardeb	...	...	...	=	300 lb.
Deims	...	...	...	=	Native cantonments.
Dom	...	...	...	=	Species of palm.
Dukhn	...	...	...	=	Bulrush millet.
Dura	...	...	...	=	Millet.
Emir	...	...	...	=	Chief.
Feddan	...	...	...	=	1·038 acres.
Fiki	...	...	...	=	"Holy man."
Garad	...	...	...	=	Acacia pods.
Ghaffir	...	...	...	=	Watchman.
Hafir	...	...	...	=	Excavation for water storage.
Hakim	...	...	...	=	Native dispensary attendant.
Heshab	...	...	...	=	The best variety of gum.
Kadi	...	...	...	=	Judge.
Kantar (cotton)	...	...	...	}	= 315 rotls = 312·0075 lb.
Large kantar (cotton)	...	...	...		
Small kantar (cotton)	...	...	...		
Kantar (gum)	...	...	...	=	100 rotls = 99·05 lb.
Keila	...	...	...	=	100 rotls = 99·05 lb.
Khalwa	...	...	...	=	25 lb. (grain).
			...	=	Native village elementary school.
Khor	...	...	...	=	Nullah, or water-course.
Kuttab	...	...	...	=	Government elementary school.
Lubia	...	...	...	=	<i>Dolichos lablab</i> .
££.	...	...	...	=	£ Egyptian = 1,000 millièmes = 100 piastres = £1 0s. 6½d.
Magdum	...	...	...	=	Chief of a district (Darfur).
Mamur	...	...	...	=	Native administrative officer.
Mek	...	...	...	=	Chief.
Millième	...	...	...	=	About ¼d.
Nazir	...	...	...	=	Tribal chief.
Oke	...	...	...	=	About 2½ lb.
Omda	...	...	...	=	Lesser tribal chief.
Omodia	...	...	...	=	Tribal sub-district.
Piastre (P.T.)	...	...	...	=	About 2½d.
Rotl	...	...	...	=	·99 lb.
Safra	...	...	...	=	Variety of millet.
Sakia	...	...	...	=	Water-wheel.
Samn	...	...	...	=	Clarified butter.
Selluka	...	...	...	=	Land flooded by the Nile.
Sharia	...	...	...	=	Mahommedan law.
Suk	...	...	...	=	Market.
Sunt	...	...	...	=	<i>Acacia arabica</i> .
Talh	...	...	...	=	Inferior variety of gum.
Ushur	...	...	...	=	10 per cent. assessment tax on crops.
Wadi	...	...	...	=	River bed.



## CHAPTER I.—GENERAL.

IN 1931 the Sudan was honoured by a visit from the Earl of Athlone and H.R.H. Princess Alice, accompanied by Lady May Cambridge. The party entered the Sudan from Uganda on the 23rd February and, after a stay in Mongalla Province, spent a few days in Khartum.

2. The economic storm that swept over the world in 1931 struck the Sudan with full force. In my report for 1930 I said that the problem confronting the Sudan in the near future would be the balancing of the budget. The event has confirmed this forecast.

3. The trade of the Sudan, which in 1929 amounted to £E. 13,665,000, fell in 1931 to £E. 5,646,000. Revenue, omitting drafts on reserve funds, fell in the same period from £E. 4,835,000 to £E. 3,360,000. These figures tell their own story, but it is not out of place to explain the conditions which brought about this collapse of trade and this shrinkage in the resources of the Government.

4. The possibility of irrigating the Gezira plain between the Blue and White Niles first attracted attention some thirty years ago, not long after the battle of Omdurman. At no time has there been any alternative scheme for promoting the financial and commercial expansion of the country. In 1911, when the first trial farm was started at Taiyiba, cotton appeared to be the most suitable crop to grow. After many years of experiment the case for cotton was proved and in 1925 the Gezira scheme definitely took shape. But, as was only natural, the infant could not thrive unless it grew.

5. As far back as 1922 both the Sudan Government and the Egyptian Ministry of Finance were aware that the original scheme of 100,000 feddans of cotton would not pay its way even at an average yield of 3·5 kantars per feddan and an average price in Liverpool of 15*d.* per lb. (*i.e.*, £E. 17 per feddan), figures which in 1927 were regarded as a conservative basis for revenue estimates.

6. But a yield of £E. 10·5 per feddan (obtained by 3½ kantars at 9·2*d.* per lb., 3 kantars at 10·4*d.* per lb., or 2½ kantars at 12·25*d.* per lb.) on an area of 200,000 feddans of cotton would give an apparently adequate margin of safety. Expansion to this area, therefore, became the Government's objective.

7. The original Gezira scheme for 100,000 feddans of cotton involved capital expenditure of about £E. 11,000,000. To double the area of cotton only one-fifth of the original capital was needed. The capital cost per feddan of gross area could be reduced from £E. 36·9 to £E. 19·6. Some £E. 3,500,000 of the Government's own reserves were put into the scheme, of which £E. 2,276,000 covered the cost of the extensions. Moreover, £E. 2,143,000 of the loans guaranteed by the British Government remained unissued.

8. At the beginning of the 1930-31 cotton season difficulties of water and finance had been overcome, an area of 196,000 feddans was

ready for planting and prospects were bright. Before the end of the season the conditions on which success depended had gravely deteriorated, for the yield was about a quarter and the price about one-third of the opening season of 1925-26.

9. In framing the 1931 budget it was clear that the yield of £E. 17 per feddan taken from 1927 onwards as a conservative figure for budget estimates could not be obtained. Had it been so, the total value of the cotton crop from the 1930-31 area would have been £E. 3,332,000 (Government's share, £E. 1,300,000). But the total value proved to be only £E. 334,000, and the total revenue accruing to Government is unlikely to exceed £E. 25,000, the remainder of the Government's share being credited to a tenants' equalisation fund. Interest and sinking fund on the capital, and the cost of the Irrigation Department, amounted to £E. 1,025,000. For a country of slender resources here suddenly was a terrible gulf to be bridged.

10. The yield per feddan has fallen from £E. 28·5 and £E. 33 in the first two years, 1925-26 and 1926-27, to £E. 5 and £E. 1·7 in the last two; the price per lb. from 16*d.* and 18*d.* to 8*d.* and 6*d.*; the yield from 4·79 and 4·77 kantars per feddan to 2·32 and 1·35. In spite of this set-back there can be little doubt that the decision to extend the area was right. It has reduced the yield per feddan at which the scheme is entirely self-supporting from £E. 22·5 to £E. 12·5. If a yield of £E. 10 on the extended area could be secured, the Government would not be out of pocket having regard to the indirect receipts that would accrue, and £E. 300,000 more cash would be put into circulation amongst the cultivators. But on the original area such a yield would mean an annual loss of about £E. 400,000 on interest and sinking fund payments alone.

11. The extension is an insurance against the normal risks of an agricultural enterprise. If the scheme should ultimately fail either through low prices or low yield we shall not be appreciably worse off than we were before. But by extending the area we have enormously reduced the risks of such failure. Moreover, the premium we have paid for this insurance has not been lost to us. It is invested in 300,000 feddans of irrigated land serviceable for uses other than the growing of cotton if cotton should eventually prove either unsaleable or unsuited to the soil, and it has enabled more than 100,000 people to be settled on the land.

12. Unfavourable climatic conditions, blackarm and leaf-curl were, in our view, responsible for the low yields of 2·32 kantars a feddan in 1929-30 and 1·35 in 1930-31. Climatic conditions are a normal risk, and the experiments of fourteen years had shown that, on the average, they cannot do much harm. Prompt measures were taken to readjust our agricultural methods. The research organisation was remodelled, special measures were adopted to deal with blackarm and leaf-curl before the sowing of the 1931-32 crop, and new seed was imported from Egypt. Pessimists, however, maintained that our

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 troubles were radical and that these measures would furnish no remedy for a soil which they held to be in progressive deterioration. But, before the end of 1931 it was clear that the pessimists were wrong. At the time of writing a yield of four kantars over 174,000 feddans and five kantars over 20,000 feddans, or a total of about 800,000 kantars, is assured.

13. Thus, the Sudan has fulfilled its promise in the Gezira scheme. Prolonged experiments, a sound policy of extension and unremitting research work have put on the market a magnificent crop of high quality. There is but one remaining factor necessary to ensure prosperity, and that factor is beyond the control of the Sudan. A price of 7·5*d.* per lb. in Liverpool would enable the 1932 budget to be balanced. Every additional 1*d.* per lb. would put £E. 120,000 to reserve.

14. The native cultivator in the Gezira has accepted these violent fluctuations of fortune in a spirit of fatalism, for he is familiar with the alternation of famine and plenty. Above all, he has been moved in many cases to work himself instead of always hiring labour. The prosperous early years bred bad habits and the ultimate salvation of the scheme lies to a great extent in the thrift and industry of the peasantry. Should the cultivator of the Gezira learn by the experience of 1929-31 to follow the example set in the cotton-fields of Egypt and Uganda, these disastrous seasons will not have been all loss.

15. It is not only in the Gezira that the price of cotton influences the financial position; from the Gash and Tokar cotton areas revenue amounted in 1927-28 to over £E. 200,000, in 1930-31 to only £E. 75,000. The profit from the sugar monopoly and the revenue from customs rise and fall in close sympathy with the profits of the cotton cultivator. In spite of increased customs duties and a fall in the world price of sugar, the estimated revenue under these two headings for 1932 is £E. 300,000 less than in 1930.

16. To meet the emergency such measures of retrenchment as were immediately possible were taken at the beginning of the year. In August Mr. H. E. Fass, C.B., O.B.E., was appointed to take over the purely financial duties of the Financial Secretary, leaving Mr. A. J. C. Huddleston, C.M.G., O.B.E., to deal with the remainder as Economic Adviser.

17. A retrenchment committee was appointed at the beginning and again at the end of the year. The actual expenditure for 1930 was £E. 4,500,000. The estimate for 1932 is £E. 3,889,000. Of this sum, about £E. 1,000,000 for the Irrigation Department and the service of the loans is not susceptible of reduction. Other expenditure has been reduced by over 17 per cent.

18. The public have had to bear a heavy share of the burden. Higher customs duties have been levied, the price of sugar has been increased. Expenditure on new works and development has ceased. New well-boring and water-storage schemes, new hospitals and

medical expansion have been postponed. Rail and postal services have been curtailed.

19. The sacrifices demanded from Government officials have been heavy. Excluding the Sudan Defence Force, the posts of 1,000 classified officials, 20 per cent. of the Government staff, including 207 British, have been retrenched. In addition, the strength of the British officers in the Sudan Defence Force has been reduced by 60 from 152 to 91. This reduction has thrown a heavier burden on those who are left. Their salaries have been reduced by 5 to 10 per cent. Allowances hitherto regarded as part of recognised emoluments have been reduced or abolished. The charge for amenities provided by Government have been increased. In these ways timely and drastic action was taken to deal with the crisis. The end is not yet in sight.

20. Although during the last few years very large areas have been brought under administration for the first time, and although reductions in the strength of the Sudan Defence Force have transferred the cost of the maintenance of public security in several provinces from the military to the province budgets, yet the total expenditure on provincial administration has been reduced to the level of 1924. The native administrations, non-existent in 1924 but which now represent more than 10 per cent. of the cost of the provinces, have to a large extent made it possible to check the growth of provincial expenditure and reduce it from the peak of 1930 to the present level.

21. In my report for 1930 I alluded to the stabilising effects of the policy of gradual devolution to these native authorities. The past year, with its continued economic depression, has provided a more severe test than any previously experienced, but, happily, the structure already completed has shown no sign of strain, and the process of building has continued.

22. Legislation for the better control of the judicial side of the native administrations was passed. A widely permissive ordinance entitled the "Chiefs' Courts Ordinance" dealt with the native courts in the three southern provinces, Upper Nile, Bahr-el-Ghazal and Mongalla. Primitive negroid tribes are here affected, and the ordinance marks the object at which we aim rather than the codification of heterogeneous existing practices. Sympathetic study of social organisation and tribal custom will in the course of time enable the provincial authorities to fit their local courts into the wide framework provided by the ordinance. Progress will no doubt be slow, but misfits will be avoided.

23. For the more advanced conditions of the Northern Sudan, the "Native Courts Ordinance" was planned to bring existing legislation within the bounds of one enactment, and also to broaden its basis in directions hitherto restricted. The ordinance consequently includes, with such amendments as experience has proved necessary, the "Powers of Sheikhs Ordinance, 1928," the "Village Courts

Ordinance, 1925," and the "Village Courts Amendment Ordinance, 1930." The new ordinance, like those which it replaces, is simple in structure and broad in sanction, so that within its ambit native institutions may have room for development along customary and indigenous lines.

24. While in the main the native administrations continue to show steady progress both on the judicial and executive sides, the past year has not been without its set-backs. In Darfur Province the untimely death of the Emir Abdel Hamid, closely followed by that of his counsellor and friend, the Resident, Mr. E. D. M. Batty, dealt the heaviest blow to the growth of the Zalingei Emirate. High hopes had been founded on the character and ability of the late Emir. A son succeeds him, but rapid progress must now give way to slower processes of character-forming and education in the principles of sound administration.

25. In Northern Kordofan the failure of one of the Gawamaa chiefs, though in itself unfortunate, had a happy issue in the amalgamation of the whole tribe under a brother chief.

26. Although the clouds of economic uncertainty and depression still hang heavily over the land, our native policy stands on a firm foundation.

27. The difficulties of our frontier relations with Abyssinia do not decrease. Later in this report a fuller survey is given. The lack of administrative control on the Abyssinian side of the frontier, the turbulence of the tribes and the absence of discipline in the Abyssinian soldiery are a constant menace both to the Sudan and to the Turkana of Kenya. It seems impossible either to prevent raids or to secure redress for them. In previous years the Sudan obtained some benefit from its proximity to Abyssinia in the export of salt via Gambeila. Even this benefit has now been removed owing to the monopoly instituted by the Abyssinian Government.

28. A reassuring feature in the trade returns is that not the quantity but only the value of certain categories of goods imported for native consumption has appreciably decreased. On the other hand, the natural export market for Sudan produce is being gradually lost. In 1925 the Sudan's exports to Egypt amounted to 90 per cent. of the goods imported of Egyptian origin. By 1931 the percentage had shrunk to 42 per cent.

29. Of minor misfortunes that at any other time would have ranked as first-class disasters, the plague of locusts for the third consecutive year had the most far-reaching results. Tens of thousands of tons of grain were again destroyed. There was famine in some areas and hardship in many. After a series of years of good rains such as 1929-31 (a rare blessing) the Sudan's granaries should have been full to overflowing, and the profits from the export of the surplus an important item in the native's budget. But, owing to these visitations, there are no reserves and export has been negligible.

30. The proportion of British to foreign shipping calling at Port Sudan is decreasing. In 1925 the proportion was 78 per cent., by 1931 it had dropped to 64 per cent. In six years the foreign tonnage more than doubled, while the British tonnage increased by less than 8 per cent.

31. Air travel continues to develop. Three hundred and fifty-nine aircraft landed at Wadi-Halfa compared with 304 in 1930 and 145 in 1929. The first air-liner of Imperial Airways African service arrived at Khartum from the north on the 3rd March. Since that date a weekly mail service has been maintained both southwards and northwards.

32. It is worthy of record that the "Times" of Tuesday, the 31st March, was delivered in Khartum at 1 p.m. on Thursday, the 2nd April, by the late Lieutenant-Commander Glen Kidston.

33. In March, Khartum and Omdurman, with a population of nearly 150,000, were threatened by an outbreak of cerebro-spinal meningitis. The province staff and the medical department worked with the utmost energy to prevent a catastrophe. Their success is the best tribute to their efforts. By the beginning of June the danger was past. Perhaps the most potent factor in controlling the epidemic was the devoted work of Major R. G. Archibald, C.M.G., D.S.O., and the staff of the Wellcome Tropical Research Laboratories. The grant by His Majesty of a Knighthood on the 3rd June to Sir Henry Wellcome, the founder, was therefore peculiarly appropriate.

#### *Personnel.*

34. It is with very deep regret that I have to record the death at Merowe on the 28th January of General Sir H. W. Jackson, K.B.E., C.B. For nearly fifty years General Jackson had been intimately connected with the Sudan, first in the 1884 and subsequent campaigns, secondly from 1902 to 1922 as Governor of Dongola Province, and from then till the day of his death as a resident in Merowe, the capital of the province. The place that General Jackson held in the affections of the people is best shown in the words of an eye-witness of the funeral:—

“The demonstration of popular sorrow was unique. Hundreds of weeping men and women surrounded the late general's house as the coffin, covered by a Union Jack, was carried out and borne to the grave by a party of the villagers to whom the pasha had been so beloved a friend for over a quarter of a century.”

35. Thus there passed to his rest one of the notable figures of Sudan history.

36. The Sudan also suffered heavily from the death during the year from accident or disease of no less than seven of her senior officials. No specific epidemic was responsible for this grievous loss, the causes were as widely separated as death from blackwater fever

in a lonely district in Darfur and a mountaineering accident in the snow of the Swiss Alps. 613

37. I have to record the retirement from the Sudan Government service of several officials with long and distinguished service :—

38. Mr. R. E. More, C.M.G., O.B.E., joined the Sudan Political Service in 1902. After serving in the Red Sea, Kordofan, White Nile, Kassala and Khartum Provinces, in the last named as Governor, he was appointed Sudan Agent in Cairo in 1920. For twelve years, till his retirement, his great ability and vivid personality found full scope in that responsible post. In 1929 he was created C.M.G. and, later, the good relations he had established with the Egyptian authorities were marked by the grant of a high honour, the Grand Cordon of the Order of the Nile. His retirement will leave a gap in Cairo which it will be hard to fill.

39. Mr. W. A. Davie joined the Agriculture Department in 1905, and was appointed Assistant Director in 1923 and Director in 1927. He has played a notable part in the development of Tokar and Kassala as cotton-growing areas, and was closely connected with the first experimental station in the Gezira, and with the organisation and rotations of the Gezira scheme. His faith was unshaken by the set-back of 1929–31, and the prospects of the present season prove that that faith was not misplaced. His staunchness in the face of difficulty in all these large cotton-growing schemes has been of the utmost value.

40. Mr. C. A. Willis, C.B.E., joined the Political Service in 1905, and his earlier years were spent in the Red Sea, Dongola and Kordofan Provinces. Appointed soon after the outbreak of war to the Intelligence Department, of which he became Director in 1920, he spent eleven years in that branch of the service and was able to assist the Central Government through some of its most difficult times. In 1926 he was made Governor of the Upper Nile Province. During the next five years he performed very valuable service in bringing under organised control large areas which had been previously administered in name only, and in laying foundations upon which, it is hoped, a superstructure of development will gradually be built.

41. Captain H. E. Dumbell joined the Sudan Civil Service from the Egyptian army in 1906 and served for eight years in Kassala Province. From 1914 to 1919 he was employed in the Slavery Repression Department. In the latter year he was appointed Director of Stores, and in 1925, on the amalgamation of the military and civil branches, Director of Stores and Ordinance. Here his capacity for organisation and thorough grasp of detail were of the greatest value. In addition, up to 1924, Captain Dumbell was in control of the staff and organisation of the central prison at Khartum North. He was appointed a member of the Cadre Committee on its formation in 1921, and for ten years his wide knowledge of both provincial and departmental conditions were of the greatest help in that capacity.

42. Mr. H. C. Jackson joined the Political Service in 1907. He served in no less than eight provinces, both in the south and north, and in three of them, Berber, Bahr-el-Ghazal and Halfa, as Governor. His studies of the sociology of Arabs, Beja tribes, Shilluk and Nuer gave him an authoritative knowledge which was of great value to the Government and, combined with this knowledge, he had the warmest sympathy with the native and care for his interests. Mr. Jackson's retirement has deprived the Sudan of an energetic and enthusiastic personality, devoted heart and soul to the country he served.

## CHAPTER II.—FRONTIERS.

### *Abyssinia.*

43. His Excellency Ras Mulugheta, K.C.V.O., C.B.E., formerly Minister of War, succeeded Ras Kabada Mangasha as Governor of Gore, and Dejazmach Mangasha Yilma, a nephew of the Emperor, took over the governorship of Maji and Goldea. Both the new Governors, whose districts border on the Sudan, established friendly relations with His Britannic Majesty's consuls, and displayed much interest in the manifold problems of boundary administration. His Majesty's consul for South-Western Abyssinia also visited Gurafarda, a district bordering on the Upper Nile Province of the Sudan, and discussed frontier questions with the Governor, Fitaurari Haile Biradet.

44. Trade between Abyssinia and the Sudan decreased from £E. 330,449 in 1930 to £E. 167,065, a decrease of 51·25 per cent. Of this, trade to the value of £E. 76,512 (compared with £E. 226,764) passed through the Gambeila enclave.

45. The problems presented by illicit incursions into the Sudan, and by uncontrolled tribes and outlaws on the Abyssinian side, showed no signs of diminishing. As in previous years precautionary patrols were maintained along the frontier in Kassala and Fung Provinces with a view to checking the raids of armed bands of men who combine poaching with brigandage, and on one occasion in March a patrol encountering a gang of Abyssinian marauders on the Setit River was obliged to fire, with the result that two of the brigands were killed, while the others escaped in the thick bush. Another encounter occurred in April near the Dinder River; on this occasion also, the marauders, who were outlaws of Sudanese origin, showed fight and two were killed and nine captured.

46. In my report for 1930 I referred to the efforts which were being made to arrange for the holding of local meetings between officials of the Fung Province and the more responsible chiefs of Beni Shangul with a view to the settlement of claims and counter-claims arising from a series of border incidents. Although the Ethiopian Government expressed themselves in favour of the proposal, it has not yet been possible to hold such meetings owing to the unresponsive attitude of the principal chief concerned, Sheikh Khogali-el-Hasan



(whose wife, Sitt Amina, is undergoing sentence in the Sudan on account of slavery offences); in these circumstances no redress has yet been obtained for offences committed against Sudan subjects by the people of this chief. There was considerable tribal unrest in that part of the Abyssinian boundary which marches with the Upper Nile Province, and although the more serious incidents were confined to Abyssinian territory, the situation gave rise to some anxiety as, owing to the almost complete disregard of ethnographical features in the alignment of the boundary, tribes under Sudan administration were to some extent affected by the prevailing disorder.

47. In April trouble broke out between the Anuak, a Nilotic tribe who are divided by the frontier into a Sudanese and an Abyssinian section, and the Gaajak Nuer, who have their permanent habitations in the Sudan, but annually cross the border in search of pasture for their herds. There were serious clashes which resulted in deaths on both sides, and the representative of Abyssinian authority, in whose territory the incidents took place, invoked the assistance of the Sudan District Commissioner, who succeeded, by advice and persuasion, in patching up a truce. Relations between the tribes nevertheless remain strained, and the absence of administration on the Abyssinian side renders the maintenance of peace extremely difficult. As a result of representations made by His Britannic Majesty's consul, the Governor of Gore paid compensation for the death of a Sudanese trader who was accidentally killed during the Anuak-Nuer fighting. Another section of Abyssinian Anuak delivered an unprovoked attack on certain Burun tribesmen from the Sudan who were visiting Abyssinian territory for purposes of trade, and killed eight men; the attackers next raided the Burun village of Pil (situated near the frontier in Sudan territory) and killed four more Burun, including a woman and a small child; they then set fire to the village and retreated with money and stock captured from the villagers. Demands for redress addressed to the Ethiopian Government have not yet led to any result.

48. At the same time there were outbreaks of truculence on the part of the Abyssinian Anuak directed against the local representatives of Ethiopian authority and provoked by the shocking ill-treatment meted out to the tribesmen by the undisciplined soldiery under the command of the frontier official. Although it is satisfactory to note that the Governor of Gore has held an enquiry into the allegations against this official and is giving serious consideration to the conditions prevailing in the area, it is difficult to feel any confidence in a permanent amelioration until some system of responsible administration of the negroid tribes is introduced on the Abyssinian side of the frontier.

49. On the Sudan side of the border there was some restlessness amongst the Anuak inhabiting the Adonga area on the upper reaches of the Akobo River. A minor Abyssinian official, Gerazmach Garbe, revived an imaginary claim to the right of collecting tribute in Sudan territory and entered into intrigues with Anuak chiefs. In March it

was reported that two of these chiefs, Sham Medda and Sham Akwei, had raided fellow-tribesmen and sent defiant messages to the District Commissioner. Sham Medda had some time previously been elected as temporary holder of the Anuak tribal regalia, certain ceremonial objects much revered both by Sudan and Abyssinian Anuak, and his defection threatened a set-back to the organisation of the tribe. Two aircraft carried out a demonstration flight over the Adonga area, and it was found that the greater part of the tribesmen had remained quiet and that the two recalcitrant chiefs, with few followers, had taken refuge with their kinsmen in Abyssinian territory. In the event, however, both Sham Medda and Sham Akwei tendered their submission to the Government and were allowed to return to their villages subject to the restoration of property obtained in raids and the handing over of the tribal regalia pending the election of a new holder acceptable to the tribe.

*Belgian Congo.*

50. A sanitary agreement was concluded between the Governments of the Sudan and the Belgian Congo providing for closer co-operation and mutual exchange of information between the two territories in respect of certain matters affecting public health.

51. In pursuance of the policy of co-operation between the two administrations in matters of mutual interest, joint boundary courts continued to be held for natives of the border districts. Although the bulk of outstanding cases have been settled, these courts still fulfil a useful function as they provide opportunities for people from both sides of the frontier to meet under suitable conditions, and thus strengthen the hands of the sleeping-sickness authorities.

*Eritrea.*

52. The friendly relations which have always been maintained with the Administration of Eritrea were further evidenced by the ready assistance given by the authorities of that colony in connexion with the disarmament of the Rashaida tribe, to which reference is made in another section of this report.

53. A similar spirit of cordial co-operation was manifested by the Eritrean authorities in the settlement of a regrettable frontier incident which occurred in April. Eritrean native police, in an excess of zeal, endeavoured to arrest a party of Lahawin Arabs who were grazing their camels in Sudan territory (though close to the frontier) evidently in the mistaken belief that these people were on the Eritrean side of the boundary and therefore liable to pay grazing dues. An affray followed in the course of which the Eritrean police killed two and wounded two others of the Lahawin and captured eight camels. After a joint investigation of the circumstances by officials of the two Administrations, which was carried out in a spirit of entire cordiality,

the Eritrean Government agreed to pay compensation for the deaths and wounds on the scale approved by native custom.

*French Equatorial Africa.*

54. The authorities of Darfur Province continued to maintain excellent relations with the Administration of the adjacent districts of French Equatorial Africa, and there was a frequent exchange of visits during which frontier problems were discussed in an amicable atmosphere of co-operation. The tendency to which reference has been made in previous reports of French subjects to immigrate into the Sudan continued unabated, especially in the earlier part of the year, and measures had again to be taken, in accordance with the boundary protocol of 1924, to collect and repatriate parties of Arab tribesmen who had crossed the frontier without permission. The reason for these movements is generally to be sought in discontent with the methods of native chiefs in French territory, and it is to be hoped that the efforts now being made by the French Administration to remove the causes of discontent will stem the tide of unwelcome immigration. The local difficulties which often arise in the repatriation of small scattered parties are fully realised by the French authorities, who have expressed their appreciation of the attitude of the Sudan Government and of the good relations existing between the frontier officials on the spot.

*Kenya and Uganda.*

55. The system of holding border courts and markets for natives of the districts adjacent to the Sudan-Uganda boundary was continued with satisfactory results. Some difficulty was experienced by the Administration of Mongalla Province in the control of illicit intercommunication between Sudan tribesmen and their kinsmen in Uganda with the attendant danger of sleeping-sickness being introduced into the Sudan from the adjacent areas in which the disease is endemic. It is on account of this danger that it is essential to check unauthorised migrations and to ensure that all intercourse between the tribesmen takes place under conditions which make it possible to exercise sanitary control.

56. Some inconvenience was caused by the fact that the southern boundary between the Kajo-Kaji district of Mongalla Province and the adjoining district of Uganda is still undemarcated on the ground, but a working arrangement for administrative purposes has been locally agreed on by the officials concerned pending formal delimitation.

57. The unadministered (and largely uninhabited) area in the south-east of Mongalla Province, which adjoins the provisional frontiers with Abyssinia and Kenya Colony, was reconnoitred early in the year by a small detachment of the Sudan Defence Force with a view to studying methods for the prevention of raids by Abyssinian tribesmen on the Turkana, a Kenya tribe who visit this area for purposes of grazing. The reconnaissance was carried out successfully,

though with considerable hardship, and touch was established with the King's African Rifles in Kenya. It was decided, however, that the establishment of posts by the Sudan Defence Force in this remote area was both impracticable and impolitic, and the Sudan Government agreed instead to make a contribution to certain additional expenditure which had in the recent past fallen upon the Governments of Kenya and Uganda in connexion with the maintenance of military garrisons on the border.

### CHAPTER III.—PUBLIC SECURITY.

58. The year under review, like its predecessor, was happily free from serious incidents disturbing public security. The pagan tribes of the south, notably the Shilluk and Nuer, still retain an unenviable notoriety for prolonged vendettas and inter-clan fights in which human life is held cheap, but it affords some measure of satisfaction to record that in a country largely inhabited by primitive races bred to habits of turbulence and profoundly ignorant of the outside world, organised opposition to the Government is getting increasingly rare.

#### *Western Desert.*

59. Raiding by Gor'an marauders from Ennedi still continued in the desert to the west of Dongola. A minor foray occurred in March, when eighteen camels were stolen from El-Ga'b oasis, and in August a caravan of Kababish Arabs from Dongola, consisting of sixteen men and 135 camels, was attacked at Wadi Natrun, whither they had gone to collect rock salt. On this occasion the Gor'an outlaws were reinforced by a party of well armed Libyan Arabs, presumed to be refugees from Italian territory. The Kababish lost four men killed and four wounded, all their camels and gear were taken and the survivors suffered great hardship before they reached the river. The pursuit of raiders in this inhospitable desert has always been a matter of difficulty. In view of the unfavourable conditions encountered in 1930 by mechanical transport and aircraft in a westward reconnaissance based on Dongola, it was decided to explore the possibility of a more practicable approach to Bir Natrun and Nukheila oasis (a watering-place regularly visited by the raiders) by means of a northward route starting from Malha (longitude 26° 11', latitude 15° 08') in Darfur, which was already the road-head of a motor route starting from El Fasher. A reconnaissance with this end in view was accordingly undertaken at the end of the year by the motor machine-gun battery attached to the Western Arab Corps, with the co-operation of the Royal Air Force. The reconnaissance was ably carried out, and the route in question was found to be practicable as far as Nukheila, thus affording a means, should the necessity arise, of despatching a mechanised column supported by aircraft for operations based on Darfur.

*Control of Firearms.*

60. Further steps were taken in the course of the year with a view to tightening up the control of firearms in native possession by the stricter enforcement of the Arms Ordinance, 1924. The most important development was the disarmament of the Rashaida, a nomadic tribe inhabiting a widely-scattered area in Kassala Province. In the course of a surprise inspection arranged to be carried out simultaneously in a number of camps, some sixty serviceable firearms of various patterns were confiscated, in addition to considerable quantities of ammunition and material for its manufacture. The authorities of the Italian colony of Eritrea gave valuable assistance throughout, and seized thirty-one muskets and some ammunition from Rashaida on their side of the border. The action taken had a salutary effect and the tribesmen responded satisfactorily to instructions for the surrender of the arms still remaining in those sections which had not been included in the search. By the end of the year the total number of arms surrendered was 491, and the disarmament of the tribe may now be considered to be complete.

61. In Mongalla Province remnants of the poacher-brigands and gun-runners, whose operations in Sudan territory were formerly based on Maji in South-West Abyssinia, were dealt with successfully. It will be recalled that the Swahili outlaws who were the chief agents in these raids were removed from the area in 1928, but certain of their Taposan followers continued to commit acts of lawlessness and their activities extended to the vicinity of the Nile. In February, a band which had raided the Bari to the north of Mongalla was intercepted by police and several captures were made, and later in the year the District Commissioner of the eastern district of Mongalla Province surprised a stronghold of these outlaws and captured several rifles and much stock.

*Police.*

62. The police force continued to carry out their duties efficiently and, although reductions in numbers were necessary for reasons of economy, the general standard of personnel was, in fact, improved by the weeding out of the less efficient. Special allowances, approved two years ago for men serving in the towns of Khartum, Port Sudan and Wad Medani, where the cost of living is necessarily high, have encouraged a better type of men to enlist in the force. Courses of instruction were held for candidates for the post of police officer, as well as "refresher" courses for officers already serving. The British personnel was reduced, for reasons of economy, by the suppression of the posts of two commandants and one assistant commandant. The rearmament of the police with magazine rifles is now nearly complete.

63. Two officers and eighty-eight n.c.o.'s and men passed out of the police training school on the completion of their course of training; a further fifteen attended, but failed to pass. The literacy of candidates attending the school showed a marked improvement.

64. The number of convictions put on record in the Identification Bureau showed an increase of 28 per cent. over the previous year, a fact not indicating a corresponding increase in crime but the improved arrangements for the recording of convictions. The growing usefulness of the bureau was exemplified by an increase of over 26 per cent. in requests received and dealt with for the antecedents of prisoners. The total number of *fiches* dealt with during the year was 18,923, the largest number for any year, and the number of record slips in the files is 62,929.

*Passports.*

65. One hundred and fifty-three Sudan passports were issued in 1931 by the Civil Secretary in Khartum, and sixty-one by the Sudan agent in Cairo, making a total of 214. Of this number ninety-seven were issued to natives of the Sudan and the remainder to persons of foreign extraction permanently established in the Sudan.

CHAPTER IV.—FINANCE.

*General Review.*

66. The 1931 budget provided for revenue and expenditure balanced at £E. 4,564,500. On the expenditure side the main anticipated decreases on the 1930 figures were £E. 144,000 in military expenditure, £E. 33,000 in province expenditure and £E. 28,000 in Irrigation Department expenditure, set off to the extent of £E. 49,000 by an increase in expenditure of departments. As regards revenue, it was anticipated that, as compared with 1930, receipts from provinces and departments would show a decline of £E. 150,000, and that the Irrigation Department would produce £E. 612,400 instead of the 1930 budget figure of £E. 1,158,800, a reduction of £E. 546,400. On the other hand, an increase of £E. 346,000 was anticipated from General Central Services, of which the Railways were to produce £E. 214,000 in excess of the 1930 figure. There was a deficit of £E. 110,000, which was to be provided by a draft on the General Reserve Fund.

67. The year has been one of grave anxiety. By a combination of economies and increased taxes, endeavour was made to maintain the balance between revenue and expenditure. Unhappily, the measures taken were rendered ineffective by the intensification of the world trade depression, the unprecedented low yield of, and price for, the Gezira cotton crop, and the destruction of other crops by locusts and the heavy incidence of cattle disease in the country.

68. Although additional economies of £E. 165,882 in expenditure were obtained, revenue fell short of the estimate by £E. 1,033,297. Of this deficit £E. 581,421 can be attributed to low yields and low prices of cotton. The stagnation in trading activity is reflected in the short fall of railway revenue of £E. 237,616; of £E. 104,299 in

customs receipts; and £E. 46,845 in the profits from the sugar monopoly.

69. At the close of the year it was clear that further and more drastic measures of economy were called for if rapid depletion of the liquid assets of the Government was to be prevented. The whole field of expenditure was accordingly examined by a sub-committee of the Governor-General's Council. On the recommendations of this sub-committee measures of retrenchment have been authorised which are expected to result in savings of £E. 720,000 in a full year.

#### Financial Results for 1931.

70. The 1931 accounts have been closed and balanced at £E. 4,398,618, compared with the estimated budget figure of £E. 4,564,500. A deficiency of £E. 1,033,297 in budget receipts was made good by drafts on the following accounts:—

	£E.
Gezira equalisation account... ..	541,569
Gezira reserve for interest and commitments ...	40,446
Sugar equalisation account ... ..	46,845
Railway renewals account ... ..	237,616
General reserve account ... ..	166,821
<b>Total ... ..</b>	<b>1,033,297</b>

#### Revenue.

71. The following figures show the results for 1931 compared with preceding years:—

—	1929.	1930.	1931.		
	£E.	£E.	£E.	(a.) £E.	(b.) £E.
Normal Administrative Revenue ... ..	2,493,352	2,624,461	2,340,163	2,293,318	2,235,318
Railways and Steamers (net receipts)... ..	402,995	506,026	361,000	123,384	294,334
Government commercial undertakings	180,618	143,710	168,791	168,791	168,791
Gezira Scheme Revenue	1,008,038	669,426	611,843	29,828	29,828
Egyptian Contribution	750,000	750,000	750,000	750,000	750,000
Draft on General Reserve Account ... ..	...	...	166,821	...	...
<b>Totals ... ..</b>	<b>4,835,003</b>	<b>4,693,623</b>	<b>4,398,618</b>	<b>3,365,321</b>	<b>3,478,321</b>

72. In the column (a) is given the position exclusive of the equalising drafts referred to in the preceding paragraph. Column (b) is added for the purpose of comparison with previous years, certain changes in system having been introduced in 1931, as stated in last year's report, which vitiate comparison with previous years.

73. The deficit in revenue from provinces of £E. 46,936 is mainly due to arrears in collection of date tax, animal tax, poll tax and tribute, and decreased receipts from licences, fines and miscellaneous fees.

74. Arrears of taxation at the end of 1931 amounted to £E. 70,000, compared with £E. 18,000 at the end of 1930, the failure in the collection being attributable to locusts, crop failure, trade depression and particularly to the low price of animals.

75. From the departments, excluding Customs, a deficit of £E. 71,500 was mainly due to short falls in revenue from the Agriculture and Forests, the Public Works and the Posts and Telegraphs departments.

76. Gum royalty, on the other hand, produced £E. 7,795 more than the estimate of £E. 145,000.

77. The value of the external trade of the Sudan in 1931 fell by approximately 50 per cent. compared with 1930, and the customs deficit was £E. 104,299.

78. As stated in the general review, there was a railway deficit of £E. 237,616. In place of the estimate of £E. 2,225,000, only £E. 1,868,654 was realised as gross railway revenue. Working expenses at £E. 1,238,412 showed, however, a saving of £E. 161,601 on the estimate.

79. A draft of £E. 237,616 was made on the Railway Renewals Account in 1931 for equalisation purposes. It is the intention that any surpluses realised in future on the budget estimates for net railway profits shall be allocated to the restoration of the account to the level of £E. 1 million at the end of the year.

80. The actual revenue during the year to the Irrigation Department from cotton was only £E. 25,935, though £E. 3,893 was received in respect of other items. The Government share of cotton sold during the year amounted to £E. 137,593, but of this sum £E. 111,658 was required to implement the agreement with the Sudan Plantations Syndicate in connexion with the Tenants' Equalisation Fund in respect of the seasons 1929-30 and 1930-31.

81. Revenue obtained from the share of the Government in the Gezira cotton crop is credited to an equalisation account. From this account there is passed to revenue each year a sum regarded as a fair average yield over a period of years. In 1930 a small draft on the accumulated surpluses in the account was necessary to equalise revenue. The amount required for this purpose in 1931, after transferring £E. 25,935 actually received to revenue, was £E. 582,015, of which £E. 541,569 was drawn from the Gezira Equalisation Account, thus exhausting it, and £E. 40,446 from the Gezira Reserve for interest and commitments.



82. Receipts into the Gezira Equalisation Account have been as follows :—

Total in respect of Sales in the Year.		Yearly Total distributed by Crops.		Total of Crop.	
£E.	Year.	Crop.	£E.	Crop.	£E.
788,345	1928	1926-27	61,602	} 1927-28	956,913
1,005,862	1928	1927-28	726,743		
	621,340	1929	1927-28	230,170	} 1928-29
1929		1928-29	775,692		
(2)137,593	1930	1928-29	475,480	} 1929-30	324,654(1)
	1930	1929-30	145,860		
	1931	1929-30	107,125	} 1930-31	128,476(1)
	1931	1930-31	30,468		

(1) Estimated.

(2) Of which £E. 111,658 has been paid to the Tenants' Equalisation Fund.

83. The Government's share of the 1930-31 crop in the Gash amounted to only £E. 38,033 against an estimate of £E. 55,000. In order to meet the deficiency a draft of £E. 16,967 was made on the Kassala Equalisation Account.

84. The return from sugar was £E. 46,845 less than was expected, in spite of the raising of the price to the consumer by 1 piastre a cone. The Sugar Equalisation Account was called on to make up the deficit.

85. Provision was made in the 1931 budget estimates for a draft of £E. 110,000 on the General Reserve Account. It was necessary to supplement this amount by £E. 56,821 in order to balance the budget account.

#### Expenditure.

86. The actual expenditure, compared with the budget estimate, may be analysed as follows :—

	Estimate 1931. £E.	Actual 1931. £E.
Provinces ... ..	847,059	824,295
Departments (excluding commercial undertakings) ... ..	1,451,088	1,387,805
Pensions ... ..	290,000	304,317
Miscellaneous ... ..	52,585	73,625
	<hr/>	<hr/>
	2,640,732	2,590,042
Government commercial undertakings	196,579	165,661
Irrigation Department ... ..	1,057,142	1,023,103
Military expenditure ... ..	670,047	619,812
	<hr/>	<hr/>
Total ... ..	4,564,500	4,398,618

*General Reserve Account.*

87. The unallotted balance of the account at the end of 1931 was £E. 817,196. Included in this amount is £E. 387,543, constituting the unallotted balance of the Gezira Reserve for interest and commitments, which has been absorbed in the General Reserve Account. The situation of the General Reserve Account is detailed in Appendix II.

88. The following table shows the net effect of the operations on the General Reserve Account in the last four years :—

—	1928.	1929.	1930.	1931.
	£E.	£E.	£E.	£E.
Budget surplus of previous year ...	379,456	601,597	371,316	...
Various receipts credited direct to Reserve Account ...	114,331	115,944	86,420	134,077
Total addition to Account ...	493,787	717,541	457,736	134,077
Net allotments from Account ...	515,606	633,957	422,492	340,851
Net increase or decrease in unallotted balance of the Account...	- 21,819	+ 83,584	+ 35,244	-206,774

*Taxation.*

89. Although the policy of the Sudan Government is to maintain a low level of taxation, it was necessary to take exceptional measures to meet the critical situation arising in 1931. Accordingly, the basic rate of customs duty was raised from 8 per cent. to 10 per cent. and the specific rates for tobacco and alcohol increased. Railway rates on confectionery, tea and cigarettes moved upwards. On the other hand, relief was granted in the rates for transport of certain items of Sudan produce, notably dura, garad, ground nuts and dates. Considerable remissions were approved in respect of direct taxes on natives.

90. The following table gives the usual analysis of the main sources of revenue :—

NORMAL REVENUE (excluding receipts from Gezira Project and Egyptian Contribution).

(Figures in parentheses denote percentages.)

	1903.	1913.	1921.	1927.	1928.	1929.	1930.	1931. <sup>(4)</sup>
	££.	££.	££.	££.	££.	££.	££.	££.
1. Direct taxes on natives ...	114,359 (48·5)	295,546 (29·9)	600,874 (22·0)	410,771 (15·1)	453,740 (14·5)	393,185 (12·8)	413,691 (12·6)	314,695 (10·3)
2. Royalties and receipts from irrigation projects (other than Gezira project)	34,211 (14·5)	109,147 (11·1)	120,712 (4·6)	273,612 (10·7)	354,865 (11·3)	279,864 (8·8)	254,428 (7·7)	306,339 (10·1)
3. Consumption duties (Customs and Sugar Monopoly)	9,042 (3·8)	186,837 (18·8)	714,219 (26·1)	929,758 (34·2)	1,019,384 (32·8)	1,079,654 (35·2)	1,163,189 (35·6)	975,701 (32·1)
4. Net revenue from Railways and Steamers and gross revenue from Posts and Telegraphs and other commercial undertakings	11,640 <sup>(3)</sup> (4·9)	241,452 (24·4)	957,384 (35·0)	690,104 (25·4)	774,993 (24·8)	813,819 (26·5)	877,334 (26·8)	852,147 <sup>(5)</sup> (28·0)
5. Miscellaneous taxes on commercial transactions, court fees, &c.	66,658 (28·3)	157,993 (15·8)	337,726 (12·3)	402,188 (14·6)	513,197 (16·6)	510,443 (16·7)	565,555 (17·3)	592,032 (19·5)
Totals ...	235,910	990,975	2,730,915	2,706,433	3,116,179	3,076,965	3,274,197	3,040,914

(3) In 1903 there was a deficit on railway working. The amount of this deficit has therefore been deducted from the gross revenue of the Posts and Telegraphs and other commercial undertakings for that year.

(4) Excluding draft on General Reserve Fund.

(5) Adjusted by addition of £ E. 170,961 in respect of railway free services.

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*Comparison between Budget Estimates for 1931 and 1932.*

91. The following is the usual comparison between the budget estimates for 1931 and 1932:—

*Revenue.*

—	Budget <sup>(6)</sup> Estimate, 1931.	Result <sup>(6)</sup> , 1931.	Budget Estimate, 1932.	Increase or Decrease on 1931 Results.
	£E.	£E.	£E.	£E.
(1) Normal revenue ...	2,438,307	2,258,412	2,012,193	— 246,219
(2) Railways ...	500,803	531,961	505,000	— 26,961
(3) Government commercial undertakings ...	197,259	168,791	168,257	— 534
(4) Egyptian contribution ...	750,000	750,000	750,000	...
(5) Gezira receipts ...	612,400	611,843	353,550	— 258,293
(6) From General Reserve Account to balance...	110,000	166,821	100,000	— 66,821
	4,608,769	4,487,828	3,889,000	— 598,828

(6) Adjusted to compare with the 1932 estimate.

92. It has been necessary to frame the 1932 estimates on the basis of a further sensible diminution of the country's purchasing power. There does not appear to be any promise in world conditions of an early improvement in trade, and public and private retrenchment must be expected to affect revenue adversely.

93. The estimates reflect certain measures of relief to the taxpayer, amounting to £E. 40,000 in the form of reduced assessments of herd tax, poll tax and tribute.

94. As regards Gezira revenue, the Government share in the balance of the old crops will be required to cover its undertaking in respect of the Tenants' Equalisation Fund for the 1929-30 and 1930-31 crops, estimated to amount to £E. 188,000. Accordingly, the 1932 budget estimate anticipates no greater amount than is expected to be received in cash during the year for the share of the Government in the proceeds of the new crop.

95.

*Expenditure.*

	Budget (7) Estimate 1931.	Result (7) 1931.	Budget Estimate 1932.	Increase or decrease on 1931 results.
	£E.	£E.	£E.	£E.
Normal administrative expenditure:—				
Provinces ... ..	912,635	888,488	798,270	— 90,238
Departments (excluding commercial undertakings) ...	1,644,016	1,558,345	1,361,870	— 196,475
Pensions ... ..	290,000	304,317	250,000	— 54,317
	2,846,651	2,751,150	2,410,120	— 341,030
Government commercial undertakings ... ..	196,579	165,661	145,338	— 20,323
Irrigation Department ... ..	1,057,142	1,023,103	997,790	— 25,313
Military Expenditure ... ..	538,031	524,171	459,429	— 64,742
	4,638,403	4,464,085	4,012,677	— 451,408
Less:—				
Overall cut in expenditure ... ..	...	...	123,677	— 123,677
Adjustment in Railway Services ... ..	30,625	...	...	...
	4,607,778	4,464,085	3,889,000	— 575,085

(7) Adjusted to compare with the 1932 estimate.

*New Projects and Loans.*

96. The period of major capital development must be regarded as closed. No new projects were initiated and no loans raised during the year.

## GOVERNMENT COMMERCIAL UNDERTAKINGS AND INTERESTS.

(1) *Sudan Government Railways.*

97. The final results for 1931 were as follows:—

	Budget Estimate. £E.	Actual. £E.	Decrease. £E.
Revenue ... ..	2,225,000	1,868,654	— 356,346
Working expenses and appropriations ...	1,864,000	1,745,270	— 118,730
Net receipts ...	361,000	123,384	— 237,616

98. The ratio of expenditure to earnings in 1931 was 77·9 per cent. compared with 65·1 per cent. in 1930, and an average of 65 per cent. for the preceding four years. Reduced receipts from the transport of cotton, cotton-seed, coal, sugar, and building

materials account in the main for this result. Although some reduction in receipts was to be expected because of the low yield of cotton in the Gezira, the decline was much in excess of expectations, notwithstanding increase in certain railway rates.

99. The following table shows comparative figures of actual receipts in respect of some of the more important commodities carried:—

	1930.	1931.	Decrease.
	££.	££.	££.
Cotton ... ..	232,531	138,864	93,667
Cotton-seed ... ..	69,835	54,408	15,427
Gum ... ..	173,909	166,112	7,797
Sugar ... ..	224,035	149,494	74,541
Total ... ..	700,310	508,878	191,432

(2) *Cotton Growing and Agricultural Development.*

(a) *Gezira Irrigation Scheme.*

*Capital Position.*

100. Capital expenditure in the Gezira against Sudan Guaranteed Loan funds and Government advances within the limit of authorised borrowing powers has now ceased. The position on the 31st December, 1931, is stated below.

Services.	Loans Issued.	Government Advances.	Loan Commitments Account.	Other Sudan Government Accounts.	Total.
	££.	££.	££.	££.	££.
Original scheme ...	9,113,640	1,439,649	...	...	10,553,289
First extensions ...	390,000	351,052	149,077	514,645	1,404,774
Western aprons ...	...	59,543	...	80,000	139,543
Eastern aprons ...	...	259,664	...	60,336	320,000
Second Northern Extension and widening of main canal ...	...	33,618	702,456	136,136	872,210
Total... ..	9,503,640	2,143,526	851,533	791,117	13,289,816

101. The total amount which the Sudan Government was authorised to raise, viz., £12,992,100 sterling (equals ££. 12,667,298), is made up of the totals of columns 1 and 2 above (plus ££. 253,164, cost of issue) together with ££. 766,968 expended on railway and other non-Gezira works included in the Loan Schedules.

*Results.*

102. Sales proceeded slowly in 1931 and at the end of the year some 30 per cent. of the 1929-30 crop and 69 per cent. of the 1930-31 crop remained unsold. The estimated position of the two crops is given in the following comparative statement :—

	Season 1929-30.	Season 1930-31.
Area under cotton (excluding seed farm) ... .. (feddans)	174,133	196,023
Total yield of seed-cotton (kantars)	404,516	266,343
Bales of 430 lb. ... ..	87,043	54,558
Average yield per feddan (kantars)	2,323	1,358
Cotton-seed ... .. (tons)	39,959	26,756
Estimated divisible proceeds of crop ... .. (£E.)	898,138	334,504
Estimated Government share in the net proceeds ... .. (£E.)	342,654	123,476

(b) *Kassala Cotton Scheme (Gash Board).*

103. The results of the undertaking for the season 1930-31 are expected to be as follows :—

Effective area under cotton... (feddans)	37,938
Yield in unginned ... .. (kantars)	57,367
Yield in ginned ... .. (kantars)	53,944
Estimated net proceeds of cotton and cotton-seed ... .. (£E.)	178,624

This sum is apportioned as follows :—

	£E.
Government ... ..	38,033
Gash Board ... ..	51,279
Tenants ... ..	89,312

The estimated crop for the season 1931-32 is 37,000 unginned kantars of 315 rotls each.

(c) *Tokar Cotton.*

104. The 1930-31 flood covered an area of 100,000 feddans, of which 60,000 feddans were effectively watered, producing a crop of 68,229 kantars of 315 rotls each. Revenue received by the Government was £E. 37,125 compared with £E. 37,545 in the previous year. The 1931-32 flood was moderately good, and an area of 38,000 feddans has been effectively watered. A crop of 50,000 large kantars is anticipated.

(d) *Rain-Grown Cotton.*

105. Production in the southern provinces for the season 1930-31 amounted to 59,017 kantars of 315 rotls each, compared with

62,588 kantars in the preceding season. After bringing into account unsold stocks at a valuation, the loss on this crop is estimated at £E. 72,868.

(e) *Pumping Schemes.*

106. The deficit on budget account was £E. 26,729. This deficit is mainly attributable to the fact that the greater part of the cotton crop was unsold at the end of the year. Prospects for 1982 are better.

(f) *Ginning Factories.*

107. The net profit realised from the nine factories which deal with the cotton crop of the country, other than that from the Gezira area, was £E. 11,519, compared with £E. 6,044 in 1980. The new factories at Port Sudan and Kadugli were in satisfactory operation.

(3) *Public Utility Services.*

*Sudan Light and Power Company (Limited).*

108. A check was experienced to the steady progress previously recorded and the number of consumers of water remained at the level of 1980. Tramway traffic suffered a decline, 4,430,139 passengers being carried, compared with 4,788,595 in 1980. Receipts from the Omdurman bridge tolls were maintained.

109. The Government share of the receipts was £E. 56,266, as compared with £E. 52,569 in 1980, the difference being mainly due to the release of £E. 4,875 from the guarantee fund in the hands of the trustees for the debenture holders. After providing for interest on debentures, sinking fund and the payment to the Khartoum municipality, the balance is £E. 18,400. Some diminution in receipts is to be expected in 1982.

CHAPTER V.—ECONOMICS AND TRADE.

*External Trade.*

110. External trade, excluding transit trade and specie, has decreased in value from £E. 11,423,423 in 1980 to £E. 5,776,610 in 1981, a decrease of £E. 5,646,813 or 49·48 per cent.

111. The total value of imports decreased by £E. 2,416,997 or 39·12 per cent. Public imports decreased by £E. 1,830,748 from £E. 4,381,271 to £E. 2,550,523 or 41·78 per cent. Government imports decreased by £E. 585,649, from £E. 1,796,139 to £E. 1,210,490 or 32·61 per cent.

112. The value of exports decreased by £E. 3,219,487 or 65 per cent. This decrease is chiefly due to a smaller export of cotton and



cotton-seed. Exports of gum decreased by £E. 977,404 or 38·50 per cent.

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113. The following table shows the value of external trade during the last four years and also, for comparison, the value of trade in 1913 :—

(In thousands £E.)

—	1913.	1928.	1929.	1930.	1931.	Decrease per cent. 1931 over 1930.	Increase per cent. 1931 over 1913.
Public imports	1,605	4,417	4,770	4,381	2,551	41·8	58·9
Government imports <sup>(8)</sup>	504	2,046	2,086	1,796	1,210	32·6	140·1
Exports ...	1,185	5,635	6,526	4,953	1,734	65·0	46·3
Re-exports ...	94	312	283	293	282	3·7	206·1
Totals ...	3,388	12,410	13,665	11,423	5,777	49·4	70·5

<sup>(8)</sup> Includes sugar, which is imported by Government for resale to the public. If sugar be treated as a public import the comparison would be as follows :—

Public imports	1,605	4,953	5,381	4,939	2,951	40·2	83·8
Government imports	504	1,510	1,475	1,238	809	34·6	60·5

114. The following table shows the balance of trade in 1930 and 1931 :—

BALANCE of trade (exclusive of transit goods and specie).

(In thousands £E.)

	1930.	1931.
Public imports ... ..	4,381	2,550
Less public re-exports ... ..	208	209
Net public imports ... ..	4,173	2,341
Exports ... ..	4,953	1,734
Excess of exports over net public imports ... ..	+780	-607
Government imports less re-exports ... ..	1,711	1,138
Total excess of imports over exports ... ..	931	1,745

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115. The balance of public trade, exclusive of transit goods and specie, but counting sugar as a public import, was as follows:—

(In thousands £E.)		1930.	1931.
		—	—
Imports ... ..		4,989	2,951
Exports and re-exports ... ..		5,161	1,948
		—	—
Balance of exports and re-exports over imports ... ..		222	-1,008

*Imports.*

116. The decrease in value of public imports is mainly accounted for by the drop in value of imports of cotton piece-goods, which fell by £E. 418,467 or 42·6 per cent. The other principal decreases were: machinery by £E. 246,275 or 74·29 per cent.; coffee by £E. 149,874 or 52·79 per cent.; motor cars, cycles and accessories, including tyres, by £E. 118,855 or 67·14 per cent.; metals and metalware by £E. 100,330 or 37·54 per cent.; stone, earthenware and glassware by £E. 78,593 or 83·93 per cent.; tobacco, tobaccos, cigars and cigarettes by £E. 75,146 or 30·10 per cent.; wheat flour by £E. 61,645 or 37·73 per cent.; timber by £E. 27,104 or 48·62 per cent.; sweets, jams and bottled or tinned fruit by £E. 26,189 or 58·35 per cent.; sacks by £E. 25,396 or 32·06 per cent.; tea by £E. 24,909 or 16·49 per cent.; spirits, wines and beer by £E. 24,980 or 34·04 per cent.; cement by £E. 20,064 or 54·02 per cent.

117. The principal increases in Government imports were: machinery by £E. 15,370 or 7·9 per cent.; timber, including railway sleepers, by £E. 12,442 or 41·1 per cent.

118. The chief decreases in Government imports were: metals and metalware by £E. 178,035 or 54·01 per cent.; sugar, refined, by £E. 157,283 or 28·18 per cent.; textiles by £E. 87,419 or 74·25 per cent.; cement by £E. 50,117 or 81·78 per cent.; coal, coke and oil fuel by £E. 46,073 or 33·91 per cent.

*Exports.*

119. The export of dura (millet) increased in value by £E. 37,251 or 89 per cent.; gold bullion by £E. 12,120 or 263·65 per cent.; dom palm nuts by £E. 7,145 or 58·28 per cent.; ivory by £E. 2,595 or 77·5 per cent.

120. The decrease in value of exports is mainly accounted for by the drop in value of raw cotton (ginned) exported, which fell by £E. 2,533,722 or 83·17 per cent.; the export of gum fell in value by £E. 377,404 or 38·50 per cent.; cotton-seed by £E. 76,636 or 37·24 per cent.; sesame by £E. 89,364 or 57·04 per cent.; skins of sheep and goats, untanned, by £E. 39,674 or 40·38 per cent.;

cattle by £E. 31,607 or 58.45 per cent.; hides by £E. 21,111 or 51.99 per cent.

121. The United Kingdom's share of Sudan imports in 1931 amounted to £E. 1,235,650 or 32.9 per cent., as compared with £E. 2,201,956 or 35.6 per cent. in 1930. The decrease in value, viz., £E. 966,306, was 43.9 per cent. The value of exports to the United Kingdom was £E. 781,327 or 45.1 per cent. of the total exports, as compared with £E. 3,289,780 or 66.4 per cent. in 1930, a decrease of £E. 2,508,453 or 76.2 per cent. This decrease is mainly due to lower cotton and cotton-seed exports to England.

122. Goods of Egyptian origin were imported to the value of £E. 617,512 or 16.4 per cent. of the total imports, as compared with £E. 877,758 or 14.2 per cent. in 1930, a decrease of £E. 260,246 or 29.6 per cent. Smaller imports of cotton piece-goods and sugar account for nearly two-thirds of this decrease. Exports to Egypt in 1931 were valued at £E. 260,205 or 15 per cent. of the total exports, as compared with £E. 427,109 or 8.6 per cent. in 1930. The decrease of £E. 166,903 or 39.1 per cent. was due chiefly to a smaller export of sesame, which fell from £E. 143,132 to £E. 66,075, a decrease of £E. 77,057, and ground nuts, the export of which fell from £E. 26,737 in 1930 to £E. 15,826 in 1931, a decrease of £E. 10,911.

123. Tables are given in paragraphs 136 and 137 showing the value of imports from and exports to the principal countries.

124. Imports from British India and Aden decreased by £E. 141,373, due principally to the decrease in the value of sacks, cotton piece-goods, tea and wheat flour. Imports from Japan decreased by £E. 66,477 owing to smaller imports of cotton piece-goods. Imports from South Africa decreased by £E. 46,655. Imports from Germany decreased by £E. 59,292. Imports from France decreased by £E. 51,039. Imports from Italy decreased by £E. 105,620. A decrease in the value of flour by £E. 22,218 was the principal reason for the reduction of £E. 22,495 in the value of imports from Australia.

125. 91.7 per cent. of the export, and 80.4 per cent. of the import, trade was via the Red Sea route.

126. The value of trade with Abyssinia decreased from £E. 330,449 to £E. 161,065, a decrease of £E. 169,384 or 51.25 per cent. Imports decreased by a little over 50 per cent. Exports fell by £E. 10,409 due to the heavy fall in the quantity of salt exported. Re-exports fell by £E. 14,294. The value of goods in transit to Abyssinia was reduced by £E. 15,471 (cotton piece-goods by £E. 6,944), but the value of goods in transit from Abyssinia was increased by £E. 1,340. Trade via Gambeila, the Sudan trading

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station in South-West Abyssinia, was valued at £E. 76,512, as compared with £E. 226,764 in 1930, a decrease of £E. 150,252 or 66·25 per cent.

127. The value of trade with the Belgian Congo decreased from £E. 19,658 in 1930 to £E. 19,493, a decrease of £E. 165.

128. The value of trade with Eritrea decreased from £E. 21,494 in 1930 to £E. 17,892.

129. The following table classifies the principal exports, showing the proportion of each to the total value of exports in 1930 and 1931:—

	Value exported.		Percentage of Total Exports.	
	1930.	1931.	1930.	1931.
	£E.	£E.		
Cotton (ginned) and cotton-seed ...	3,252,076	641,718	65·6	37·00
Gum arabic ... ..	980,157	602,753	19·8	34·77
Cattle, sheep, hides and skins ...	198,922	101,310	4·0	5·85
Sesame ... ..	156,675	67,311	3·2	3·88
Ground-nuts ... ..	40,078	20,954	0·8	1·21
Other exports ... ..	325,374	299,749	6·6	17·29
Totals ... ..	4,953,282	1,733,795	100·0	100·00

### Cotton.

130. Exports of cotton and cotton-seed, Egyptian and American types, in 1931, were as follows:—

	Cotton.		Cotton-seed.		Total Value of Cotton and Cotton-seed.
	Quantity.	Value.	Quantity.	Value.	
	Tons.	£E.	Tons.	£E.	£E.
Egyptian, ginned ...	6,418	411,959	41,397	116,242	528,201
American, ginned ...	2,587	100,649	6,240	12,868	113,517
Cotton scarto ... ..	116	2,983	...	...	2,983
Cotton, unginned ...	60	748	...	...	748
Totals ... ..	9,181	516,339	47,637	129,110	645,449

131. The total exports of cotton and cotton-seed during the last five years have been as follows:—

Year.	Cotton. <sup>(a)</sup>		Cotton-seed.	
	Quantity.	Value.	Quantity.	Value.
	Tons.	£E.	Tons.	£E.
1927 ... ..	28,891	3,190,289	57,847	359,415
1928 ... ..	23,486	3,589,480	47,960	398,484
1929 ... ..	30,451	4,583,133	59,800	398,559
1930 ... ..	27,764	3,046,330	56,267	205,746
1931 ... ..	9,005	512,608	47,637	129,110

(<sup>a</sup>) Excludes unginued cotton and cotton scarto.

#### *Gum Arabic.*

132. In 1931 20,086 tons of gum were exported, as compared with 20,072 tons in 1930. Prices were lower in 1931, the average for the year at El Obeid being 41½ piastres per kantar as against 132 piastres in 1930.

					Average export per annum.
					Tons.
1909-13	...	...	...	...	15,192
1913-18	...	...	...	...	14,086
1919-28	...	...	...	...	18,171
1929 actual export	...	...	...	...	16,787
1930 actual export	...	...	...	...	20,072
1931 actual export	...	...	...	...	20,086

133. The value of the export in 1931 was £E. 602,753, as compared with £E. 980,157 in 1930.

134. The chief purchasers in 1930 were: United Kingdom, 5,091 tons; United States of America, 3,314 tons; France, 2,175 tons; Germany, 2,074 tons; Italy, 1,378 tons; Belgium, 1,388 tons; Japan, 1,056 tons; Holland, 833 tons; Australia, 423 tons; Spain, 441 tons; China, 325 tons; Sweden, 700 tons; Egypt, 111 tons; Norway, 59 tons; Canada, 79 tons; New Zealand, 37 tons; Brazil, 48 tons; British India, 121 tons; Argentine, 59 tons; Finland, 33 tons; Denmark, 71 tons; Danzig, 78 tons.

#### *Live-Stock Trade.*

135. Exports have been as follows:—

		1927.	1928.	1929.	1930.	1931.
Cattle	... ..	13,808	11,121	10,412	9,510	5,347
Sheep	... ..	14,161	13,974	15,194	5,773	901
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Of the cattle exported, 2,339 were shipped via Port Sudan, the remainder by the Nile route to Cairo. The exports in 1931 were the smallest for many years; the decrease is chiefly due to reduced purchases by Egypt. Prices dropped to such a low level that by the end of the year export had become unprofitable.

136. The approximate value of goods and merchandise imported into the Sudan was as follows:—

Countries from which imported.	1930.		1931.	
	Value.	Percentage of Total.	Value.	Percentage of Total.
	££.		££.	
United Kingdom ... ..	2,201,956	35·6	1,235,650	32·9
Egypt ... ..	877,758	14·2	617,512	16·4
India (British and Aden) ...	368,843	6·0	227,470	6·1
Belgium ... ..	525,072	8·5	344,798	9·2
Japan ... ..	394,848	6·4	328,371	8·7
Abyssinia ... ..	234,300	3·8	103,750	2·8
United States ... ..	171,294	2·8	47,406	1·2
Italy ... ..	195,573	3·2	89,953	2·4
France ... ..	148,516	2·4	97,477	2·6
Germany ... ..	116,245	1·9	56,953	1·5
Australia ... ..	88,387	1·4	65,892	1·8
Union of South Africa ...	131,533	2·1	84,878	2·2
Kenya ... ..	48,265	0·8	34,361	0·9
Holland ... ..	21,005	0·3	26,434	0·7
Other countries (includes value of postal parcels (other than tobacco, &c.) from Egypt for which no countries are known) ...	653,815	10·6	400,108	10·6
Totals ... ..	6,177,410	100·0	3,761,013	100·0

The value of imports shown for each country includes goods from that country which entered the Sudan via Egypt. The total for Egypt, therefore, represents only goods of Egyptian origin.

137. The value of exports from the Sudan in 1930 and 1931 was as follows :—

Countries to which Exported.	1930.		1931.	
	Value.	Percentage of Total.	Value.	Percentage of Total.
	£E.		£E.	
United Kingdom ... ..	3,289,780	66·4	781,327	45·1
Egypt ... ..	427,109	8·6	260,206	15·0
United States ... ..	276,425	5·6	143,575	8·3
France... ..	358,490	7·2	121,628	7·0
Germany ... ..	164,125	3·3	85,920	4·9
Italy ... ..	99,011	2·0	63,377	3·7
Belgium ... ..	62,128	1·3	44,858	2·6
Holland ... ..	40,512	0·8	65,388	3·8
Japan ... ..	37,091	0·8	37,046	2·1
Australia ... ..	26,410	0·5	19,150	1·1
Other countries ... ..	172,201	3·5	111,320	6·4
Totals ... ..	4,953,282	100·0	1,733,795	100·0

138. The country's trade both import and export, in common with that of the world generally for 1931, showed a marked decline compared with 1930. The heavy fall in commodity prices which characterised all markets during the year 1930 continued through the greater part of the past twelve months.

139. The loss of 50 per cent. in the total foreign trade of the country was, to a large extent, due to the small export of cotton; the crop was again a small one and, in addition, the greater part of the season's production was held in the country and does not figure in the exports, whereas no stocks of cotton were carried over in the country from 1930.

140. The effect of the small production of cotton and the reduced value of exportable goods generally was widespread trade depression and scarcity of ready money.

141. The export of gum, one of the oldest trades of the country, again proved a valuable standby, and it was found possible to market abroad a crop well up to the average tonnage. Though prices were low in comparison with the past two years, the amount realised enabled a section of the population to buy those imports which have come to be regarded as necessaries of life.

142. It is noteworthy that, though the value of the imports of some of the more important articles of native consumption has largely decreased, yet the amount imported has remained nearly the same as in 1930. For instance, tea imports were practically the same as in 1930, while flour imports were slightly larger. Again, though coffee imports were substantially smaller, there had been a heavy carry-over of stock from the 1930 imports, which were exceptionally

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large; and from an estimate of stocks on hand at the end of the year, it seems that consumption has fallen little, if at all.

143. On the other hand, the quantity of sugar sold over the whole country fell by 32·7 per cent.; therefore, as native taste requires a heavily sweetened brew of tea or coffee, one must assume that honey, when available, is being used as a substitute.

144. Grain prices remained low and supplies were plentiful until the last quarter of the year. Export continued up to the end of July, when rising prices in local markets, due to the uncertainty of the rains and the fear of locusts, checked business abroad.

145. The rains, though late, were abundant, particularly in the north, and a record grain crop at one period appeared a possibility; but dense swarms of locusts flying from the north in October consumed a large proportion of the standing grain crops and occasioned renewed fears of a poor harvest. As reports from the chief grain-producing provinces became available it was apparent that all hopes of a bumper crop must be abandoned, for the locust plague was in many places the worst yet known. Speculation in grain became rife and prices commenced to rise.

146. It was fortunate that world prices of grain were at a low level and it was possible to check the rise by encouraging the import of cheap millet from abroad.

147. While no general scarcity before the next rains is anticipated, in certain districts where locust depredation has been most severe and where the people have no means of purchasing grain, some relief measures will be necessary.

148. The fall in sterling when the gold standard was abandoned in September acted as a temporary stimulant to the export trade, though the retail prices of many imported articles were increased by some 25 per cent. This improvement was not, however, maintained. After a short period the depressing influence of overstocked markets again made itself felt and trade relapsed into its former state of stagnation.

#### *Sudan Chamber of Commerce.*

149. The difficulties with which the trade of the country had to contend during the past twelve months raised many problems very closely affecting the producers, the commercial community and the Government. The Sudan Chamber of Commerce has again been most helpful on all occasions when matters of mutual interest have been discussed. Special thanks are due to those members of the Chamber who have found time, during a period of grave care and anxiety, to devote to consideration of matters affecting the general welfare of the country. The chamber kindly placed their offices at the disposal of the British African Trade Exhibition, who held an exhibition of trade samples in Khartum in September. This expedition, travelling by



road from Cairo to the Cape, were delayed for many weeks by the late rains, which damaged the roads.

*Transport and Communications.*

150. Reductions in railway and steamer rates were made during the year affecting the following articles: Fresh fruit and vegetables (Sudan produce), oil cake, ground nuts, henna (local production), garad, timber for export; dura (Sudan produce), dura and dukhn for export, sesame, empty benzine and kerosene drums, benzine and dates. Special reduced rates for exports, on the basis of a full truck-load, have proved successful.

151. The number of motor vehicles registered in the Sudan in 1931 shows a small decrease on the 1930 figures, viz. :—

	1930.		1931.	
	Cars.	Motor Cycles.	Cars.	Motor Cycles.
Private ... ..	2,227	251	2,189	280
Government ... ..	618	74	639	57
	<hr/>	<hr/>	<hr/>	<hr/>
	2,845	325	2,828	287

152. Competition between road and rail transport has been more noticeable during the year. Road transport has been helped to some extent by the cheapness of second-hand cars and lorries. There has, however, been a considerable fall in the sale of new cars and, consequently, the present expansion of road transport may be to some extent limited by the lives of the existing vehicles. The problem of reconciling the interests of both road and rail transport is one from which the Sudan cannot escape and is being studied.

*Roads.*

153. The late rains delayed the opening up of all roads for motor transport. In spite of the financial stringency practically the whole system of dry-weather roads was eventually brought into use.

*Aviation.*

154. The increase in aerial activity continued and some forty privately-owned aircraft passed through the Sudan in 1931. The number of landing grounds on the route of Imperial Airways is now thirty-two, while there are a further seventy-nine in the remainder of the country, a total of 111 in all. A postal and passenger service between Cairo and Mwanza was inaugurated by the Imperial Airways in March.

*Port Sudan and Shipping.*

155. The following table shows the numbers and total tonnage of ships calling at the port :—

Year.	British.		Foreign.		Total.	
	No. of Vessels.	Tons.	No. of Vessels.	Tons.	No. of Vessels.	Tons.
1913	...	527,845	...	194,025	...	721,870
1920	258	657,214	50	99,988	308	737,202
1921	349	1,172,934	102	230,653	451	1,403,587
1922	342	1,138,601	110	361,334	452	1,499,935
1923	456	1,768,603	153	496,772	609	2,265,375
1924	513	1,940,266	186	582,963	699	2,523,229
1925	563	2,470,493	223	704,007	786	3,174,500
1926	591	2,763,902	234	814,565	825	3,578,367
1927	605	2,809,872	248	886,086	853	3,695,958
1928	639	2,872,496	283	1,097,501	922	3,969,997
1929	585	2,870,334	301	1,193,809	886	4,064,143
1930	609	2,979,923	336	1,448,084	945	4,428,007
1931	548	2,655,881	340	1,485,702	888	4,141,583

*Imperial Institute.*

156. Various improvements were carried out in the Sudan court in the galleries of the Imperial Institute. The exhibits are proving of increasing interest to the public and some 730,000 people visited the galleries in the course of the year.

157. Valuable information on samples of Sudan produce has been provided by the technical staff of the institute, who have reported upon the following: Sun pods (*Acacia Nilotica*), sword beans (*Canavalia ensiformis*), castor seed, ground nuts, dry beans, safflower, coffee, frankincense, silk, ginger, vanilla, psyllium seed. Trials were also carried out with samples of Sudan clays and a report made on samples of three mineral concentrates.

*Weights and Measures.*

158. The introduction of a bulk fuel supply has added considerably to the duties of the responsible department.

159. A steady improvement in the standard of weights and weighing instruments in use in Khartum Province has been maintained, but, with the exception of occasional short tours of inspection in other market centres, it has not yet been possible to extend activities to other provinces.

160. A great deal remains to be done to co-ordinate the numerous varieties of measures and weights in the provinces, but in providing and maintaining a standard unit for the measure of grain throughout the country, the most pressing need of the people has been met.

Since the task of reform was undertaken six years ago, some 35,640 dry measures of capacity have been issued, of which 4,826 are now all-metal measures; 392 standard milk measures have been put into use and 39,536 weights, measures and weighing machines have been tested.

#### CHAPTER VI.—COMMUNICATIONS.

##### *Railways and Steamers.*

161. The general manager reports that the gross revenue earned by the Department during 1931 amounted to £E. 1,868,654 and the net revenue to £E. 413,208, as compared with a net revenue of £E. 901,780 earned in 1930. Gross revenue decreased by £E. 718,644, due primarily to the general depression in trade.

162. Full provision for depreciation amounting to £E. 367,034 was debited to working expenses, but in view of the general financial situation this amount was reduced to £E. 150,000, the balance of £E. 217,034 being credited to appropriation account.

163. After making appropriations amounting to £E. 506,858 for interest, sinking fund charges, free services, &c., the balance accruing to the Central Government was only £E. 123,384; but, in order that the contribution from the railways to the general revenue of the country should not be less than £E. 361,000, the figure included in the budget, it was necessary to supplement this sum by a transfer of £237,616 from the Railways Renewals Fund.

164. The following table gives a summary of the results of the last five years :—

Year.	Revenue.	Expenditure.	Ratio of Expenditure to Earnings.	Profit.	Appropriation from Profit.	Balance accruing to Central Government Funds.
	£E.	£E.	Per cent.	£E.	£E.	£E.
1927 ...	2,180,753	1,456,573	66·8	724,180	295,563	428,617
1928 ...	2,365,589	1,508,490	63·8	857,099	458,204	398,895
1929 ...	2,549,582	1,641,235	64·4	908,347	505,352	402,995
1930 ...	2,537,298	1,685,518	65·1	901,780	395,755	506,025
1931 ...	1,868,654	1,455,446	77·9	630,242 <sup>(10)</sup>	506,858	361,000 <sup>(10)</sup>

(10) After the adjustments mentioned above.

165. The total recorded capital expenditure to the 31st December, 1931, was £E. 11,173,175. Of this total £E. 8,922,396

was on account of railways, and £E. 2,250,779 on account of the steamers and other ancillary services.

166. The road mileage of the railway at the end of the year was 1,997 miles (3,216 kilom.) and the mileage of river services operated 2,326 (3,746 kilom.).

#### *Railways.*

167. The total number of passengers carried decreased from 708,838 to 418,857. Third and fourth-class passenger traffic showed marked decreases. The number in the latter class fell from 554,804 to 292,174, and is to a certain extent symptomatic of the condition of the people. Receipts from passenger traffic amounted to £E. 232,760, as compared with £E. 319,512 in 1930.

168. Revenue-earning goods carried during the year amounted to 397,991 tons, as compared with 616,031 tons in 1930, a decrease of no less than 218,040 tons. Receipts from this traffic decreased from £E. 1,429,904 in 1930 to £E. 1,020,858 in 1931. The average earnings per ton-mile were 1.453*d*. In view of the prevailing economic conditions this decrease was only to be expected.

169. The following table gives details of the tonnage of the principal commodities carried during the last five years:—

—	1927.	1928.	1929.	1930.	1931.
Exports—	Tons.	Tons.	Tons.	Tons.	Tons.
Public ... ..	142,090	156,916	177,473	178,416	151,162
Government ... ..	3,821	1,865	7,054	10,572	6,075
Total ... ..	145,911	158,781	184,527	188,988	157,237
Cotton, ginned ... ..	27,737	23,406	31,182	28,554	18,272
Cotton, unginced (for ginning at Port Sudan) ... ..	8,806	10,209	11,202	13,927	9,015
Cotton-seed ... ..	54,401	41,521	56,348	53,237	44,046
Dates ... ..	1,344	1,674	1,941	1,062	678
Dom nuts ... ..	5,198	4,882	5,536	2,244	4,583
Dura and dukhn ... ..	4,839	22,178	20,497	31,953	30,345
Ground-nuts ... ..	1,439	2,376	4,186	4,379	2,861
Gum... ..	21,638	23,210	17,284	21,485	21,374
Hides and skins ... ..	1,958	3,185	2,352	1,819	1,699
Sesame ... ..	8,750	13,534	14,838	9,415	5,457

N.B.—The above figures represent tonnage of commodities consigned to the different ports, and they therefore include tonnage of any commodities consigned for local consumption at the ports.

	1927.	1928.	1929.	1930.	1931.
Imports—	Tons.	Tons.	Tons.	Tons.	Tons.
Public ... ..	142,472	139,578	162,131	176,991	114,306
Government ... ..	20,752	17,762	18,157	22,001	7,328
Total ... ..	163,224	157,340	180,288	198,992	121,634
Benzine ... ..	4,393	5,906	7,330	9,725	7,772
Cement ... ..	14,640	16,511	18,911	23,015	8,143
Coal and patent fuel ... ..	17,324	17,774	16,641	25,151	6,409
Piece-goods ... ..	4,902	5,520	7,004	6,553	5,255
Dura ... ..	17,981	238	352	257	290
Flour ... ..	9,375	9,012	11,102	11,818	12,106
Fuel oil ... ..	6,953	6,761	6,922	9,081	8,063
Petroleum ... ..	4,057	4,887	5,322	6,331	4,484
Provisions ... ..	1,153	2,114	2,353	2,337	1,495
Salt ... ..	10,911	11,764	13,240	12,095	8,635
Soap... ..	2,287	2,363	2,839	2,790	2,608
Sugar ... ..	20,696	23,605	30,149	30,941	20,065
Tea ... ..	1,920	2,580	2,709	2,719	2,384
Timber, unwrought ... ..	4,026	5,655	7,660	6,659	3,869

	1927.	1928.	1929.	1930.	1931.
Local—	Tons.	Tons.	Tons.	Tons.	Tons.
Public ... ..	130,362	169,042	171,683	139,285	96,663
Government ... ..	66,454	78,326	82,528	88,766	22,457
Total ... ..	196,816	247,368	254,211	228,051	119,120
Bricks ... ..	13,039	16,785	18,966	9,100	650
Coffee ... ..	1,889	1,693	1,519	1,311	887
Cotton, unginued ... ..	31,212	28,105	36,154	26,454	22,973
Dura and Dukhn ... ..	24,882	56,834	53,162	37,845	29,270
Dates ... ..	7,797	9,257	8,062	7,411	6,943
Onions ... ..	1,529	1,937	2,435	2,615	1,594
Sand, stone and rubble ... ..	63,574	71,627	72,222	86,140	15,917
Sesame ... ..	2,880	4,283	4,382	4,266	2,572

170. The tonnage of public goods carried to the ports was 151,162, as against 178,416 in 1930. The poor yield of cotton in the Gezira and the continued falling off in the export of sesame account mainly for this decrease.

171. The reduced purchasing power of the natives and the generally depressed condition of trade naturally affected public import traffic, the tonnage of which fell from 176,991 tons in 1930 to 114,306 tons in 1931. Government imports also decreased from 22,001 tons to 7,328 tons.

172. The export of cattle and sheep diminished further during 1931, only 20,930 head being transported as compared with 30,652 in 1930.

173. Reductions in passenger train services and decreased goods traffic resulted in a reduced train kilometrage from 3,611,163 in 1930 to 2,642,594 in 1931.

#### Steamers.

174. The poor trade conditions are also reflected in the working results of the three branches of the steamer services as is shown by the following table:—

	Revenue.		Working Expenses.		Net Revenue.		Ratio of Expenditure to Earnings.	
	1930.	1931.	1930.	1931.	1930.	1931.	1930.	1931.
	£E.	£E.	£E.	£E.	£E.	£E.	Per cent.	Per cent.
Southern Reaches	233,313	161,978	202,805	166,828	30,418	4,850	87·0	103·0
Halfa-Shellal Reach	71,427	58,041	46,528	43,071	24,899	14,970	65·1	74·2
Dongola Reach	20,025	17,796	22,478	19,520	2,453	1,724	112·3	109·7
						(loss)		
						(loss)		

175. The gross revenue of the steamers operating on the southern reaches decreased by no less than £E. 71,335 or over 30 per cent., resulting in a loss being incurred despite the fact that services were curtailed as far and as quickly as circumstances permitted and expenditure reduced accordingly. The numbers of passengers carried in all three classes fell from 18,364 in 1930 to 15,258 in 1931, and receipts therefrom from £E. 40,568 to £E. 32,239. The tonnage of goods transported decreased from 51,751 tons in 1930 to 32,838 tons in 1931, and the receipts from £E. 129,721 to £E. 78,569. There was a general decrease in all services, but particularly in respect of the Belgian Congo traffic and trade with Abyssinia via Gambeila.

176. Receipts from the Halfa-Shellal Reach decreased from £E. 71,427 to £E. 58,041, and the net revenue from £E. 24,899 to £E. 14,970.

177. Despite a reduced revenue the net loss in working the Dongola Reach during 1931 was less than in 1930. Even under favourable conditions this service cannot be expected to do more than cover working expenses.

*Catering Service.*

178. The gross revenue in the catering service fell by nearly £E. 9,000, but a small net profit was obtained.

179. The year 1931 was especially difficult, for not only did the number of tourists and other passengers fall considerably, but the receipts at the hotels were affected by the local financial stringency.

180. The new hotel at Halfa was opened during the year, and in normal times is expected to do well.

*Port Sudan.*

181. Eight hundred and eighty-eight ships called at the port during the year as compared with 945 in 1930.

182. The working results of the port as compared with the previous year were as follows:—

	1930.	1931.
	£E.	£E.
Revenue ... ..	152,850	114,964
Expenditure... ..	139,060	126,938
Profit ... ..	13,790	loss 11,974
Ratio of expenditure to earnings ... (per cent.)	91	110·4

183. The total tonnage of goods dealt with dropped to 455,902 from 586,579 in 1930, a decrease of 22 per cent. Inwards traffic totalled 276,806 tons, a decrease of 28 per cent. on the 1930 figures. The total weight of outwards traffic was 179,596 tons, a decrease of 10 per cent. The sale of bunker coal has again fallen, but oil shipped for bunkers increased to 12,069 tons from 6,593 tons in 1930, the previous highest figure. Transshipment traffic totalled 10,078 tons, a slight increase on 1930 figures.

184. The total number of passengers embarked and disembarked was 8,199, including 3,296 British troops. In 1930 the figures were 9,008 and 3,697 respectively.

185. 23,172 tons of water were supplied to shipping, a decrease of 33 per cent. on the figures for 1930.

186. At the end of the year 11,700 tons of ginned cotton were stored in the port. This situation was abnormal.

187. In order to obtain increased revenue, pilotage and port and light dues and crane hire charges were increased in November. The former scale of charges was low compared with charges in other similar ports, moreover, during recent years very considerable expenditure has been incurred in improving the facilities of the port. As a matter of convenience the basis of assessing charges on vessels has been altered from International tonnage to net registered tonnage.

188. In the past labour in the port has been done principally by men imported from the Yemen. Sudanese labour is now being substituted as far as possible.

*Mechanical Transport.*

189. The working results of this section for 1930 and 1931 are as follows :—

	1930.	1931.
	£E.	£E.
Revenue ... ..	20,957	10,817
Expenditure ... ..	24,054	18,682
Loss ... ..	3,097	8,815
Ratio of expenditure to earnings (per cent.)	114·8	132·1

190. Early in the year it was decided by the Central Government to close the Mongalla branch, and in July the majority of the vehicles were handed over to the Sudan Defence Force; the equipment of workshops and buildings was transferred at the end of the year. Transport was supplied from the Atbara branch for miscellaneous activities, including a campaign against locusts.

*Tourist Traffic.*

191. Receipts from tourist traffic for the season 1930–31 amount to £E. 30,826 as compared with £E. 32,272 for the previous season. In view of present conditions this comparatively small decrease is remarkable.

*Rates.*

192. A number of temporary reductions in rates for certain exports were made to suit the special economic conditions existing. Rates on certain highly priced imports were increased with a view to obtaining increased revenue.

*Permanent Way.*

193. 55 kilom. of track was re-sleepered during the year with wooden sleepers. Additional protection work had to be carried out on the Kassala line. Heavy rains caused severe washouts on the Khartum–Atbara–Halfa section and on the Port Sudan, Kassala and Suakin lines. The cost of repairing track damaged by washouts amounted to £E. 7,325.

*Accidents.*

194. There were no accidents involving serious damage to rolling-stock or plant.

*Road Motor Competition.*

195. Road motor competition with the railways is increasing and presents a problem which will clearly have to be tackled in the immediate future.



*London Office.*

196. The number of orders dealt with at the London Office totalled 6,028, as compared with 8,785 in 1930. 6,848 consignments were shipped. The Passage Department dealt with 1,395 individuals and booked 767 passengers.

197. Every effort was made to economise and the cost of the office was reduced from £36,011 to £25,621. The proportion of the cost of the office during 1931 which can be taken as attributable to the purchase, inspection and shipment of stores is £14,452, which is 3·32 per cent. of the value of orders paid.

198. The statutory requirements of the Company's Act in respect of the Kassala Railway Company (Limited), the Sudan Construction and Equipment Company (Limited), and the Gedaref Railway and Development Company (Sudan) (Limited), were carried out as usual.

*Railway Advisory Board.*

199. The Railway Advisory Board met in London in September.

*Sir Felix Pole.*

200. During the early part of the year Sir Felix Pole paid a second visit to the Sudan, at the invitation of the Government, to give a general review of the situation and report as to how his previous recommendations had been carried out.

201. Between the dates of Sir Felix's acceptance of the invitation and that of his arrival the financial situation of the Government generally had been so seriously affected by the universal depression of trade that Sir Felix was asked to devote his time and attention principally to discovering ways and means of reducing very considerably the expenditure of the Railways Department. A report was received in July and has been given careful consideration.

*Retrenchment.*

202. In the second half of the year it became apparent that drastic measures would have to be taken to reduce expenditure. A heavy reduction has been made in the establishment of the British and Egyptian staff, the numbers of whom will shortly be about 31 per cent. and 33 per cent. respectively less than those actually employed on the 1st January, 1931. In addition, train and steamer services have been reduced, many stations have been closed, reduced hours are being worked in the workshops and the Engineering Department workshops and the chemical laboratory have been closed.

*Posts and Telegraphs.**General.*

203. The authorised establishment of the Department in 1931 was 1,473, compared with 1,382 in 1930, the increase being mainly due

to personnel transferred from the Stores and Ordnance Department and additional staff for wireless stations and telephone posts. The actual strength on the 31st December was 1,364, compared with 1,328 in 1930. Seventeen boys from Sudan schools were appointed during the year to fill existing vacancies.

204. The total revenue for the year amounted to £E. 134,558, of which £E. 107,912 was cash from the public. A system of free services was instituted for the majority of Government departments, but receipts from certain commercial departments amounted to £E. 26,646. The decrease in cash revenue on that of 1930 was £E. 18,277. The effect of the general trade depression on the cash revenue of the Department became marked in September 1930 and by February 1931 monthly revenue returns appeared to have reached relative stability at new and lower levels. A comparison with 1930 of revenue under the main headings is given below:—

	1930. £E.	1931. £E.
Sale of stamps ... ..	34,112	35,667
Share of postage on parcels exchanged with foreign coun- tries ... ..	14,085	8,557
Net commission on money orders and postal orders ...	10,730	8,048
Net commission on value pay- able parcels ... ..	1,912	1,176
Transmission of telegrams ...	52,017	41,573
Telephone rentals ... ..	6,731	6,987
Telephone call fees ... ..	1,961	1,988
Other items ... ..	4,641	3,916
	<u>126,189</u>	<u>107,912</u>

The increase in the sale of postage stamps is due to sales to philatelists of air-mail issues estimated at £E. 3,300 and to the increase in postage dues brought into force on the 1st November, 1931. The normal sale of stamps was less than in 1930.

205. The ordinary expenditure for 1931 was £E. 229,273, compared with £E. 247,020 in 1930. A comparative statement under budget headings is given below:—

Item.	1930. £E.	1931. £E.
Salaries and wages ... ..	141,252	145,921
Cash allowances to personnel ...	11,274	8,597
Services ... ..	25,180	13,964
Stores, materials, &c. ... ..	17,925	11,449
Departmental services ... ..	51,389	49,842
	<u>247,020</u>	<u>229,273</u>

206. Expenditure on capital works during 1931 was £E. 8,021, as compared with £E. 19,096 in 1930, as follows :—

	£E.
Telegraphs—landlines ... ..	1,819
Telegraphs—wireless ... ..	3,318
Telephones ... ..	2,472
Posts and general ... ..	412
	<hr/>
	8,021

207. Engineering works on repayment were carried out during the year for the Sudan Irrigation Department (£E. 1,535) and for the Sudan Government Railways (£E. 6,517).

208. Customs dues on foreign parcels collected for the Customs Department was £E. 8,007, as against £E. 12,175 in 1930.

209. The cash turnover in post offices was £E. 3,200,858, as against £E. 4,430,154 in 1930 (excluding transactions with Government Treasuries).

210. Ninety-eight post and telegraph offices were open during the whole or a portion of the year, of which seventeen were travelling post offices. A permanent post and telegraph office was opened at El Suki, a permanent wireless office at Kapoeta, a town sub-post office at Omdurman market, and a temporary post and telegraph office at Erkowit (hill station). The post and telegraph offices at Abu Zabbad and Kebkabiya were closed.

211. Two mail services weekly between the Sudan and Great Britain and Europe via Cairo were maintained throughout the year. Outward mails were conveyed from Egypt by the Peninsular and Oriental and Sitmar Line Packets; inward mails by the Peninsular and Oriental, Messageries Maritimes, Lloyd Triestino and Maritima Italiana Packets.

212. A Great Britain—East Africa air mail service was inaugurated in March 1931. The first arrival under the new service in Khartum from north was due on the 6th and arrived on the 7th, and that from south was due on the 12th and arrived on the 13th. The offices of exchange in the Sudan to which foreign postal administrations have made up direct despatches on and from the date of inauguration of the service are Wadi Halfa, Khartum, Kosti, Malakal and Juba. Atbara was subsequently included and received its first direct despatch from London on the 7th August.

213. As a result of the fall in sterling, postal charges on correspondence posted for abroad were increased as from the 1st November, 1931.

214. Serious delay owing to railway washouts caused by heavy rain occurred during the year. The Khartum—Port Sudan service was delayed on two occasions for five and nine days, and the Wadi Halfa—

Khartum service twice for three and two days. The Kassala service was interrupted three times for six, nine and six days.

215. During the year five despatches from London failed to secure connexion in Cairo owing to late arrival of mail packets, and on two occasions a portion of London despatches was delayed in Europe.

216. The number of letters, post-cards, newspapers and other packets (parcels excluded) posted and delivered was 16,877,649, showing a decrease of 3,107,236 on the previous year.

217. The total number of parcels dealt with in 1931, including parcels in transit to and from the Belgian Congo, was 200,491, as against 290,309 in 1930, a decrease of 89,818. Receipts amounted to £E. 15,668, as against £E. 22,999, a decrease of £E. 7,331. The number of C.O.D. parcels was 55,172 in 1931, as against 84,910 in 1930, the value falling from £E. 195,234 in 1930 to £E. 98,491 in 1931.

218. The number of money orders dealt with in 1931 was 292,813, as compared with 457,301 in 1930, a decrease of 164,488, the total value decreasing by £E. 1,132,631 and the commission by £E. 3,388. An inland postal order service was instituted with a view to facilitating the transmission of amounts not exceeding £E. 1 through the post. Arrangements were also made for the payment of Egyptian postal orders in the Sudan and Sudan postal orders in Egypt. The number of Sudan and Egyptian postal orders issued and paid was 155,674, the total value being £E. 104,935. The total revenue received from commissions on money and postal orders was £E. 8,169 in 1931, compared with £E. 10,493 in 1930.

219. At the end of the year the total value of deposits in the savings bank amounted to £E. 61,711, an increase of £E. 4,628 over 1930. The number of depositors increased from 6,377 to 6,483, and the average balance per depositor was £E. 9.519 mms., compared with £E. 8.951 mms. in 1930.

#### *Telegraphs.*

220. The total number of telegrams (including wireless) dealt with was 672,224, a decrease of over 200,000 on 1930. The corresponding decrease in revenue amounted to approximately £E. 30,000. There was a notable decrease in the number of Government telegrams.

221. Land-line renewals were carried out as follows: Atbara–Abu Hamed (commenced in 1930 and completed during 1931), and Sennar–Roseires (commenced and completed 1931). Progress on the general renewal of the Atbara–Sallom route was made, and the section Sallom to Haiya was nearly completed.

222. Apparatus was introduced enabling Reuter's to be simultaneously broadcast from one telegraph key to all offices in direct land-line communication with Khartum and all wireless stations

in the Sudan. The traffic capacity of the Khartum–Wadi Halfa circuit was increased by the installation of duplex apparatus. Standardisation of telegraph office equipment throughout the Sudan proceeded and approximately 85 per cent. of offices have been dealt with.

223. The year has been remarkable for the increased use made of wireless communication. By improvement of apparatus and reorganisation of traffic arrangements, wireless communication has progressed from the stage where it was confined to emergency use, and circuits are now working regularly as normal traffic routes.

224. On the 2nd March communication was established with aircraft flying on the London–British East Africa air route, and from that date to the end of the year 5,407 hours co-operation have been carried out. Wireless stations maintain continuous co-operation with aircraft on the whole flight from Egypt to Kampala, the stations connected being Wadi Halfa, Atbara, Khartum, Malakal and Juba. Stations at both ends of the section in which the aircraft is flying keep watch simultaneously and pass reports to and from the aircraft and representatives of the Imperial Airways along the chain of wireless stations ahead and behind. Seven hundred and twenty hours' co-operation with the Royal Air Force were carried out during 1931, and machines beyond the range of their own wireless station at Khartum were kept in touch with ground stations throughout the Sudan.

225. Experiments in short-wave transmitters were commenced with a view to providing communication between Juba and Khartum. Satisfactory results are being obtained and the experiments will be continued in 1932. Arrangements with the Egyptian State Telegraphs were made for daily wireless traffic to be passed between Khartum and Sua (Giza). Reception from Cairo was at first difficult, but was improved by the addition of special apparatus. During the summer season atmospherics at times prevented reception after about 11 A.M.

226. Wireless sets in use on the 31st December, 1931, were as follows:—

	Power.	Number.
Army pattern "F" sets at Khartum and Juba ... ..	6 kilowatt	3
Radio Communication Company type continuous-wave sets, standard ship apparatus, at Port Sudan, Wau, Fasher and Malakal ... ..	1½ kilowatt	5
Sudan Government type II and II.A. transmitters (including four mobile sets) ... ..	300 watt	34
Marconi pattern Y.C.2 C.W. mobile sets ... ..	½ kilowatt	3

Old type "spark" and "arc" sets at Port Sudan, El Fasher, Atbara and El Obeid were replaced by modern valve wireless transmitters. The standard (type 2.A. transmitter) wireless sets were installed at thirteen stations with remote control of the transmitting plant from the telegraph offices. All outlying wireless stations are now provided with duplicate apparatus for emergency purposes.

#### *Telephones.*

227. Minor alterations to the existing telephone system were made at Wad Medani and Khartum. Small magneto exchanges were installed at Tokar, Sinkat, Abu Ushar and at the research farm at Wad Medani. The installation for the new northern extension area of the Gezira was completed and a trunk line was built between Hassaheisa and Merebia in the Blue Nile Province.

### CHAPTER VII.—IRRIGATION.

228. The Sennar Dam and Gezira Canal operated normally. The area in feddans under crop and fallow since the dam was completed in 1925 are shown in the following table:—

Season.	Cotton.	Lubia.	Dura.	Fallow.	Total.
1925-26	80,031	8,990	32,286	114,693	240,000
1926-27	100,058	49,017	50,091	103,092	302,258
1927-28	100,768	53,005	50,404	100,845	305,022
1928-29	131,292	57,478	65,334	143,526	397,630
1929-30	174,164	98,838	76,164	178,018	527,184
1930-31	196,799	111,159	86,408	202,307	596,693
1931-32	194,935	10,514	82,137	394,694	682,280

The expansion of area in 1930-31 was due to the completion of the first instalment of the second northern extension, and to the inclusion of certain minor areas in other parts of the system.

229. In the early part of the year it was decided to change the system of crop rotation to permit of cotton being followed by two years' fallow. Lubia was cut out except for a small area needed to provide fodder for plough cattle. The dura was segregated into blocks outside the cotton rotation, the area of dura per holding

remained unchanged at 4.375 feddans. The effect of this was to reduce the ratio of cotton area to gross area from 10 in 30 to 10 in 34.375. The resulting reduction in the cotton area was neutralised as far as possible by taking in small areas previously considered unsuitable for cultivation. The inclusion of these areas and the completion of the second northern extension brought the total area comprised in the scheme from 300,000 feddans in 1926 to 682,000 feddans in 1931. The completion of the extensions affords an appropriate occasion for reviewing briefly the circumstances in which they were undertaken, and for showing the effect of the expansion of area on the capital and working costs per feddan, and upon the prospects of the scheme proving remunerative. The scheme, as taken in hand after the war, comprised the construction of the Sennar Dam and the canalisation of an area of 300,000 feddans, the calculations on which the project had been based showing that this was the maximum area that could be served by the water stored in the reservoir, and thus the maximum possible without detriment to the supplies already in use by Egypt. For various reasons, in particular, the abnormal price levels of the early post-war years, the cost of the scheme was found to be in excess of the estimates, and the desirability of extending the area and thus enlarging the earning capacity of the works was soon recognised.

230. The gauging of water consumption on the areas under pump irrigation showed that the actual water requirements were only about two-thirds of the project provision. Thus the canal head capacity of 84 cubic metres a second, designed to serve 300,000 feddans, might suffice for 450,000 feddans. It appeared also that the storage capacity of the reservoir could by various expedients be made to serve an area considerably greater than 300,000 feddans. These conclusions were confirmed when the canal came into operation, and when the contents of the reservoir were accurately measured.

231. The extensions were in two main areas to the north and west of the original area. Besides these a number of smaller blocks lying within or contiguous to the original area were taken in by minor extensions of the canal system. Although the work remained continuously in progress the extensions may be treated as having been carried out in two instalments, the first of which carried the total area to 546,000 feddans, and the second to 682,000 feddans.

232. The subjoined table shows the effect of the extensions on the capital and working costs per feddan, and the crop proceeds that would be needed to repay the working costs. The figures of working cost cover interest and sinking funds now in operation and take into account all recent economies. The table exhibits comparable results with areas of 300,000, 546,000 and 682,000 feddans. For purposes

of comparison figures have been worked out both in the original and on the current crop rotation.

	Comparative Figures.		
	300,000 Feddans.	546,000 Feddans.	682,000 Feddans.
Capital cost—	££.	££.	££.
Per feddan of gross area ... ..	36·9	23·0	19·6
"  "  cotton (10:34·375) ... ..	126·5	79·0	67·3
"  "  "  (10:30) ... ..	110·7	69·0	58·8
Working costs—			
Per feddan of gross area ... ..	2·66	1·70	1·45
"  "  cotton (10:34·375) ... ..	9·12	5·82	5·00
"  "  "  (10:30) ... ..	7·98	5·10	4·35
Government share... ..	35%	39·1%	38·4%
Proceeds required to cover working costs per feddan—			
(1) Including interest on Government funds—			
Rotation 10:34·375 ... ..	26·0	14·9	13·0
"  "  10:30 ... ..	22·8	13·0	11·3
(2) Excluding interest on Government funds—			
Rotation 10:34·375 ... ..	23·3	13·0	11·4
"  "  10:30 ... ..	20·8	11·6	10·0

233. Thus, on the original area, the working costs would only be met by divisible proceeds of ££. 26 per feddan, whilst with the extensions now completed the working costs would be met by a crop at half this value.

234. If the last instalment of 136,000 feddans is considered separately, and on the basis of the current cropping system, the following figures result:—

Working costs per feddan of cotton ... (££.)	1·7
Government share... .. (per cent.)	35
Proceeds required to cover working costs (££.)	4·9

235. The working costs in the above calculation include provision for interest to the amount of ££. 24,500 only, being the interest on the loan capital employed. If interest on the balance of the capital expenditure provided out of free resources had to be included, the interest charges would be increased by ££. 14,500 to



£E. 39,000, and the corresponding proceeds to cover all expenses would be £E. 6·0 per feddan.

236. A further matter which it may be interesting to touch upon retrospectively is the effect of the Sennar reservoir on the supply available for Egypt, at one time the subject of acute controversy. With the reservoir in operation any water in excess of what is consumed by the Sudan is available for irrigation purposes in Egypt. The following table shows the consumption in the Sudan and the surplus discharged to Egypt for the six completed seasons that have passed since the scheme came into operation :—

(Millions of cubic metres.)

Year.	Loss in Reservoir.	Used by Sudan.	Surplus discharged.		
			From Reservoir.	From Canal.	Total.
1926... ..	100	284	397	39	436
1927... ..	111	263	407	25	432
1928... ..	111	253	417	18	435
1929... ..	108	318	355	3	358
1930... ..	121	423	237	3	240
1931... ..	102	489	190	3	193
	653	2,030	2,003	91	2,094

237. It will be seen that Egypt has benefited as well as the Sudan; though with the expansion of area in the Gezira the surplus now is appreciably reduced as compared with the earlier years.

238. The remaining work on the protective aprons downstream the Sennar Dam was duly completed in May 1931, and examination since the fall of the flood has revealed no appreciable damage or displacement. These aprons have resulted in giving security from erosion along the whole waterway of the dam.

239. The buildings for the new division at Abu Usher, necessitated by the expansion of area, were constructed and completed during the year. As the result of trials extending over the last few years, it was found that the silt clearance could be carried out more economically by drag-line excavator than by hand labour, which had to be imported from Egypt. For purposes of supervision and maintenance of the plant and for mechanical work generally throughout the scheme, a permanent organisation has been set up with headquarters and workshops at Kilom. 114. Amongst

other duties, this organisation has taken over the operation of the large pumping-stations at Wad-el-Nau and Hag Abdullah, which though the property of the Government, have hitherto been under the supervision of the Sudan Plantations Syndicate. The change is expected to give economy in working.

240. The survey party which proceeded to Lake Tsana in 1930 for the purpose of collecting data to enable a final design and estimate of the scheme to be prepared, returned to New York in June 1931 on the completion of their studies, but their report has not yet been presented.

### CHAPTER VIII.—AGRICULTURE AND FORESTS.

#### *General.*

241. A comparison of the figures for the exports of agricultural and forest products in 1929, 1930 and 1931 shows that the Sudan was early and severely hit by the slump in world prices. The decrease in output of the main export crops has been progressive and sustained, both quantitatively and in unit values. It should be noted that the chief item, Egyptian cotton, is reduced in 1931 by the combination of a poor crop, a fall in value and the storage of a large portion in Port Sudan.

242. The rains of 1930 were late and only moderately satisfactory, and, as the depredations of locusts were also severe, accumulated stocks of grain began to be drawn upon. In 1931 the rains, though again late, were ample, and very heavy crops seemed assured when flying locusts in enormous numbers destroyed the crops of Southern Berber and Khartum and very heavily reduced those of the Blue and White Nile Provinces, Fung, Kordofan, and portions of Darfur. In Mongalla the early cereal crops were entirely destroyed, but the late crops escaped. As a result of these adverse conditions the crop from the main grain-producing areas of the Sudan may be considered as little more than half a normal crop. In the Blue Nile Province outside the irrigated area it is estimated that only 125,000 ardebs were harvested, and the irrigated area yielded about 120,000 ardebs. Both areas suffered severely from damage by locusts.

243. In contrast to the above, the rain crops of the North-Eastern Sudan were good, as were those of Northern Berber, and as a result of the ample flood of 1931, basin and river crops are good and forage is plentiful. Dongola was also fortunate in escaping the flying locust scourge.

Cotton.

244. The following table gives the final yield of cotton from the various districts for the season 1930-31:—

	Feddans.	Yield in Kantars of 315 Rotls.	Yield per Feddan.
<i>Sakel Type.</i>			
Gezira—			
Sudan Plantations Syndicate (Ltd.) ... ..	175,418	227,781	1·29
Kassala Cotton Company (Ltd.)	20,605	38,562	1·87
Total ... ..	196,023	266,343	1·35
Tokar ... ..			
Gash Delta (Kassala) ... ..	60,000	68,229	1·13
Private pumping estates ... ..	37,938	57,367	1·51
Government pumping schemes ... ..	2,952	6,002	2·03
	550	991	1·80
Total Sakel ... ..	297,463	398,932	...
<i>American Type.</i>			
Irrigated—			
Government schemes ... ..	5,432	17,523	3·22
Private estates ... ..	9,793	34,033	3·47
Rain-grown—			
Southern Provinces—			
Kordofan (Nuba Mountains)	43,000	47,827	(Estimated)
Upper Nile ... ..	5,333	3,301	"
Mongalla ... ..	7,980	7,895	"
Northern Provinces ... ..	4,050	4,240	"
Total American ... ..	75,588	114,819	...

245. In the Gezira, the main source of Sudan Sakel cotton, climatic conditions were unfavourable. A poor stand resulted from severe attacks of blackarm (*Pseudomonas Malvacearum*) which occurred during an unfavourable seed time. The resulting plants achieved a poor growth and were heavily infected by leaf-curl disease. Crop prospects became gradually worse throughout the season, the final yield of 1·34 kantars being the worst yet experienced. The only redeeming feature was that the deterioration was approximately as marked in the crop on land not previously sown with cotton as on the old areas which have been under irrigation for many years. At Tokar and Kassala the yields were good in spite of the prevalence of leaf-curl in both districts. The proportion and quality of the higher grade cotton from these sources were also very satisfactory.

246. The American cotton crops from both areas under irrigation and rain cultivation were about normal. In the south the seed

issue was restricted to approximately the quantities issued the previous season in order to place a limit on commitments for purchase of the crop. Such seed was readily taken up in spite of the falling prices. Cultivators in these districts participating in a young industry had yet to realise from experience the serious vagaries to which the cotton market is subject. The estimated yields of cotton to be harvested in the season 1931-32 are as follows:—

	Feddans.	Estimated Yield in Kantars of 315 Rotls.	Estimated Yield per Feddan.
<i>Sakel Type.</i>			
<i>Gezira—</i>			
Sudan Plantations Syndicate (Ltd.) ... ..	174,788	699,152	4·0
Kassala Cotton Company (Ltd.)	19,191	95,955	5·0
Total ... ..	193,979	795,107	4·1
Tokar ... ..	38,000	50,000	1·31
Gash Delta (Kassala) ... ..	17,500	37,000	2·11
Private pumping estates ... ..	2,950	9,000	3·05
Government pumping schemes ...	375	1,400	3·73
Total Sakel ... ..	252,804	892,507	...
<i>American Type.</i>			
<i>Irrigated—</i>			
Government schemes ... ..	3,764	15,150	4·02
Private estates ... ..	6,889	27,922	4·0
<i>Rain-grown—</i>			
<i>Southern provinces—</i>			
Kordofan (Nuba Mountains)...	46,000	41,269	...
Upper Nile ... ..	5,000	2,539	...
Mongalla ... ..	8,840	4,742	...
Northern provinces ... ..	...	...	...
Total American ... ..	70,493	91,622	...

247. In the Gezira, prospects for 1932 are very much brighter than they have been in recent years. It is not possible to estimate the part played by different factors, each of which contributed in some measure to the improvement. The sowing season was a favourable one. New seed for the whole area was imported from Egypt and was treated by a disinfectant before sowing. Sowing was carried out with great care, and a very thorough search was made for ratoon cotton springing from the roots of the previous season's crop and for volunteer seedlings. These were, as far as possible, exterminated. The crop as a whole made an excellent start, and its growth and healthy appearance was up to the standard of the best crops grown since the initiation of the scheme. Later,

blackarm appeared in many places and became generally distributed throughout the scheme with the exception of the most northerly blocks. Its behaviour was irregular. In some places it spread considerably and in others remained localised and did little damage. The loss due to this cause, although considerable, is much less than it has been in recent years. Leaf-curl also appeared, but to a relatively small extent and little harm need be attributed to it this season. The most encouraging feature is the direct evidence that the Gezira soil can, under suitable conditions, grow as good a cotton plant as it ever did, both on the new and on the old-established areas.

248. At Tokar the flood was a good one, and more than an average crop is anticipated. In the Gash Delta the area is reduced, partly through the adoption of a rotation in watering, and partly owing to the depredations of locusts.

249. The crop of American upland-type cotton from irrigated land will show a considerable falling off, due to low prices, in spite of an excellent yield obtained at Zeidab and on the Government pumping schemes in Dongala Province. The rain cotton crop in the south will be reduced chiefly owing to the lateness of arrival and short period of the rainy season. It is probable that the reduced prices will lead to a further diminution in production. In the northern areas cotton, as a rain crop, has practically disappeared for the time being.

#### *Pump Irrigation.*

250. Owing to low prices a number of pump-irrigated estates have closed down in the north. On the other hand, there has been a considerable extension of this form of agriculture on Aba Island in the White Nile Province, which is owned by Sayed Sir Abdel Rahman-el-Mahdi, and his first crops are extremely promising.

#### *Coffee.*

251. In Mongolla Province some 70 acres of young coffee were planted out in the Yei district, and young coffee in the Acholi district came into bearing. The suppression of the post of coffee officer, necessitated by retrenchment, will lead to a set-back to this new industry, which was showing some promise, and also in the experimental plantings of Cinchona and Hydnocarpus which had been started in Opari district.

#### *Research.*

252. While the work of all research sections has been focussed on furthering our knowledge of the two main diseases affecting the cotton plant in the Sudan, namely, blackarm and leaf-curl, and on seeking means of avoiding, controlling or mitigating their effects, investigations have also been continued in cultural, manurial and crop rotation experiments, the results of which have become more

valuable as the period of their operation extends. The testing, comparison and selection of different varieties of cotton, grain and leguminous crops have been carried on, and attention has been paid to live-stock, both cattle and sheep, and considerable progress made in soil surveys and land records.

253. As from the close of the season under review the research work in agriculture and the allied sciences has been reorganised with a view to obtaining the fullest possible co-operation between the different scientific sections which are engaged on this work, and which have hitherto been distributed between the Wellcome Tropical Research Laboratories and the Department of Agriculture. The members of the staffs of these departments who are employed on research have been seconded to the newly-formed Gezira agricultural research organisation with headquarters at the Gezira research farm, Wad Medani. It is hoped that this change will lead to increased efficiency in the work as a whole, and particularly to the solution of the very pressing problems which confront agriculture in the Gezira.

#### *Crop Returns.*

254. Returns from provinces show a total cultivated area of 2,192,512 feddans, compared with 2,426,634 in the previous year, and an average of 2,177,503 for the ten years 1921 to 1930. The following table, compiled from the returns made by Governors, show the areas of the principal food crops. The provinces of Darfur, Upper Nile, Mongalla and Bahr-el-Ghazal are excluded, as figures are not available :—

					Feddans.
Dura	...	...	...	...	1,085,672
Dukhn	...	...	...	...	279,077
Sesame	...	...	...	...	181,819
Earthnuts	...	...	...	...	20,388
Wheat	...	...	...	...	22,127
Maize	...	...	...	...	9,369
Barley	...	...	...	...	6,199
Beans	...	...	...	...	2,458

255. In spite of the fall in value and the very inferior crop harvested in the Gezira; cotton is still the most important export crop. The following is the approximate area in feddans under cotton for the last three years :—

Year.	Rainland.	Artificial Irrigation.	Floodland.	Total.
1928-29	... 70,190	158,420	70,751	308,361
1929-30	... 71,545	197,112	150,795	419,452
1930-31	... 73,104	213,405	128,231	409,740

256. For the same period the total output of sakel and American cotton, expressed in kantars of 315 rotls seed-cotton, has been as follows:—

Year.	Sakel.	American.	Total.
1928-29	592,451	93,751	686,202
1929-30	565,911	149,134	715,045
1930-31	599,901	112,171	512,072

*Gezira Irrigation Scheme.*

257. Extensions were made to the irrigated area in the north by the addition of blocks at Kab-el-Gedad and Meilig. The areas under cotton, and yields, were as follows:—

	Feddans.	Kantars per feddan.
Sudan Plantations Syndicate (Ltd.)	175,418	1·29
Kassala Cotton Company (Ltd.)	20,605	1·87
Total	196,023	1·35

258. The circumstances of this disastrously low yield, and the measures adopted with a view to combating the major diseases of blackarm and leaf-curl with which it is associated, have already been described. A further step, which cannot have effect until the season 1932-33, is an alteration in the rotation, involving an extension of the fallow period and the omission of a green crop, which had been found to harbour the chief vector of leaf-curl and which was susceptible to the cladosporum fungus.

259. As already stated, a good average yield from the new crop of 1931-32 with a high percentage of good-grade cotton is now assured. The areas under cultivation in 1931-32 are shown in the following table:—

	Cotton. Feddans.	Dura. Feddans.	Lubia. Feddans.
Sudan Plantations Syndicate (Ltd.)	174,788	73,229	8,499
Kassala Cotton Company (Ltd.)	19,191	8,459	1,940

*Tokar.*

260. The 1930 flood was good, the effective area being about 60,000 feddans on which sakel seed from Kassala was sown. Leaf-curl was general throughout and did considerable damage, otherwise it is probable that a record crop would have been picked. A final yield of 68,292 kantars of 315 rotls seed-cotton was obtained, compared with 56,615 kantars for the previous season. The value of the crop, excluding the Government seed farm crop, of 516 large kantars, was £E.165,119. Of this £E.41,279 represents the

Government share, from which the value of the seed—a free issue—has to be deducted.

261. The 1931 flood has been very satisfactory and has taken very much the same course as that of 1930. Much of the lightly-watered area will produce a good crop owing to the subsequent heavy rainfall. The flooded area was 85,000 feddans, and the effective area is estimated at 38,000 feddans. Pests have so far done very little damage.

*Kassala-Gash Board.*

262. The area flooded was 55,000 feddans, of which 38,000 feddans was effective. A low yield, averaging 1.51 large kantars per feddan, was largely due to the damage done by leaf-curl and, to a small extent, by an outbreak of pink bollworm during March. Certain weedy areas were left unsown owing to the necessity of keeping cash advances down to a low level. It is now proposed to change the two-course to a three-course rotation of cotton-fallow-fallow, in order to check the increasing growth of grasses to which this soil is extremely subject.

263. The area flooded in 1931 was 46,000 feddans, of which the effective area is 17,500 feddans. 4,500 feddans of this reduction was due to locusts, from which the dura crop also suffered badly. Leaf-curl has done very little damage. The whole of the delta was sown with seed selected from the 1930-31 crop grown on the area which showed the greatest freedom from leaf-curl. All seed was treated with "Abavit B," a germicidal mercuric compound, at the time of sunning.

264. A scheme for the provision of a drinking water supply, extending over a distance of 50 kilom. practically throughout the cotton area, was completed during the year. The water is pumped from groups of wells at Gammam and Mekali, and distributed to tanks at various centres by underground pipe-lines.

*Southern Rain-Grown Cotton.*

265. The general policy of previous seasons has been continued. The Government provides the seed, supervises the cultivation, purchases the crop when picked, and arranges for its transport, ginning and marketing. The output for the season 1930-31 was 59,017 kantars compared with 62,588 kantars in 1929-30. The reduction in yield was due to the cessation of cotton-growing in Yei district of Mongalla Province, light rains in the Upper Nile Province, and the restricted issue of seed.



266. The following table gives the output of cotton since **663** in kantars of 815 rotls of seed-cotton :—

Province.	1924- 25.	1925- 26.	1926- 27.	1927- 28.	1928- 29.	1929- 30.	1930- 31.	1931- 32.
Upper Nile ... (Northern Area)	1,308	3,160	3,417	1,250	2,315	3,258	1,759	4,124
Upper Nile ... (Southern Area)	75	1,530	1,730	1,001	2,315	2,791	1,539	
Kordofan and Nuba Mountains	146	3,114	8,436	13,320	24,565	46,777	47,824	47,619
Mongalla ...	268	5,075	5,519	3,907	5,892	9,762	7,895	8,254
Totals ...	1,797	12,879	19,102	19,478	35,087	62,588	59,017	59,997

267. In spite of low prices cultivators are realising that cotton is the only cash-producing crop of any importance from which taxation and other expenses can be met.

268. Experimental demonstration farms, particularly those at Kadugli and Talodi, are doing valuable work in carrying out comparative tests of varieties of plants, in cultural operations and in propagating selected improved strains of seeds for issue to cultivators. Apart from their educational value these afford an excellent demonstration to local cultivators; agricultural exhibits have also been shown at the Nuba tribal gatherings.

#### *Pumping Schemes.*

269. The areas and yields of the principal crops of the Berber and Dongola stations were as follows :—

Crop.	Area in feddans.	Yield.
Cotton (American) ...	5,418	17,545 kantars = 3·2 kantars per feddan.
Wheat... ..	1,365	4,736 ardebs of 420 rotls = 3·5 ardebs per feddan.
Dura and maize ...	3,201	11,371 ardebs of 420 rotls = 3·5 ardebs per feddan.

270. Dongola stations averaged 4·81 kantars of cotton per feddan, and Berber stations 2·20 kantars. The reduced yield on the Berber stations is again attributed to pink bollworm infestation. Kulud station produced a record yield of 6·69 kantars per feddan for an area of 665 feddans. A certain amount of cotton grown on sakia and private pump schemes was taken over by pumping stations in the absence of any local market for such cotton. On Shambat and Dueim

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pumping stations Sakellarides cotton was the main crop and the areas and average yields were as follows :—

		Feddans.	Kantars per Feddan.
Shambat	... ..	300	·52
Dueim	... ..	250	3·34

The low yield at Shambat was due to flooding after heavy rains and the consequent growth of weeds, which cultivators failed to cope with. Further damage was done by blackarm and leaf-curl. At Dueim, too, the yield suffered, though to a less extent, from rains followed by blackarm and leaf-curl.

#### *Ginning.*

271. The new ginning factory at Port Sudan operated successfully and dealt with the whole of the Gash crop, that of northern sakel-growing estates, and a portion of the Tokar crop. Its equipment consists of eighty roller gins and two presses, and the electric power is provided by the main power station. An air blast feed was adopted and has proved a success, and the new ball-bearing gins showed a marked economy in power requirements over those of the older pattern. The Yei factory was closed down as the cultivation of cotton in this district has been discontinued; the remaining seven ginneries operated by the department of agriculture carried out their functions successfully.

#### *Pests.*

272. The Sudan suffered severely in 1931 from an infestation of desert and hairy-chested locusts. The latter confined their depredations almost entirely to dura and similar crops, and at times showed an unfortunate lack of interest in poison bait. The desert locust, whilst generally preferring dura, did considerable damage to cotton in Berber Province, and completely destroyed some 5,000 feddans in the Gash Delta. The dura crop of Southern Berber, the Gash, Tokar, Upper Nile, Mongalla and the Nuba Mountains district of Kordofan suffered most. Immense numbers of hoppers were destroyed chiefly by the use of poison bait, of which the Government entomologist had prepared and distributed a large supply, and recourse was also had to the older methods of trenching and burning. The area affected is so vast and the population is so sparse that such control can only be partial. Much was, however, achieved in the protection of crops in defined areas. Means have not yet been found for dealing with the flying locust and an immense amount of damage has been done by the vast swarms which swept across the country devastating the crops in their course.

273. Pink bollworm was, as usual, a severe pest in Berber Province cotton crops, and to a less extent in the Gash crop; elsewhere, the infection was slight and Dongola Province still main-

tains its immunity. Blackarm did considerable damage in the Gezira and in Mongalla Province, but the infection was only slight in other cotton areas, while leaf-curl, which was more harmful than blackarm in the Gezira, also had serious consequences at Kassala, Tokar, Duein and Aba Island.

*Legislation.*

274. The Plant Diseases Ordinance, 1911, has been amended with the addition of the following as proclaimed diseases: blackarm or angular leaf spot (*pseudomonas malvacearum*), leaf-curl or leaf-crinkle. A Forest Ordinance is in the process of revision.

*Publications.*

275. The following publications have been issued by the Department of Agriculture: Annual Report for 1930, Report on Agricultural Research Work in the Sudan, 1929-30.

*Horticultural Section.*

276. A number of alterations have been made to the lay-out of the garden at Sennar. An office, store-rooms, potting sheds and quarters for native staff have been erected. At the same time an endeavour has been made to cope with the large demand for vegetable seeds, flower seeds, fruit, berseem and citrus trees from all parts of the Sudan. A 6-inch pump was erected during the year to continue irrigation after the opening of the dam during the dead season in the Gezira.

*Forestry.*

277. The export of gum shows a slight increase in spite of the reduced price obtained. 20,086 tons, valued at £E. 602·753 mms., were reported. The price fell from 50 piastres to 26 piastres per kantar at El Obeid.

278. White Nile steamers were supplied with 62,862 cubic metres of wood fuel during the year, compared with 113,139 cubic metres last year. The requirements of Government departments in Khartoum were supplied, but very little was sold to private consumers owing to the fall in price in the open market from 8 piastres to 5 piastres per kantar.

*Afforestation.*

279. Work has been continued in the many districts included in the afforestation programme. In the Blue Nile Province protection work has been carried out for thirty reserved areas, and 200 feddans have been sown in Naba Doleib and Khashm-el-Beit forests. In the White Nile, work on the central reserve programme has been confined to the Nabra reserve, the natural regeneration of which has not been

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good since it was last clear felled. Thinning was carried out at Aba and Salati reserves. The sown area at Gamuia in Khartum Province has been increased by 600 feddans, making a total of 900 feddans of sunt. The central nursery has continued its activities and neem and sisso have been planted in Wad Hamid basin with a view to testing their suitability under flood conditions.

*Timbers.*

280. A saw-mill has been erected at Wau for the supply of mahogany sleepers to the Sudan Government Railways, by whom an order for 150,000 sleepers has been placed.

CHAPTER IX.—VETERINARY.

281. The Sudan Veterinary Service assumed veterinary charge of the animals of the Sudan Defence Force at the beginning of the year and five officers of the Royal Army Veterinary Corps, who had been seconded for this duty, returned to their corps. Owing to financial stringency, the establishment of veterinary inspectors was reduced during the year from fifteen to twelve and the strength of the veterinary police force was reduced by one-third. Further progress was made in the training, referred to in last year's report, of selected tribal retainers in disease-control measures and it is intended to call upon this trained tribal staff to carry out many of the duties which have devolved on the veterinary police in the past.

282. The owners of live-stock have experienced one of the most trying years in recent times. Losses from disease have been exceptionally heavy and the light rains of 1930, coupled with the depredations of locusts, resulted in a shortage of grazing throughout the Central Sudan from the beginning of the year until the beginning of the rains. In certain areas deaths from starvation were reported and when the rains broke a heavy mortality occurred amongst sheep, particularly among ewes on the point of lambing. The rains were late, but good, and in September grazing was reported to be abundant in the northern areas. In the south, however, conditions are not so satisfactory.

283. A serious reduction in the milk supply occurred in many of the cattle-breeding districts. This was attributable partly to the scarcity of food, but mainly to the effects of cattle plague, since many of the cows which recovered from this disease aborted afterwards.

284. The position in regard to cattle plague was far from satisfactory at the end of 1930. This disease was prevalent throughout the cattle-breeding areas of the country and outbreaks were so numerous and so widespread as to overtax the resources of the veterinary staff. This unsatisfactory state of affairs persisted during the first half of 1931. As the dry season advanced, the control of the disease became

even more difficult and, in several areas, lack of grazing led to an increase of the death rate. The congregation of large herds of cattle on permanent water supplies provided conditions highly favourable to the spread of the disease, and the segregation of infected herds frequently became impracticable. To add to these difficulties the small stock of cattle plague anti-serum left over from last year was exhausted before fresh supplies could be made available and, when these were forthcoming, they proved quite inadequate to meet the demand. An immediate improvement in the situation occurred with the opening of the rains when it was possible to distribute the cattle widely over their northern grazing grounds, and by the end of the year the disease was considered to be under effective control.

285. The losses suffered from cattle plague cannot be accurately ascertained, but it is estimated that at least 100,000 cattle succumbed to the disease in Upper Nile Province and that, in Southern Darfur, the Rizeigat tribe alone lost 20,000 head.

286. In the course of the year some 73,000 doses of cattle plague anti-serum were produced at the serum station at Malakal as compared with 56,000 doses in 1930. Preparations have been made to increase the output of serum still further next year. In addition to the serum, a quantity of vaccine was issued and successfully used to protect over 5,000 cattle against the disease.

287. Small outbreaks of contagious bovine pleuro-pneumonia, which were easily suppressed, occurred in White Nile, Khartum and Blue Nile Provinces, but this disease assumed more serious proportions than it did in 1930 in Darfur, Kordofan and Kassala Provinces, and in the Bor district, Upper Nile Province. 23,580 doses of vaccine were issued from the veterinary laboratory to meet the requirements of the veterinary staff in dealing with the various outbreaks to prevent them spreading.

288. No serious losses from disease were recorded among camels, sheep or goats. Losses from African horse-sickness were not abnormal, but an increase in the number of cases of epizootic lymphangitis among police ponies is noted in certain areas.

289. Rabies was definitely diagnosed in dogs in Blue Nile, Kordofan, Mongalla, Kassala, Darfur and Khartum Provinces, and in Port Sudan and Suakin. Every effort was made in the infected and threatened areas to reduce the number of ownerless and stray dogs to a minimum.

290. The poor demand for meat in Egypt was reflected in a further considerable decrease in the numbers of cattle and sheep exported, but the number of camels forwarded to Egypt was greater than last year. 1,700 tons of hides and skins were exported, but there was a fall in value of 33½ per cent. as compared with 1930.

291. Satisfactory progress continues to be recorded in the improvement of the breed of pony by the use of selected local sires and

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of imported Arab sires. Every encouragement was given to the cattle-owning tribes to eliminate from their herds all bulls unsuitable for breeding purposes.

#### CHAPTER X.—JUSTICE.

292. In accordance with the scheme for retrenchment, the senior British staff was reduced by three in the course of the year. In addition, the post of Registrar of the High Court was abolished, and one of the Syrian district judges was replaced by a native of the Sudan.

293. I regret to report the death of Mr. W. E. David-Devis, Judge of the High Court and Registrar-General of Lands, which took place in June.

294. Mr. T. P. Creed, a district judge and a member of the Political Service, has been seconded to the Iraq Government for a period of years.

##### *Criminal Courts.*

295. There is little that calls for comment in the returns of cases tried by the courts established under the Code of Criminal Procedure. There is a noticeable decrease in the number of summary convictions, the figures for 1930 and 1931 being 30,632 and 27,703 respectively. On the other hand, non-summary convictions at 2,241 for 1931 show an increase of about 200 on last year's figures. There were more cases of homicide and theft during the year under review. The decrease, therefore, in serious crime, noted in last year's report, has not been maintained.

##### *Civil Courts.*

296. The increase in the total number of suits dealt with by the civil courts continues: 10,023 cases were instituted in 1931, 674 more than in 1930. The increase, however, is practically confined to Khartum and Port Sudan, where it may be accounted for by the anxiety of small traders to collect their debts as quickly as possible in view of the prevailing financial uncertainty. Most other districts show substantial decreases and it is reasonable to infer that the native courts are relieving the courts established under the Civil Justice Ordinance of a considerable amount of work. The figures for the Court of Appeal compare with those of 1930 as follows:—

	1930.	1931.
Appeal Court appeals ...	15	21
Revisions... ..	73	56

##### *Bankruptcies.*

297. There were twenty-four bankruptcy petitions during the year, of which seventeen were made by the debtors. This is the

largest number of bankruptcy petitions ever recorded in the High Court, the previous highest being in 1921, when the number was seventeen. In the provinces bankruptcy work has been normal with the exception of the Blue Nile and Kordofan, where there has been an increase. The fees collected in the bankruptcy division of the High Court amounted to £E. 277·025 mms., compared with £E. 77·440 mms. for 1930.

*Registration of Companies.*

298. In March 1931 the Companies Ordinance was amended to provide that companies incorporated outside the Sudan carrying on business in the Sudan should deposit for registration certified copies of their articles of association or charter, a list of the directors and certain other particulars; in the case of public companies a copy of the annual balance sheet is also required. During the year twenty-eight companies incorporated in Great Britain and elsewhere filed the necessary particulars. No new companies were incorporated in the Sudan during the year.

*Registration of Partnerships.*

299. During the year six partnerships were registered in Khartum, one in Wad Medani, ten in El Obeid and thirteen in Port Sudan.

*Registration of Business Names.*

300. In April 1931 the Registration of Business Names Ordinance came into force. Up to the end of the year sixteen firms operating under a business name were registered in the Khartum registry.

*Registration of Trade Marks.*

301. The Trade Marks Ordinance referred to in the report for 1930 came into force on the 1st January, 1931. During the year 401 applications were received and £E.1,805 was collected in fees.

302. The introduction of the new legislation mentioned above has caused a large increase of work in the office of the official receiver, who is also registrar under these ordinances. The work has been carried out with expedition and thoroughness by Mr. Gerrard and his staff.

*Legislation.*

303. Twelve ordinances were passed during the year. Of these the two most important were the Companies Amendment Ordinance and the Registration of Business Names Ordinance, which have already been referred to. Of the remainder, five related to customs matters.

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*Administration of Estates.*

304. Forty-one new estates of the estimated gross value of £E. 8,286 were dealt with by the official administrator during the year.

*Non-Mahommedan Marriages.*

305. One hundred and eighty-five marriages were registered under the Non-Mahommedan Marriage Ordinance. Of this total 119 were registered in the Provinces of Bahr-el-Ghazal, Mongalla and the Upper Nile. These 119 marriages were celebrated by Roman Catholic priests, the parties to the marriages being natives of the Sudan.

*Registration of Lands.*

306. Comparative figures for the numbers of deeds registered and the amount of fees collected in the years 1930 and 1931 are as follows:—

	1930.		1931.	
	Deeds.	Fees.	Deeds.	Fees.
		£E.		£E.
Town lands ... ..	5,034	6,374	5,197	5,972
Agricultural lands ...	6,463	2,145	6,618	1,313
	11,497	8,519	11,815	7,285

These figures call for no special comment. The estimated receipts, £E. 6,000, were well exceeded. Tours by land registry officials in the White Nile Province have resulted in an increase in the number of transactions registered.

*Sub-Department of Lands.*

307. There is nothing of outstanding interest to report concerning the normal transactions in Government land throughout the country carried out under the direction of this department. In accordance with the now settled policy new schemes regulating the disposal of Government town land on leasehold tenure only were introduced at Wad Medani, El Obeid and Wadi Halfa and are working satisfactorily. In general, town development has been steady and on normal lines.

308. A total area of 33,268·993 feddans of land was taken up during the year for the Gezira irrigation scheme under the provisions of the Gezira Land Ordinance, 1927.



309. There has been a falling off in the demand for sites for the erection of petroleum installations, due no doubt to the depression in trade; a few sites, however, in some of the smaller towns have been allotted for the erection of stores for packed petroleum products.

310. The Government has acquired very little land for public purposes under its statutory powers and, in the few cases where this has been done, no difficulty was experienced in coming to an agreement with the owners concerned.

311. A concession for the growing of coffee was negotiated and the concessionaires have been given a thirty years' lease of approximately 600 feddans in the Yei district of Mongalla Province.

312. Operations at the Ras Rawayya and Dara salt-fields were carried on successfully as in past years, and the output of salt was satisfactorily maintained although somewhat less than last year—the export trade to Abyssinia having decreased.

*Mahommedan Law.*

313. The amount of work dealt with by the Mahommedan courts has materially decreased as appears from the following figures :—

	1930.	1931.
Cases ... ..	13,476	10,832
Estates ... ..	3,559	2,718
Marriages registered ...	21,019	14,109
Divorces registered ...	9,138	6,824
Fees ... ..	£E. 7,016	£E. 5,269

314. The Acting Grand Kadi attributes this decrease to the universal financial difficulties and to the reduction in the time spent on circuit by some of the courts. It will be necessary to curtail circuits still further this year owing to the amount of money involved in transport and travelling allowance. The decrease in the amount of fees collected is the normal consequence of the decrease of work. There is a large amount of fees outstanding, mainly in estates, the greater part of which must be regarded as irrecoverable. The scale of fees in the Mahommedan law courts and the manner of collecting the money have been under examination for some time past with a view to securing a measure of uniformity with the fees collected in other branches of the Legal Department. The amount of unclaimed estates paid into the Government Treasury during the year was £E. 809.

## CHAPTER XI.—EDUCATION.

*Northern Sudan.*

315. In the northern provinces the majority of the schools are Government institutions. The following table shows the number of pupils attending these schools in 1930 and 1931 :—

	1930.		1931.	
	Schools.	Pupils.	Schools.	Pupils.
Gordon College Higher School ...	1	555	1	534
Primary Schools ... ..	10	1,276	11	1,272
Elementary Schools (Kuttabs) ...	87	8,388	89	9,339
Training College for Elementary School-masters ... ..	1	55	1	44
Subsidised Native Schools (Khalwas) ... ..	768	28,669	786	29,356
Instructional Workshops ... ..	3	387	3	372
Girls' Training College ... ..	1	61	1	60
Girls' Elementary Schools... ..	21	1,905	22	2,045
Totals ... ..	...	41,296	...	43,022

*Gordon College Higher School.*

316. Five hundred and thirty-four boys attended this school in 1931 as compared with 555 in 1930. The slight decrease in numbers is accounted for by the acceptance of a slightly smaller number of boys into the 1st-year classes.

317. Mr. F. Addison, Chief Inspector of Schools and Conservator of Antiquities, retired on pension after twenty-four years' valuable service. Possessed of sound professional qualifications, he displayed excellent judgment in the performance of his varied duties. In the administration of the antiquities section Mr. Addison's industry in research and classification has proved of the greatest value to the Government.

*Primary Education.*

318. A slight expansion in primary schools was made by the opening of a primary class in Khartum North. The numbers attending primary schools remained practically unchanged.

*Elementary Vernacular Education.*

319. The number of pupils attending these schools (kuttabs) showed an increased of nearly a thousand. This was due to the addition of preparatory classes in certain schools.

320. A conference of kuttab headmasters was held in the autumn. Many useful suggestions were put forward and discussed and steps have been taken to implement those finally adopted.

321. The subsidised village schools (khalwas) increased in number from 768 in 1980 to 786 in 1981, and the attendance from 28,669 to 29,536. 673

*Girls' Education.*

322. The attendance at the twenty-two girls' elementary vernacular schools increased from 1,905 to 2,045 in 1981. The demand for more girls' schools in the more advanced areas of the Northern Sudan is being met gradually. A new school was opened in Berber Province. No expansion of the girls' training college at Omdurman took place during the year.

*Scouting.*

323. There were thirty troops in the country with a total strength of 1,011 officers and scouts. Encouraged by the formation of a scout council and local association in Khartum, outside interest in the movement has grown, particularly in the proposal to form troops for boys in non-Government schools.

324. The two girl guide companies, attached to the Church Missionary Society's girls' school at Atbara and the Unity High School for girls in Khartum, were enthusiastically supported during the year.

*Non-Government Schools.*

325. The following table shows the number of non-Government schools and pupils in the Northern Sudan :—

Name.	Boys.	Girls.	Total.
Church Missionary Society (11) ... ..	115	807	922
Roman Catholic Mission (4) ... ..	211	248	459
American Mission (4) ... ..	399	371	770
Hellenic Community (4) ... ..	187	130	317
Egyptian Coptic (4) ... ..	704	261	965
Armenian Community (1) ... ..	5	5	10
Unity High School for Girls (1) ... ..	...	27	27
Diocesan Schools for British children (3) ..	15	19	34
Native Primary School (1) ... ..	178	...	178
Syrian Catholic School (1) ... ..	33	33	66
Private Schools (3) ... ..	88	14	102
Evangelical School (1) ... ..	12	6	18
	1,947	1,921	3,868

326. The Church Missionary Society experienced a year of financial stringency and various economies in expenditure on education services were enforced. Good progress, however, was made and the number of pupils attending the schools increased. New buildings were made available for the school at Atbara and additions

and improvements carried out to the school premises at Wad Medani. The Roman Catholic Mission increased the number of pupils in their schools and a new school for girls was opened in Omdurman. The attendance at the Unity High School for Girls fell considerably and a reduction in the school's expenditure proved necessary. The schools of the American mission and of the various communities continued to be well attended.

*Southern Sudan.*

327. There are thirty-two elementary vernacular schools for boys and, though no new schools were opened, the attendance rose from 2,024 in 1930 to 2,374 in 1931. Two new girls' schools were opened during the year and 162 pupils attended the six schools. Nearly 200 girls also attended classes attached to the boys' schools.

328. The numbers in the three intermediate schools increased to 237. The boys under instruction in the three trades' schools numbered 103, and the normal school at Torit, opened for the purpose of training elementary vernacular school teachers, had forty pupils.

329. Further progress was made by missions in the establishment of "bush" schools. These numbered 189 and the attendance exceeded 4,000.

330. An extensive building programme was undertaken by the missions throughout the year. Improvements and enlargements were made to existing schools and additional buildings, of a permanent nature, were erected.

331. The fifth educational conference for Mongalla Province was held at Juba on the 14th April and the many subjects discussed included that of employment and rates of pay of boys trained at mission schools.

332. Work on the production of grammars and vocabularies and of text-books in the group languages was continued. Several translations await the approval of the special Text-Books Committee.

333. The Resident Inspector, Mr. N. B. Hunter, retired to pension in September. Transferred from the Political Service in 1927, Mr. Hunter was the first resident inspector in the southern provinces, where both he and Mrs. Hunter rendered valuable service to the cause of education.

*Wellcome Tropical Research Laboratories.*

334. The Director, Major R. G. Archibald, C.M.G., D.S.O., writes as follows: "It is with great regret that I have to record the deaths of Mr. A. E. Berlyn in March and Mr. R. H. K. Peto in August. Mr. Berlyn was Lecturer in Biology and during his three years of service had shown exceptional zeal and ability in his duties. Mr. Peto occupied the post of chemist at the Gezira Research Farm

and showed great promise as an original investigator with a flair for devising special methods and apparatus. 675

335. "By reason of his appointment to a post in the Cairo public health laboratories, the bacteriological section lost the services of Dr. D. Riding in October. During his tenure of office as Government bacteriologist Dr. Riding carried out a number of original investigations and also proved himself a very able pathologist. His collection of pathological material, carefully indexed, has enhanced considerably the value of the pathological museum, and as a lecturer in pathology he did much to raise the standard of pathological teaching in the Kitchener School of Medicine."

*Bacteriological Section.*

336. The route examinations have exceeded those of past years and totalled 11,836, comprised as follows: Blood examinations, 1,955; faeces and urine, 2,069; general bacteriology, 3,439; histopathological examinations, 336; serum tests for syphilis, 3,911; suspected rabies material, 64; water tests, 62. In addition, several thousands of *bullinus* and *planorbis* molluscs, collected weekly from the Gezira irrigation canals, have been examined for the cercarial stages of the bilharzial parasite.

337. Vaccines have been prepared on a larger scale than in previous years and the following quantities issued: Typhoid-paratyphoid, 16,385 c.cs.; anti-rabic, 21,065 c.cs.; meningococcus, 12,050 c.cs.; cholera, 3,200 c.cs.; gonococcus, 2,440 c.cs.; staphylococcus aureus, 725 c.cs.

338. The bacteriological laboratory at Port Sudan has carried out useful work. The routine examinations totalled 1,990, represented as follows: Blood examinations, 498; serum tests for syphilis, 177; faeces and urine, 1,011; general bacteriology, 304.

339. Investigations on bilharzia have continued and some important data have been obtained. The technique evolved last year for studying the larval trematodes of mulluscs have proved invaluable and has enabled the completion of a descriptive study of the cercariæ of *B. hamatobium* and *B. mansoni* as well as other larval trematodes of bird or animal hosts found in naturally-infested *bullinus* molluscs. Failure to infest some of the latter with the larval stages of the human bilharzial worm indicates the possibility of making use of animals or birds infested with certain trematodes as accessory agents for the control of bilharzia in localised areas. Experimental work on control measures for this disease has been continued mainly on the rational lines of attacking the intermediate molluscan host by means of chemical agents non-toxic to man or animals. The results of numerous experiments have proved the efficiency of a coal-tar derivative with the trade name of "Prince Regent," which, employed in a dilution of 1 in 100,000, will diminish considerably the costs of chemical treatment of irrigation canals in the Gezira. Further work,

moreover, has proved the value of crude commercial salt. In the strength of a 1 per cent. solution commercial salt is lethal not only to the miracidial and cercarial stages of the bilharzial worm, but also to intermediate bullinus and planorbis molluscan hosts.

340. A lengthy investigation on the lactose fermenting organisms present in the faeces of Europeans and natives has unexpectedly shown that only 65 per cent. of them reduced nitrates to nitrites, 63 per cent. were methyl red positive, 61 per cent. indole positive, while 21 per cent. gave a positive Koser and 8 per cent. a positive Voges-Proskauer reaction. These results have proved the limited merits of the nitrite methyl red, and indole reactions as discriminating tests for organisms of human investigation should be invaluable for assessing the sources of origin of lactose fermenters in water supplies of questionable purity.

341. The summer months provided an opportunity for investigation of an extensive epidemic of cerebro-spinal meningitis in the Blue Nile and Khartum Provinces. Serological tests proved that the causal organism was the type II Meningococcus and the advantage was taken of carrying out a hitherto untried experiment of prophylactic inoculation on a large scale. A vaccine representing 2,000 million meningococci per 1 c.c. was prepared from nine local strains of the type II Meningococcus and administered subcutaneously in a dosage of 1 c.c. to some 12,000 natives. By marking with silver nitrate the thumb nail of all recipients of the vaccine it was possible to record the number of cases of cerebro-spinal meningitis that occurred amongst the inoculated and uninoculated. A critical analysis of the results, allowing for statistical errors, showed that a single prophylactic dose of meningococcal vaccine conferred little or no immunity against the disease. In the event of a subsequent epidemic the effect of a double prophylactic inoculation appears worthy of a trial.

342. An important investigation initiated by Dr. T. F. R. Hewer in the latter part of the year dealt with the changes occurring in the cerebro-spinal fluid in treated cases of syphilis. The results, based on a large number of cases, show that certain synthetic arsenical preparations, commonly employed in syphilis therapy, compare unfavourably with the salts of bismuth and mercury. In the course of this investigation some data of significance have been obtained on the cerebro-spinal fluid pressures in syphilis.

343. Research on blackarm disease of cotton was concentrated mainly on the problems connected with the epidemiology of the disease and some new facts have been established regarding the resistant properties of *P. malvacearum* to heat, sunlight and desiccation.

344. The serological test devised last year in these laboratories for differentiating *P. malvacearum* from allied organisms present in soil, water, and on plant tissues, has proved invaluable in the numerous investigations on blackarm disease of cotton.

*Chemical Section.*

345. The samples examined in the Khartum and Atbara laboratories totalled 6,871; in the Gezira laboratory the examinations mainly consisted of soil analyses and totalled 51,853.

346. Investigations on the food value of various fodder grasses from Kordofan, Kassala, Darfur and the White Nile Provinces have shown (a) a low mineral content, (b) a deficiency in protein, (c) a low phosphorus content, in the grasses examined. Compared with good pastures in Europe, the most striking deficiency appears to be nitrogen, a deficiency consequent on the lack of nitrogen in the arid soils where these grasses abound.

347. Work in conjunction with the Gezira laboratory has continued on various soil problems, including (a) soil improver trials; (b) residual effects of gypsum; (c) movement of salt under irrigation; (d) physical properties of irrigated and fallow lands; (e) sulphate content of soil; (f) total nitrogen of the soil; (g) moisture content. The results of these investigations will be embodied in a separate report issued by the Controller, Gezira Agricultural Research Service.

348. The possible chemical aspect of the disease known as "leaf-curl" was explored. A number of investigations on the mineral content of healthy cotton leaves and leaves attacked with leaf-curl showed no deficiency in any major mineral element as an underlying cause of leaf-curl. Leaves examined for starch and pentosen content afforded no positive result. Unhealthy leaves, however, showed a diastatic activity four times greater than healthy leaves. Soil investigations in leaf-curl plots provided negative evidence that soil factors played a part in the etiology of the disease.

349. The Atbara laboratory has performed valuable work for the railways. Apart from the routine examinations of water, coal, metals and cements, special investigations have been carried out on (1) timber impregnation; (2) strength of cement and mixtures; (3) deterioration of coal on storage; (4) spontaneous combustion of coal; (5) boiler corrosion; (6) water softening.

*Entomological Section.*

350. As the result of another serious plague of locusts the work in the Khartum laboratory has centred mainly on locust research. The possibility of destroying adult locusts on the wing has been explored and a method devised for using finely sifted sodium arsenite as a poison dust. The small-scale experiments with sodium arsenite appear promising and worthy of trial on a large scale. Arrangements for carrying out the latter have been made with the co-operation of the Royal Air Force.

351. A study of certain species of Sarcophagid flies parasitic on locusts has been undertaken with the object of ascertaining the possibility of increasing their numbers sufficiently to prove effective in locust control.

352. At the request of a commercial firm measures for the control of a bruchid *pachymerus pallidus*, found in senna pods, have been the subject of investigation.

353. Progress has continued in the work of classifying the specimens in the collections. More than 1,300 specimens were sent to the Imperial Institute of Entomology for identification, and a total of 930 determinations were received, representing 389 species. Of these twenty-two were new to science and a further sixty-nine species were unrepresented in the British Museum (Natural History) collections.

#### *Geological Survey.*

354. Very little fresh ground was explored and most of the work related to water supplies. Numbers of samples from wells and borings sunk in various parts of the Sudan were examined and reported on. Some well-digging in the Gedaref region was begun by the geological survey and before the end of the year water had been reached in two new wells. Nearly 800 samples were examined and reported on from borings along the line of the proposed canal of the Veveno project in the Upper Nile Province. Gebeit and Wadi Ohaff mines in Kassala Province were inspected and plane table surveys made of the concession areas and surroundings. Many other questions regarding well-sites, soils, mineral deposits, &c., have been dealt with.

355. In the report for 1930 mention was made of the selection of the Government geologist to attend a conference on meteorological questions. The conference decided to arrange pilot balloon observations; these have been carried out since March 1931. The results have been of considerable value to the Imperial Airways pilots and also to the Royal Air Force.

#### *Antiquities Service.*

356. An important bequest of historical relics was received from General Sir Herbert Jackson Pasha, whose death is referred to elsewhere in this report.

357. Field work was carried on at Kawa in Dongola by Professor F. Ll. Griffith with satisfactory results as regards museum material. Commander Wheeler, of the Harvard-Boston expedition, started work near Halfa in November at Mirgiosa, a fortress dating from the twelfth dynasty. It was decided to adapt a house in Khartum as a museum to show certain collections not hitherto exhibited. The collections of birds and antiquities at the Gordon College are to remain as they are.

#### *Natural History Museum.*

358. The number of visitors to this museum increased by over 100 as compared with the preceding year. No additions have been made to the exhibits of mounted birds owing to the lack of space. A large number of bird-skins, snakes and scorpions have, however, been



added to the collection. The museum has been fortunate in that Dr. N. L. Corkill, of the Sudan Medical Service, has kindly undertaken a study of the snakes in the Sudan. The typescript of the second and final part of the catalogue of Sudan birds has been published. Four bird skins were examined and determined by officials of the British Museum (Natural History) and two bird skins were presented to that museum. Apart from the members of the Entomological Section, contributors to the natural history collections numbered forty-nine.

## CHAPTER XII.—PUBLIC HEALTH.

### *General Health.*

359. The health of the Sudan was affected during the first half of the year by epidemics of relapsing fever and of epidemic cerebro-spinal meningitis in several provinces. These epidemics died down before the end of June and the second half of the year was unusually healthy. In Kordofan and the White Nile Provinces epidemic malaria was severe following unusually heavy rains, but in the thickly populated Blue Nile Province, on the other hand, the rains were below the average and the incidence of epidemic malaria was correspondingly diminished.

### *Health of Officials.*

360. The health of British officials showed a slight deterioration on that of last year, the average number of days lost per British official being 2·46 as against 1·7 last year.

361. The health of Egyptian officials also showed a slight deterioration, from 1·2 days in 1930 to 1·3 days in 1931.

362. The health of Sudanese officials remained constant at 1·7 days lost per Sudanese official. The following table shows the average number of days lost per official for officials of various nationalities, the figures in the first column show the approximate strength of the establishment on the 31st December, 1931 :—

Nationality.	Number of Officials Employed.	Total Placed on Sick List.	Number of Days' Sickness.	Average Days Sick.		Died.	Invalided.
				For all Officials.	For those who were Sick.		
British ... ..	930	231	2,287	2·46	9·9	3	5
Sudanese ... ..	2,869	539	4,756	1·7	8·8	13	7
Egyptians ... ..	1,131	166	1,470	1·3	8·9	1	11
Syrians ... ..	185	21	213	1·1	10·0	...	...

363. The numbers of days lost through sickness by British, Sudanese and Egyptian officials in various provinces were :—

Province.	British.	Sudanese.	Egyptian.
Bahr-el-Ghazal ... ..	3·3	1·4	4·8
Berber ... ..	1·1	0·4	0·4
Blue Nile ... ..	1·4	1·0	2·2
Darfur ... ..	2·9	0·1	5·8
Dongola ... ..	1·8	2·0	0·7
Fung ... ..	1·7	1·3	2·3
Halfa ... ..	0·7	1·9	1·6
Kassala ... ..	0·8	2·9	0·7
Kordofan ... ..	1·7	0·9	1·0
Mongalla ... ..	1·7	6·3	3·9
Port Sudan and Suakin ...	1·8	1·7	0·9
Upper Nile... ..	3·7	1·2	1·0
White Nile... ..	1·0	2·3	2·0

364. From this table it appears that the Upper Nile and Bahr-el-Ghazal proved the most unhealthy provinces for British officials. The sickness rate amongst Egyptians was, on the whole, greater in the Southern than in the Northern Sudan, whereas that of the Sudanese—with the exception of Mongalla—was more evenly distributed throughout the country.

*Health of Khartum, Khartum North and Omdurman.*

365. The health of these towns has maintained a satisfactory standard. There has been some increase in intestinal diseases. Efforts have been made to improve and increase the latrine accommodation for houses in Omdurman and the suburbs of Khartum and Khartum North, but these efforts have been limited by the prevailing financial stringency. The outbreak of cerebro-spinal meningitis in the early part of the year placed a heavy strain on the sanitary staff. The increased anti-malarial work in the rural district continues to exert a beneficial effect on anti-malarial work in the three towns.

*Progress of Medical Work.*

366. In spite of endeavours to limit the number of in-patients admitted to hospitals by treating cases wherever possible as out-patients, a further increase of in-patients is recorded. A considerable proportion of this increase is composed of patients treated at undieted hospitals and dispensaries. The following table shows the increase of in-patients, out-patients and operations :—

Year.	In-patients.	Out-patients.	Operations.
1930 ... ..	49,911	3,840,923	6,110
1931 ... ..	59,736	4,044,439	6,798

*Cerebro-Spinal Meningitis.*

367. A severe outbreak of this disease occurred in Khartum province. The first cases occurred in February and epidemic conditions continued until June. Minor epidemics also occurred in the Blue Nile and Upper Nile provinces. Mongalla province, which has suffered from severe epidemics for the last four years, was this year free from any epidemic outbreak.

*Diphtheria.*

368. The incidence of endemic diphtheria in Khartum and Omdurman was considerably increased. A serious epidemic occurred at a village in an isolated district of Halfa province, which resulted in the death of thirty-two children before the disease was reported and medical assistance could be sent.

*Relapsing Fever.*

369. The epidemic of relapsing fever which had broken out in the Blue Nile province in August 1930 continued during the first five months of 1931. The outbreak ceased abruptly in June. Minor epidemics occurred in Khartum and Darfur.

*Small-Pox.*

370. The epidemic of small-pox which had swept Darfur during the last three years and which had caused 1,293 recorded deaths, came to an end in the spring of this year. The havoc wrought by successive epidemics of relapsing fever and small-pox previous to the existence of an organised medical service demonstrates the need for such an organisation even among primitive people, and, in particular, in border provinces. Darfur may now be said to have the essentials of an organised medical service. The incidence of small-pox in the rest of the Sudan is very low.

*Endemic Diseases.**Blackwater Fever.*

371. Forty-three cases of the disease were reported during 1931, with twenty deaths. This compares with twenty cases and six deaths in 1930, and thirty cases with eight deaths in 1929. The race incidence is as follows :—

	Cases.	Deaths.	Locality.	
British	... 3	2	Bahr-el-Ghazal	... 7
Syrians	... 1	1	Blue Nile	... 2
Greeks	... 5	...	Darfur	... 11
Italians	... 4	1	Kassala	... 1
Egyptians	... 1	1	Khartum	... 1
Sudanese	... 29	15	Kordofan	... 6
			Mongalla	... 7
			Upper Nile	... 7
			White Nile	... 1

372. All the twenty-nine Sudanese cases were natives of the northern Sudan and thirteen of these contracted the disease south of the twelfth parallel of latitude. Malignant malaria is at present a rare disease in the southern negroid population. Of the fourteen non-Sudanese cases only one occurred north of the twelfth parallel. Thus, of the total of forty-three cases, twenty-six occurred south of the twelfth parallel, whereas last year eleven out of twenty cases occurred north of the twelfth parallel.

*Dysentery.*

373. A total of 2,209 cases were recorded. The following table shows the percentage of admissions to hospital for amœbic and bacillary dysentery in relation to the total of admissions to hospitals for all causes :—

—			1926.	1927.	1928.	1929.	1930.	1931.
Amœbic	...	...	2·47	3·29	3·40	3·02	2·68	3·28
Bacillary	...	...	1·23	1·21	0·80	0·75	0·37	0·41
Total	...	...	3·70	4·50	4·20	3·77	3·05	3·69

374. Bacillary dysentery is essentially a disease of the towns and of areas such as the Gezira, where the native population has been brought much in contact with the foreigners. The decrease in the incidence of this disease would appear to be due to more complete sanitary organisation in the towns and the irrigated area of the Gezira.

*Kala-Azar.*

375. The total number of cases reported for 1931 was eighty-four, this compares with fifty-six for 1930. Of these eighty-four cases, forty-eight were reported from the Kapoeta district, the recently occupied endemic area in the south-east of Mongalla Province, leaving a total of thirty-six new cases for the rest of the Sudan. Of the fifty-six cases reported in 1930, fourteen cases came from the Kapoeta district and forty-two from the rest of the Sudan. The figures of the new kala-azar cases for the Sudan, excluding the Kapoeta district, for the last five years are :—

	Cases.				
1927	...	...	...	...	21
1928	...	...	...	...	42
1929	...	...	...	...	95
1930	...	...	...	...	42
1931	...	...	...	...	36

376. The heavy increase in the number of reported cases in 1928 and 1929 is in part attributable to the opening up of the Gedaref and

Roseires endemic areas to medical work and the recognition of cases which would otherwise have remained unreported. Out of a total of eighty-four infected cases in 1931, twenty-eight were among natives of the endemic areas and fifty-six were among persons who were born and bred outside the endemic areas.

377. It would seem that kala-azar is endemic in the foot-hills and plains along the whole Sudan-Abyssinian border. Immigrants, whether Abyssinians from the plateau or Sudanese from the plains, are more susceptible to the disease than the local inhabitants. There are definite localised foci of the disease in certain areas, and these may be so unhealthy as to be known to, and avoided by, the local natives. Despite the fact that an area may have been thus uninhabited for many years, cases immediately occur if it is reoccupied. It seems that an alternative host to man carries on the infection in his absence. A few cases also occur sporadically throughout the Sudan outside the endemic areas.

#### *Tuberculosis.*

378. Six hundred and eighty-four cases of tuberculosis were admitted to hospital in the course of the year. Of these eighty were foreigners and eleven had contracted the disease in Egypt. Thus the number of cases of tuberculosis contracted in the Sudan was 593. It is difficult to get a reliable indication of the increased incidence or retrogression of this disease, but a useful indication is afforded by the ratio of admissions to hospital for tuberculosis to total admissions. The value of this ratio may be vitiated in individual years by epidemic diseases such as malaria or dysentery, but over a period of years this ratio should afford a fair indication. The following table shows the number of admissions for all tuberculosis cases since 1922 and their percentage in relation to total admissions :—

Year.	Pulmonary.		Non-Pulmonary.		Total.	
	Admissions.	Percentage.	Admissions.	Percentage.	Admissions.	Percentage.
1922...	140	0·82	94	0·56	234	1·38
1923...	123	0·72	128	0·74	251	1·46
1924...	159	0·80	131	0·66	290	1·46
1925...	135	0·62	157	0·84	292	1·46
1926...	175	0·80	196	0·91	371	1·71
1927...	226	0·86	178	0·69	404	1·55
1928...	260	0·82	237	0·75	497	1·57
1929...	302	0·65	322	0·70	624	1·39
1930...	480	0·95	300	0·61	780	1·56
1931...	390	0·65	294	0·49	684	1·14

379. It would appear from this table that no increase of pulmonary tuberculosis is taking place in the Sudan as a whole. A study of the

percentage rates for pulmonary tuberculosis in the individual provinces suggests that Halfa is most heavily infected with a percentage of 2·06, Dongola with 1·80, the Fung with 1·26, and Kassala provinces with 1·20: the next is Khartum with 0·87 and the others are considerably lower. But it must be noted that in Halfa 54 per cent. of the cases contracted the disease in Egypt. In Dongola four out of twenty-three cases contracted the disease in Egypt. In the Fung Province a sixth of the cases were foreigners and were believed to have contracted the disease abroad. In Kassala 56·1 per cent. of the cases were foreigners and almost certainly contracted the disease abroad.

#### *Bilharzia.*

380. Considerable progress in reducing the incidence of bilharzia is recorded from Dongola Province, which is heavily infected. On the other hand, in the Gezira, where great efforts have been made by the medical staff to prevent bilharzia becoming endemic in the irrigated area, evidence of the infection of the canals in certain areas is more definite than it has been previously.

#### *Leprosy.*

381. Further information has been obtained as to the incidence and distribution of leprosy in the Sudan. In the Northern and Central Sudan considerable progress has been made in securing a measure of relative isolation in their own villages for the small number of lepers that exist, in ensuring their regular supervision, and in many cases their treatment at neighbouring dispensaries. In the heavily-infected areas in the extreme south the leper settlements are being continued, while every effort is being made to find and train suitable local natives with a view to opening a network of dispensaries which will eventually take over the work of the large settlements.

#### *Malaria.*

382. In the Blue Nile Province the rains were light and the incidence of epidemic malaria was below the average; this diminution of epidemic malaria reacted favourably on endemic conditions and the lower material incidence was maintained to the end of the year. In Kordofan and the White Nile Provinces the rains were above the average and epidemic conditions were accentuated. In the Northern Sudan the malarial incidence was below the average.

#### *Rabies.*

383. Three deaths from hydrophobia occurred amongst natives of the Sudan. Animal rabies may now be said to have established itself in all the provinces of the Sudan, with the exception of Dongola, Halfa and the Upper Nile Provinces.

*Sleeping Sickness.*

384. In spite of the fact that epidemic conditions still prevailed in Uganda territory, some 30 miles across the border, no new cases occurred in Mongalla Province; this is the seventh year since any indigenous cases have occurred in this province.

385. Sixty-one new cases have occurred in Tembura district of the Bahr-el-Ghazal Province as against thirty-seven in 1930 and eighteen in 1929. This increase serves to emphasise how quickly and inevitably any relaxation of sleeping sickness precautions results in an increase of the disease in a district where heavily inflicted endemic areas exist just across the border.

*Kitchener School of Medicine.*

386. The Registrar, Dr. F. E. Anderson, was transferred to Kordofan and was succeeded by Dr. D. R. Macdonald. Thirty-three students were under training during 1931, ten in the first year, eight each in the second and third, and seven in the fourth. In the first-year examinations ten students were examined in chemistry, physics and biology. Eight reached the required standard. The two unsuccessful candidates were advised not to continue the medical course. In the second-year examinations eight candidates were examined in anatomy and physiology. All reached the required standard. For the final examinations the school was fortunate in obtaining the services of Major A. G. Biggam, Professor of Clinical Medicine, and Mr. A. K. Henry, Professor of Clinical Surgery at the Egyptian University, Cairo, as assessors. Six candidates only were examined, one candidate being referred for a year on account of ill-health. The candidates were examined in medicine, surgery, pathology, midwifery, gynaecology, public health, forensic medicine, psychiatry and pharmacy. All were successful and will be posted to the larger hospitals as house-surgeons and house-physicians for a period of one year on probation.

387. The Warden of the Gordon College was appointed an *ex-officio* member of the Selection Committee of the Kitchener School of Medicine.

*Midwifery Training School.*

388. Twenty midwives were taken into training at the beginning of the year. They were selected from the following provinces:—

Berber	...	...	2	Halfa	...	...	3
Darfur	...	...	2	Kassala	...	...	2
Dongola	...	...	6	Kordofan	...	...	5

389. The midwives completed their course of training and were examined in June by a board composed of the Senior Physician, Khartum Hospital, and the Senior Medical Inspector in charge of

Omdurman Hospital. All the candidates successfully passed their examination, were granted a certificate of proficiency and returned to practice in their own villages. Up to date 153 midwives have been trained, of these 108 are practising as follows :—

Berber Province ... ..	13
Blue Nile Province ... ..	8
Darfur Province ... ..	7
Dongola Province ... ..	16
Fung Province ... ..	3
Kassala and Red Sea Hills ... ..	4
Halfa Province ... ..	4
Khartum Province ... ..	38
Port Sudan and Suakin... ..	3
White Nile Province ... ..	12

390. In November and December the Inspectress of Midwives and the Matron inspected the midwives, both trained and untrained, in Berber and Kassala Provinces. They selected twenty-three midwives for training in 1932. Three of these undertook to defray their own expenses.

#### *Nurses' Training School.*

391. Twenty-six probationers were under training in 1931. Of these, eleven had reached a year's training in 1930, and fifteen were appointed in January 1931. Five probationers were discharged as unsuitable for training. Nine probationers successfully passed their examination in December 1931, two were deferred for three months' additional training and ten, who have completed one year's training, will continue their training in 1932.

#### *Wadi Halfa Quarantine.*

392. A total of 357 Egyptian labourers were dealt with at the Wadi Halfa quarantine station, as against 4,075 in 1930. Of these, nineteen were rejected, eighteen being infected with bilharzia and one was blind.

#### *Port Sudan Quarantine.*

393. The health of the port has been good, no epidemic outbreaks have occurred in Port Sudan or its neighbourhood. Suez, Aden, Massowah and other Red Sea ports have been clear throughout the year. Only eleven cases of plague were reported from Port Said, the last case having occurred in December. No abnormal mortality of rats was discovered in any ship visiting the port. In September, owing to an outbreak of cholera in the Persian Gulf, certificates of vaccination against cholera were exacted from all passengers from these ports who wished to enter the Sudan. The import of dates from Bombay, Basra and ports of the Persian Gulf



was also forbidden. In December all quarantine restrictions against Basra were withdrawn, but the restriction against the other ports remained in force at the end of the year. 687

994. The following table shows the number of vessels arriving at Port Sudan for each of the last four years :—

—	1928.	1929.	1930.	1931.
Ships arriving ... ..	932	885	944	879
Sambuks ... ..	633	526	529	530
Men-of-War, British ... ..	12	17	20	18
"  "  French ... ..	4	5	9	4
"  "  Italian ... ..	4	6	3	1
Ships quarantined ... ..	12	...	...	...
Persons isolated from ships ... ..	2	...	2	...

995. Fifteen people were admitted to the quarantine hospital and all were natives of the Sudan.

#### *Suakin Pilgrim Quarantine.*

996. Thirty-nine of the ninety-one ships calling at Suakin were pilgrim ships. A total of 2,414 pilgrims left Suakin on the 1931 pilgrimage as compared with 4,791 in 1930. This decrease of approximately 50 per cent. corresponds with a fall in the total number of pilgrims of all nationalities, which decreased from 120,000 in 1930 to 64,000 in 1931. The fall in the number of West African pilgrims was greater than that of Sudanese pilgrims. The West African pilgrims earn the money required for the expenses of the pilgrimage in the cotton-fields of the Gezira, and to a less extent in those of the Gash and Tokar. The pilgrimage was at first declared clean, but on the 25th May, owing to the discovery at Tor of a certain number of vibrio carriers, four of whom were carriers of agglutinating vibrios, the pilgrimage was declared suspect. This did not affect the general conduct of the pilgrimage, but it enabled pilgrims to be detained at Tor for a further period to enable more detailed examinations to be carried out. As a result of the report of these cases of vibrio carriers, thirty-seven pilgrims returning to Suakin on the 27th May were reinoculated against cholera. In view of later and fuller information this reinoculation was discontinued. All pilgrims before leaving for the Hejaz were vaccinated against small-pox and received a single inoculation against cholera. They all paid for a return ticket by steamship, and paid a deposit for quarantine charges in the Hejaz and on their return to Suakin. No pilgrims left or returned by sailing vessel. At the end of the year it was reported that a large number of Nigerian pilgrims were stranded at Jedda in a destitute condition and without means to return to the African coast. Arrangements were accordingly made

to repatriate these people, and all who had sailed for the Hejaz from Suakin, numbering 110, were sent to that port, while some 500, who had sailed from Massowa, were given return passages under arrangements made with the assistance of the Italian authorities. The general health of the returning pilgrims was good, and there were only ten admissions to the quarantine hospital; an admission rate of 0·4 per cent. of the total pilgrims, as compared with 1·1 per cent. in 1930. There were four deaths, two from small-pox, one from pneumonia, and one of an old man from bronchitis. Seven cases of small-pox were admitted to the isolation hospital, and of these two died within three days of admission, both with the hæmorrhagic type of small-pox. In these two fatal cases pustules had appeared before they arrived in the quarantine station, but the remaining five developed the disease after admission. The following table gives a comparison of the numbers of pilgrims leaving from and returning to Suakin in the last three years:—

Year.	Sudanese.				West Africans.				Grand Total.
	Men.	Women.	Children.	Total.	Men.	Women.	Children.	Total.	
1928 ... ..	703	214	15	932	1,238	878	189	2,305	3,237
1929 ... ..	933	363	28	1,324	1,226	1,011	305	2,542	3,866
1930 ... ..	1,017	410	9	1,436	1,613	1,273	469	3,355	4,791
1931 ... ..	668	279	14	961	767	474	212	1,453	2,414
Returning pilgrims:									
1928 ... ..	684	254	10	948	960	724	172	1,856	2,804
1929 ... ..	961	375	33	1,369	1,156	915	242	2,313	3,682
1930 ... ..	930	284	4	1,218	1,489	1,038	344	2,871	4,089
1931 ... ..	593	266	13	872	656	538	228	1,422	2,294

Pilgrims returning by sambuks:—

1928	...	...	...	...	...	20
1929	...	...	...	...	...	...
1930	...	...	...	...	...	...
1931	...	...	...	...	...	...

#### *Medical Work of Missions.*

397. The Church Missionary Society's hospital was improved by the addition of a new out-patient department, a new twelve-bedded ward and an isolation block, for which funds had been allotted from the Lee Stack Indemnity Fund. The British staff consists of three doctors, of whom one is a lady, three nurses, a dispenser and a housekeeper. The number of attendances showed

an increase of over 7,000 over the preceding year, and 300 operations were performed, of which number 120 were minor operations. The leper hospital attached to this mission was disbanded in the course of the year, and the patients, according to the degree of infection, were either sent to their homes for treatment by local doctors or sent to other colonies. The attendances at the dispensary maintained by this mission in the Abu Rof quarter of Omdurman also showed an increase, and growing interest is taken by native mothers in the child welfare centre attached to the dispensary. The American mission at Khartum North have a dispensary in connexion with their boarding school for girls. \*

398. In the Southern Sudan the Church Missionary Society's hospital at Lui (Mongalla Province) treated over 3,500 in-patients and some 26,000 out-patients during the year; 120 lepers were cared for in a colony attached to the hospital. The same society opened seven dispensaries in the Southern Sudan, which are staffed by young natives, trained at the mission school and hospital. The dispensaries maintained by the Sudan United Mission in the Upper Nile Province and in Kordofan, and by the Catholic Mission in different centres in the south, also continued to perform useful work.

#### CHAPTER XIII.—PROVINCES.

##### *Bahr-el-Ghazal.*

399. Certain reorganisations were effected during the year. Tambura and Yambio districts and the western half of Meridi district (Mongalla Province) were amalgamated, with headquarters at Yambio, thus bringing the whole Zande tribe under one administration.

400. The Arab, Fellata and negroid population of the western district, numbering over 1,000 taxpayers who had migrated during past years from Darfur, were returned to that province. An uninhabited belt, some 50 miles wide, was thus ceated on the Bahr-el-Ghazal side of the inter-province boundary and Kafia Kingi station was abandoned. In the central and western districts scattered portions of tribes were collected into tribal areas to facilitate both direct and native administration.

401. Public security was well maintained; petty offences showed an increase because shortage of food brought the people into the towns. Feuds between Dinka clans caused the usual fights and in some cases province police had to be used to restore order, but no serious clash occurred. A system of releasing prisoners from the province prison on guarantee proved successful. Lack of money caused many men to emigrate to northern provinces in search of work.

402. The poor crops of 1930 caused a shortage of food amounting in some areas almost to famine conditions; grain had to be imported from the north for sale. Good rains largely counteracted the damage done by locusts, which were present throughout the year; their

depredations were only serious in parts of the central, eastern and Rumbek districts. Efforts were made with considerable success to encourage those tribes who only grow millet for their food supply to plant cassava, sweet potatoes and maize.

403. The number of cattle exported to the north again decreased owing to low prices. Exports overland to Kordofan Province incurred a loss, while those by river to Omdurman showed little profit owing to heavy incidental expenses. The small trade with Mongalla Province and the Belgian Congo showed better results. Rinderpest spreading from the Upper Nile Province caused heavy losses along the eastern border. The hide trade, which with normal prices should bring much money into the province, practically ceased. 23,806 rotls of chillies were exported from the southern area. Native-made chairs, baskets and carved wooden animals found a ready sale in Khartum, the demand exceeding the supply.

404. Out of a total poll and hut tax of £E. 13,378, £E. 10,769 was collected in cash, the latter figure showing an increase of £E. 1,613 over 1930. This increase is due to the completion of the registration of poll taxpayers by the issue of discs, and to the new system of collecting the Dinka hut tax through the leaders of their Gols, a family division recognised by the tribe. Revenue for the year was £E. 22,325 and expenditure £E. 43,961.

405. Some advance has been made in native administration and chiefs are gradually developing more authority. Their courts have generally improved, but they still require the close supervision of district commissioners, especially in the award of punishments. Forty-six courts dealt with 8,664 cases. Court clerks and chiefs' police remain a weakness, but the small improvement reported is encouraging. Chiefs' dressers have increased in numbers and efficiency and are well reported on by medical officers.

406. The two top classes of the Government school at Wau have been absorbed in the Roman Catholic Mission intermediate school, where three Canadian teaching brothers arrived during the year to take charge. At the nine Roman Catholic Mission elementary vernacular schools 838 boys and 131 girls are under instruction, the trade school at Wau has 29 pupils and the normal school opened at Mupoi this year has 30. The number of sub-grade schools increased and the qualifications of the teachers are improving as boys pass out from the elementary schools. The Church Missionary Society has 189 boys and 46 girls at its two elementary vernacular schools. One of the two group-languages—Zande and Dinka—is now taught at all schools except those in the western district, and additional instructional books have been published in these languages. The speaking of English has made definite progress. It is taught in schools and classes for police, messengers, hospital staff, servants and prisoners have been far more successful than had been expected, thanks to the enthusiasm of the British staff.

407. Out of a total of 37 provincial clerical and accounting staff, 23 are now locally-recruited natives of the province. These vary greatly in efficiency and conduct, but, on the whole, they have not been unsatisfactory.

408. Medical work showed further expansion, the people coming from long distances to the hospitals. 5,149 in-patients and 203,564 out-patients were treated, 800 operations performed and 42,136 injections of novarsenobillon given. Malaria showed a definite increase, especially in Wau, where few officials escaped. Dysentery is becoming a scourge in the southern area, where it caused hundreds of deaths, while there were 186 cases in Wau. 28,493 persons were treated for syphilis and yaws. 131 cases of tuberculosis were found among the Dinka of the eastern area. Of six cases of blackwater fever, one was fatal. No cases of cerebro-spinal meningitis or small-pox occurred. Cases of sleeping-sickness in the Tambura area showed an increase, 61 cases being detected as against 37 in 1930, 18 in 1929 and 26 in 1928. Forty-two of the cases occurred along the frontier of French Equatorial Africa, including 19 in sleeping-sickness settlement. 206 patients were discharged from settlements as cured and 901 remain under treatment. 4,385 lepers were receiving treatment at Wau and in the southern area at the end of the year. 1,910 were discharged as being no longer disseminators of the disease. In the western area an increased number of cases was registered; it is unfortunate that financial stringency has prevented the opening of a settlement there. Two open-type hospital wards at Wau and an operating theatre at Rumbek were completed during the year.

409. No new buildings were erected for the province by the Public Works Department, and the programme at Tonj and Rumbek, referred to last year, remains uncompleted. Raga and Yambio stations were largely rebuilt under province arrangements, the work at each place including an additional district commissioner's house. Reduction in the money allotted for communications caused work to be confined to the maintenance of that done in the past two years, both on the main and side roads. Heavy rains and abnormal floods caused much damage.

410. A decision having been taken to supply a large number of mahogany sleepers to the Railways Department, the Forests Department took over all forestry work in the province and a new sawing plant was erected on the east bank of the River Jur, some 12 miles north of Wau.

#### *Berber.*

411. The general condition of the people is unsatisfactory. In the southern district, but for the generous rainfall, which provided more growth than even the hordes of locusts could demolish, and but for that part of the basin area which was sown after the locusts had gone, it would have been still more serious. As it was, many people

suffered from extreme scarcity during the last two or three months of the year, but, with the ripening of basin crops and rain crops fear of actual famine has been for the moment allayed. Elsewhere there has been no actual want, but throughout the province cash is conspicuous by its absence and trade is at a very low ebb. The only exception is the dura trade and, unfortunately, a substantial rise in the price of this staple commodity will do more harm than good. The slump in the date market, coupled with poor yield and quality, has increased the depression in Abu Hamed district. The recent slight improvement in price occurred after the bulk of the crop had been sold to merchants. There was little or no demand for animals, the few sold fetched poor prices and a large proportion of those brought to the Damer market failed to find a sale at all.

412. The Nile flood of 1930 was low and the 1930 rains were very slight. Prices for all agricultural produce continued to fall and the 1930-31 season was therefore definitely a bad one for both agricultural and pastoral communities. Six out of ten private pump owners in the southern district closed down their pumps for the 1931-32 season.

413. The 1931 flood was above the average and the 1931 rains were excellent throughout the province. These favourable factors were largely discounted, in the north by the destruction of much of the rain-grown crops by the stemborer caterpillar, and in the south by the heaviest plague of locusts within living memory. Despite all available efforts locusts wiped out the entire sakia crop and much of the early selluka and early basin crops in Shendi district. In the northern part of the province, however, the area of river crops is large and their condition average. The date crop was seriously damaged by the rains both in yield and quality. There were also heavy losses in animals, estimated at 20 per cent., from lack of forage, rinderpest, drowning and exposure.

414. With the exception of the Sudan Plantations Syndicate station at Zeidab, where the large area available renders possible a generous fallow rotation and reduces overhead charges to the minimum, it would appear very doubtful whether pumping schemes in this province can be run at a profit with the present low prices of cotton. The extension of basin canalisation seems the most inexpensive substitute for pumps as an insurance against famine in years of bad rainfall and moderate Nile flood. The potential basin area is large, and, provided funds are available, extensive development seems possible. Meanwhile, one or two small and apparently inexpensive basin schemes are being examined both on the Nile and the Atbara.

415. A most successful horse-show and race-meeting, financed entirely by private subscription, was held at Shendi in March. Its popularity with the people was manifest; the prize money and the prices realised for horses sold were welcomed as an addition to depleted local resources, and the novelty of the gathering as a break in the

monotony of existence. Hopes are everywhere expressed that this will be an annual event.

416. Most of the schools continue to be well attended, but as yet the desire for education for education's sake is by no means marked. As the great majority of the population is, and always will be, employed on agricultural labour, this apathy is not unnatural. Berber town is notoriously conservative and the lack of interest in the girls' school there is still in evidence; the figures of attendance have fallen since the opening by about 30 per cent. It is said that young Sudanese of the educated class are seeking educated wives in Egypt owing to the lack of local supply, but on the other hand parents in rural areas fear that educated daughters may refuse to marry their uneducated cousins who are workers on the land and may insist on alliances with educated Government employees entirely unconnected with the tribe or locality. Marriage between cousins is preferred, not only on grounds of custom, but also because it costs less in dowry.

417. The financial situation has deteriorated. Revenue was £E. 32,136, compared with £E. 51,715 in 1930, and a budget estimate of £E. 44,650. Expenditure totalled £E. 37,406, compared with £E. 48,847 in 1930, and a budget estimate of £E. 39,826, and further economies are under consideration. Despite remissions, arrears of herd tax, date tax, rent and tax on agricultural land carried forward for collection in 1932 amount to over £E. 7,000.

418. Except at Atbara town, which depends almost entirely on wages paid to railway employees, sugar middle-men have found stocks of sugar accumulating on their hands and have all applied to reduce their allotments substantially in 1932. Among the nomads the scarcity of tea, coffee and sugar, which they have come to regard almost as necessities, is very noticeable.

419. Many younger men emigrated to the Gezira and Gash areas when money was plentiful there owing to the high price of cotton. They found employment as small traders, motor-drivers, servants and so forth. A certain number of them are now being driven back to their homes in this province by the lack of money in the cotton areas. There are signs that this has brought about an increase of sakia cultivation, particularly in Abu Hamed district.

420. The devolution of powers to native authorities within the limits hitherto maintained appears to have reached a stage where consolidation rather than advance is called for. The sheikh's courts throughout the province, the bench of magistrates at Abu Hamed, and the majority of the village courts have done their work quietly and efficiently. Appeals are very few, though it would perhaps be too much to say that these courts are as yet universally popular in a province so long accustomed to direct administration. The people are essentially law-abiding and the punishment of crime handed over to native courts plays but a small part in their everyday life. Furthermore, the employment of omdas and sheikhs to assist in the assessment and

collection of taxes is no new growth. But although the intelligence and ability of a considerable number of the omdas, especially in the northern district, provides excellent material for further steps in devolution, there are considerable obstacles to rapid progress. With the exception of the remote and inhospitable areas of the Monasir and the Western Hassania of the Gilif range, which have long been to all intents and purposes self-governing and will probably never be seriously ruffled by changes in the rest of the Sudan, the province has for more than a century been under more or less intensive and continuous direct administration. Memories of previous tribal independence are dim, and intensive foreign rule has destroyed many traditional boundaries and tribal loyalties which it would otherwise have been desirable to revive. Existing administrative units are so small that it is impossible to devolve any real authority to them, and new and larger units of native administration must be gradually built up or encouraged to grow round the personal prestige and ability of individuals. It is hoped that these new units may eventually coincide with traditional tribal or family spheres of influence and thus rest on a secure foundation.

421. Individual titles to land have been carefully settled and registered and are most jealously prized. Their security must always be protected by the sovereign power. Land taxation, the main source of revenue, must, on account of the great annual variations in the height of the Nile and the course of the river bed, be always the subject of careful and detailed annual assessment. These are difficult matters for native authorities to deal with unaided and it may not be easy in these circumstances to envisage the fiscal autonomy of native authorities.

422. To the common folk, whose livelihood depends entirely on the varying Nile flood and a still more uncertain rainfall, the struggle for existence remains the chief interest of their lives and "forms of government" are of relatively minor importance. The most important duty of the Government towards them is still to reduce the risk of famine by development of such schemes as are possible and to keep taxation low.

423. Medical work has increased during 1931. Two additional travelling dispensaries have been opened, one at Wad Bannaga and the other in the Monasir country: demands have been received from the people for more. The number of patients has increased from about 310,000 in 1930 to about 412,000 in 1931. Malaria is prevalent all along the river and anti-malarial work has been maintained under the supervision of three British sanitary inspectors. An outbreak of cerebro-spinal meningitis at Haffab was successfully prevented from spreading by strict quarantine measures. Bilharzia incidence is decreasing at Bouga and Kitiab, but the Monasir country, where until 1931 no work had been done, is very heavily infected. Atbara civil hospital extension was completed and in full occupation early in 1931.



*Blue Nile.*

424. The Governor writes as follows: "The completion in June of the second northern extension of the Gezira scheme marks the conclusion of existing projects. The extension (126,405 feddans) brings the total irrigated area to a figure of 684,084 feddans, of which 15,781 are irrigated by pumps from the Nile, 2,285 from pumps from the main canal, and the remainder by gravity from the Sennar dam. The area of the second northern extension was increased from the 102,520 feddans originally proposed to 126,405 feddans in order to provide the land required by a change of policy as regards rotation of crops. Included in the total area above are small extensions in the area of the Kassala Cotton Company and minor extensions in that of the Sudan Plantations Syndicate.

425. "At the Sennar the protective masonry aprons downstream of the dam, referred to in last year's report, were completed. Inspection of the work done, after being tested by the river flow, showed satisfactory results.

426. "Proper and adequate drainage of the irrigated area is a complicated question and one of first importance. The scheme originally proposed has been extended generally in the southern area with success.

427. "The average yield per feddan of the Sudan Plantations Syndicate area of 175,418 feddans cotton was 1.298 kantars, as against 2.12 kantars the previous year over an area of 158,585 feddans of cotton. This yield—the lowest on record—was due to unfavourable climatic conditions and to a heavy incidence of the pests of blackarm and leaf-curl. The same factors militated against the crop of the Kassala Cotton Company, which produced 1.87 kantars per feddan over about 20,600 feddans of cotton, as against 4.45 kantars for the previous season over 15,548 feddans. These low yields, combined with the low prices of cotton, naturally presented a somewhat serious situation, but every possible measure by financial economy, by research work, by alteration of rotation of crops, was taken, and the prospects of the present season, at any rate as regards crop, are far more encouraging.

428. "As the result of the united efforts of the Government, syndicate and tenant, aided by favourable climatic conditions, an average crop is assured, with a high percentage of high-quality cotton; prices for the commodity will determine the financial position. But it is very significant that in spite of the sudden slump from conditions of unaccustomed prosperity to those of comparative penury, the 20,000 odd tenants concerned have accepted the change with a philosophy which has increased rather than decreased their personal efforts—a happy augury for the future.

429. "A very promising rain crop of dura was severely damaged by locusts. An area of 323,000 feddans—almost the same as last year—was sown, but the average yield was half that of last year

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and gave 125,000 ardebs, as against 218,500. In the irrigated area 81,688 feddans of dura yielded, on an estimate, 120,000 ardebs. There was a considerable increase in riverain cultivation from 599 to 923 feddans, but the area of flood cultivation—5,378 feddans—was rather less than last year. Crops include dukhn, ground nuts, maize, onions and sesame.

430. "Interest in education is unabated. The numbers of primary schools (2), vernacular schools (16), village schools (160), and girls' schools (4), are the same as last year, but requests for educational facilities are being received from areas hitherto apathetic. Pupils in primary schools numbered 193 as against 252 last year; in vernacular schools, 1,507 as against 1,267; in village schools, 6,907 as against 7,334; and in girls' schools, 373 as against 310. The increase in girl pupils is particularly gratifying, and there is evidence of a widening interest in girls' education.

431. "The general standard of the village schools has improved owing partly to further training of the fikis and partly to the reduction of unwieldly numbers in individual schools, which accounts for the decrease in pupils noted above. Efforts are being made to link up vernacular and village school education with native administration through the medium of local boards.

432. "Revenue and expenditure were budgeted for at £E. 82,450 and £E. 70,387 respectively. On the expenditure side, in spite of several emergency calls which had to be met, a total saving of some £E. 1,178 was effected. Revenue produced £E. 76,060, and as the budget estimate had to be reduced by £E. 5,000 in June, the result may be considered satisfactory. The main taxes were paid in steadily and there were no arrears at the end of the year. The local provincial budgets, with the exception of Medani Town, have now been absorbed into the province budget.

433. "Medani Town local provincial services made a satisfactory showing. Revenue was budgeted for at £E. 12,500 and expenditure at £E. 10,809. During the course of the year it became evident that the revenue estimated would not be realised, and economies were effected immediately. In the event revenue reached the figure of £E. 11,159 and expenditure £E. 9,378, leaving a surplus of £E. 1,781.

434. "As regards indirect native administration, the aim has been in the main to consolidate progress already made in order to meet altered economic conditions. On the judicial side native town benches and sheikhs' courts have functioned admirably. Several native authorities have been entrusted with financial and additional administrative responsibilities; and the experiment of training natives for veterinary work among their own people, though at present on a small scale, has proved a success. One very distinct advance has been made. Managil district, which until last year required an entire district staff, including the normal complement

of police, is now under the control of a local sheikh, aided by his court and a police post. This sheikh occupied a similar position forty years ago, and the justice of his rule was emphasised recently when on a tour of the district with the district commissioner of Wad Medani, he was greeted with acclamation at every village that was visited.

435. "The year 1930 saw the first step in an administrative project for converting the whole of the irrigated area into an administrative unit, when the irrigated areas in Wad Medani and Hag Abdullah district (since abolished) were taken over by the Gezira Commissioner. In 1931 the areas in Hassaheisa and Kamlin districts were also taken over, and the project is complete.

436. "Crime statistics show considerable increase over those of 1930. This was not unexpected and is due to economic conditions. Cases totalled 6,875 as against 5,585. The increase is confined to cases tried by sheikhs' courts, non-summary and summary cases tried by Government courts being somewhat less. The sheikhs' courts have tried 3,742 cases as against 2,037 last year. Native town benches tried 1,384 cases as against 1,711. These figures are interesting, as public security has been excellent; they go to show that the control of this increase of crime, which is a perfectly normal feature of the present economic conditions, has been in the hands of native authorities. A further analysis shows that cases in the irrigated area numbered 2,056 as against 807, and that the whole of the increase lies there. It is due mainly to the influx of a large number of westerners for cotton-picking who found considerably less work and profit than they did last year. They therefore sought a livelihood by other means. Crimes of violence have, for the same reason, increased from two cases of murder and two of culpable homicide not amounting to murder, to four and eighteen respectively. These figures not only are not abnormal, but surprisingly low in the circumstances. They indicate, however, the necessity of keeping a vigilant eye on the irrigated area. Police and warders have carried out their duties in a very satisfactory manner, in spite of the increase in crime and heavy duties in connexion with epidemics.

437. "Public health still maintains its high standard in spite of difficulties incidental to a seasonal influx of labour for the irrigated area from the west. Of epidemic diseases, relapsing fever, which started in August 1930, continued, but under full control, until June this year. 492 patients were involved, of whom 467 were from outside provinces. A small outbreak of cerebro-spinal meningitis, which lasted from February to October, claimed thirty-eight victims out of fifty-one cases.

438. "Malaria is endemic, but rains were light and water did not lie for any length of time. The number of cases treated was 6,250; the population of the province is estimated at over 500,000. In the irrigated area the disease is less prevalent than it was before the Gezira scheme was started. Bilharzia, of which grave fears

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were at one time entertained, seems to be under control. Adults and children to the number of 31,721 were examined, of whom 514, or a percentage of 1·6 were found infected. An area inspected in 1926 was reinspected this year; 16,419 were examined in 1926, 11,102 in 1931. Seventy-six were found infected as against eighty-four. That is to say that in five years the survey shows an increase of cases from seventy-six to eighty-four, and of percentage from ·47 to ·75. The percentage is so low that a very few cases will affect it appreciably; the position, although entirely satisfactory, is still being closely watched. Rabies is a comparatively new disease and one which it is essential to stamp out. Eight cases occurred in dogs and one in a donkey. Everywhere precautions were taken, and over 25,000 dogs were killed by humane methods.

439. "At Wad Medani hospital 80,350 out-patients were treated, an increase of 17,000 over last year. The figures include 24,626 women and children; 4,685 patients were admitted to hospital, as against 5,662 last year. The hospital at Abu Usher, referred to in my report last year, was opened on the 6th September.

440. "Trade has been practically non-existent. Shortage of cash is felt everywhere. Payments to tenants in the Gezira scheme by way of profits, advances and appreciations amounted to £E. 209,452 in 1931, as against £E. 671,816 in 1930, and £E. 1,286,200 in 1929. Payments by cheque or in cash by the syndicate in the province amounted to only £E. 234,573, as against £E. 980,120 in 1930. On the other hand, the general position has been eased by the fact that even this amount of money, in addition to £E. 75,000 paid out in rent of land in the irrigated area, has been in circulation. In the circumstances, bankruptcies have been surprisingly few and the people deserve great credit for having adapted themselves so readily to the altered conditions. Sugar consumption, which is an indication of the purchasing power of the people, fell from 5,487 tons in 1930 to 2,971 in 1931, a decrease of 45·9 per cent. Except for this shortage of cash the general condition of the people has been excellent. Grain has been cheap and plentiful, though a shortage threatened at the end of the year when prices tended to rise after the effect of the poor rain crop was realised. Public health and public security have been excellent and the people have a confidence in the future which appears to be proof against any temporary difficulties."

#### *Darfur.*

441. The Governor writes as follows: "The year 1931 has been a most difficult one from every point of view. Shortage of grain and grazing, drought and cattle disease have coincided with adverse economic conditions; the resulting difficulties of administration have been enormously increased by a series of tragic casualties at the most critical points.

442. " Mr. J. L. Rowland, who had only recently taken charge of the Baggara sub-district of the southern district, died of backwater fever at Buram on the 12th May. Sheikh Adam El Nur, President of the Kalaka (Baggara) tribal court, collapsed in June and died at Nyala on the 28th October. The Emir Abdel Hamid of Zalingei, on whose admirable qualities so many hopes had been based, died at Zalingei on the 26th October after a short illness. Finally, on the 27th November, the day chosen for the proclamation of his successor, the Resident of Western Darfur, Mr. E. D. M. Batty, also died at Zalingei of black-water fever.

443. " The 1929 grain crop had been a poor one. The 1930 crop, except in the east and north-east, suffered, as reported last year, from 'the worst locust visitation within living memory,' and the more favoured areas in the south and west were overrun by an influx of grain purchasers both from the northern district and from French territory. As a result, supplies fell considerably short of local requirements. Grain became unobtainable at Buram, Nyala and Zalingei, and the essential needs of police and prisoners had to be supplied to the southern district from El Fasher headquarters reserves. Fortunately, though El Fasher prices rose to 190 piastres per ardeb, the market was kept supplied from the eastern area, and even from Western Kordofan. By the end of the dry weather, prolonged this year by the lateness of the rains, famine conditions had been approached in many places and reached in some. A large proportion of the population existed for some months on what forest produce they could find, particularly on mukheit berry (*boscia octandra*), which was particularly plentiful and must have saved thousands of lives.

444. " In these circumstances everything depended on the 1931 crop. Very large areas were cultivated, but there were ominous signs in June of yet another and even more disastrous locust invasion. Nothing in the nature of an organised campaign of destruction could be attempted except in the sparsely inhabited Dirra-Abiad area (on the main El Fasher-Um Kedada road), where a company of the Western Arab Corps operated for two months with conspicuous success. Elsewhere the native authorities were supplied with adequate quantities of poisoned bran and left to take their own measures under the supervision of their district commissioners. In the south and west, hatching (both of *gregaria* and *migratoides*) began early and continued throughout June, July and August. In the north and east they were generally delayed till August. In all cases they were faithfully dealt with. Flying swarms did damage during July and August to young crops, which in many cases had to be resown two and three times. But the menace of an irresistible invasion gradually diminished as the season advanced.

445. " Reasonably good crops were assured almost everywhere by the end of September and general optimism at once prevailed, though flying crops did considerable harm to ripening crops during October.

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In retrospect, it is evident that (even allowing for increased efficiency in combating it) the plague was considerably less than that of 1930. It is noticeable that the native authorities tended to rely more and more on trenching and beating and burning as methods of destruction, and to keep their supplies of bran in reserve.

446. "Cultivation of cassava is proving successful at Nyala, and cassava flour was used to eke out prisoners' rations during the rains. Further experiments are proceeding at Zalingei. It is thought that the stabilisation of this crop in the south and west would afford a valuable standby in bad years.

447. "The tobacco crop was short, but consistently good prices were maintained at El Fasher, where an auction market was successfully introduced early in the year. The royalty was increased in June to an *ad valorem* rate of 50 per cent., with a maximum of £E. 1 per kantar. As a result of this brisk trade, larger areas have been planted with tobacco, and a glut in 1932 is not improbable, since the demand is strictly limited.

448. "Cattle have had a bad year. Rinderpest had reappeared among the Baggara of the southern district before the end of 1930 and it raged through the Habbania and Rizeigat herds until the rains. The nazir of the latter tribe puts its losses at 30,000 head, though the senior veterinary inspector thinks that 20,000 is nearer the mark. Serum, unfortunately, could not be provided until April, though the Arabs clamoured for it. Lesser outbreaks occurred in every district and did much damage. Considerable losses were also caused by contagious bovine pleuro-pneumonia, which is considered to be endemic. Immunisation of healthy herds by means of vaccine was attempted, but the results were not encouraging.

449. "In company with agricultural trade of all kinds (except tobacco), the cattle trade has suffered severely from the prevailing economic depression. The import of cattle from French Equatorial Africa practically ceased, and there was very little demand for Darfur cattle in Kordofan markets. The southern Baggara, who rely on marketing some 6,000-8,000 head annually, only disposed of about 3,700 at very low prices, and many brought their bulls home unsold. The Meidob tribesmen, who trade direct with Omdurman, succeeded in selling nearly 6,000 sheep, though also at very low prices. Camels too were nearly unsaleable. The trade in hides, of which there was an export of 297 tons in 1929, has been completely killed by low prices and lack of demand.

450. "The horse-breeding scheme has survived the inevitable set-back of a most unfavourable year. Shortage of grain and grazing naturally resulted in casualties among young crossbred stock, and it is all the more encouraging to report that at the Baggara shows held in December a large number of excellent crossbred foals and fillies were seen. The scheme is now in its second and most interesting stage, at which the breeding from half-bred fillies is beginning. It has

always been of the greatest administrative value; there is now evidence that its material advantages will be equally prominent in the future.

451. "In the conditions already described the general standard of living has inevitably deteriorated. The incidence of hardship varies, of course, with local circumstances, but, as a general rule, the sedentary, and especially the negroid sedentary, has suffered less than the pastoral tribesman. The former is inured to scarcity and adapts himself readily to hard conditions. He regards money as a commodity and, since his need of it is strictly limited, the fact that it is dear does not unduly depress him. He is finding, too, in many cases, for the first time, that grain crops are a commercial asset.

452. "The pastoral tribes, on the other hand, have suffered severely. The northerners have had to pay dearly in cattle and sheep for their grain. The Baggara (cattle-owning) tribes of the south, accustomed to easy conditions, have, as a result of rinderpest, been half-starved for lack of milk and semn. Now that they once more have enough to eat they are called on to pay taxes and find their very riches a burden. Cattle and camels are almost unsaleable. There is little to be earned nowadays by camel transport. The hide trade is dead. Semn is still worth something, but there is none to spare. It is small wonder that native courts have been busy with theft cases and that prisons are full. Nevertheless, the Baggara are reasonably cheerful and their tribal organisations have stood the test remarkably well.

453. "The Nyala town court was extended during the year to form a district court of appeal for the sedentary tribes of Nyala district (excluding the Beni Helba) under the presidency of Melik Tibn Saad-el-Nur, who will thereby become the chief native authority in that area. In a year of transition and development this organisation has surmounted all the difficulties of external conditions, and promises to be of the greatest judicial and administrative value.

454. "Steady progress has marked the development of the Northern Darfur Magdumate. The Magdum 'Abu Yusef,' as he is called, has assumed an administrative as well as a judicial status and has rendered effective service in both capacities. Care is taken at this stage to avoid undue emphasis of his position *vis-à-vis* the powerful and capable Zaghawa chieftains. The subsidiary Mellit and Meidob tribal organisations are also working admirably.

455. "At Kuttum, early in March, 1,386 camelmen and 1,740 horsemen took part in the annual tribal gathering.

456. "The president of El Fasher court, Fiki Saleh Ali-el-Dadingwi, continues to discharge his responsibility for public security in El Fasher town, and has, on the whole, been successful in a difficult task. His ghaffirs have improved in efficiency and bearing, and mutual tact has disposed of some awkward situations *vis-à-vis* the military and commercial communities. The El Fasher court itself

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dealt with 147 civil disputes and 528 criminal cases, of which 308 were cases of theft or dishonesty. It acquitted 79 persons and sentenced 192 to imprisonment and 257 to fine.

457. "Native courts in general all over the province have been exceedingly satisfactory. Records are well kept and complaints are very few. A preponderance of theft cases is a sign of the times, and general shortage of cash has reversed the former tendency to punishment by fine. Such courts as have jurisdiction in Mahomedan domestic cases have done particularly well and it appears that their ulema members give complete satisfaction as interpreters of Mahomedan law.

458. "The Zalingei Emirate has developed rapidly into a full-grown native administration. The Emir's pilgrimage last April to his father's tomb at Menawashi, and the completion in the same month of the transfer of his headquarters to their new site at Hemidia mark a definite stage in its evolution. Further advances are represented by the change of the title of district commissioner to "Resident," by the institution of a Fur elementary school at Dar Turra in Gebel Marra (which contains the burial place of the great Fur Sultans), and by the decision to entrust the Emir in 1932 with responsibility for a separate budget and the custody of its funds. Meanwhile, the machinery of the Emirate has been swiftly and smoothly gathering momentum. Tax collection and locust destruction were carried out admirably; the difficult task of grain collection for Zalingei cantonment requirements was found to have pitfalls, but was none the less accomplished. But the Emir's death in October and that of the Resident a month later are a severe set-back. The Emir's eldest son, Mohammed Fadl, has been appointed his successor and it has been decided to carry through the whole programme of financial and administrative delegation. He will need constant help and support in the control of his subordinates, the elder and most effective of whom are steeped in the bad old methods of Sultan Ali Dinar and find it difficult to forget them.

459. "The Dar Masalit native administration has steadily assimilated the new accounting system and other improvements which were inaugurated last year. The Sultan is active and keen.

460. "Apart from the increase in theft and petty crime, the result of adverse conditions, public security has been normal. Not a shot has been fired in anger either by the police or the Sudan Defence Force. Sixteen persons have been found guilty of murder by major court, as against thirteen findings of murder and nine of culpable homicide in 1930. A number of other killings, some of them accidental, have been settled by blood-money in accordance with native custom.

461. "Public health has been, on the whole, excellent. There were some sporadic reappearances of relapsing fever and small-pox, but these were stamped out in their early stages. Despite changes in



British staff, medical progress has been well maintained. The facilities afforded by the three hospitals (El Fasher, Geneina and Nyala) and by thirteen dispensaries at selected native centres are increasingly appreciated and form the greatest possible administrative asset. The growing proportion of female patients is particularly noticeable. Two more dispensaries were approved, but have had to be cancelled in the interest of economy.

462. "The following figures show the progress at El Fasher civil hospital in recent years:—

—	1927.	1928.	1929.	1930.	1931.
In-patients ... ..	702	508	1,078	1,603	1,319
Out-patients ... ..	8,123	13,803	25,293	39,502	54,559

463. "A total of 116,587 out-patients and 1,647 in-patients were treated in dispensaries, as compared with 92,639 and 663 in 1930.

464. "Undoubtedly the most successful dispensary (and the most economical) is that of Zalingei. Not only are in-patients encouraged to make baskets, mats, string, &c., and to cultivate during the rains, but an experiment is being tried here whereby every applicant for treatment is charged a small fee. These fees are collected on a ticket system, and the actual cash is handled not by the dispensary hakim, but by an almoner supplied by the Emir. Special arrangements are made for the free treatment of really indigent persons, who do not amount to more than 2 per cent. of the total. The fee is paid cheerfully by an unsophisticated rustic population, accustomed to far higher charges by wandering native quacks, and has no deterrent effect. A similar experiment is being tried at Geneina Town dispensary, and it is hoped to extend it further as local circumstances permit. Five dispensaries are already staffed by local youths who have been trained for the purpose. A further class is now under training locally for appointment as native (baladi) hakims, and will be particularly suitable for staffing dispensaries under native administration.

465. "The province revenue, including for the first time revenue from local rates, &c., in El Fasher Town, totalled £E. 67,340 in 1930. Nearly all items show a decrease, but the chief deficit is in the revenue from poll and animal tax, collection of which has been radically affected by the agricultural and economic conditions.

466. "A reduction of police by forty-nine n.c.o.'s and men has been effected during the year. Economies of classified staff have been rendered possible by a reorganisation of the southern district,

which bases the assistant district commissioner for the Paggara tribes on Nyala, and reduces Buram to the status of a police post.

467. "Relations with the French authorities on our western border are most satisfactorily cordial.

468. "The Resident, Dar Masalit, has undertaken an extensive combing-out of unauthorised immigrants into the Sultan's territory, and reports a consequent decrease in crime. A number of Hemei Arab refugees, who had entered Dar Ta'aisha, were repatriated, though with considerable difficulty, by the district commissioner of Southern Darfur during the rains.

469. "A reconnaissance of the Libyan Desert by No. 2 Motor Machine Battery (Western Arab Corps) was carried out in November-December under the command of Lieut.-Colonel R. A. D. Moseley, O.B.E., and in co-operation with the Royal Air Force; Mr. P. J. Sandison, Assistant Resident of Western Darfur, accompanied the force as political officer. The whole area of Bir Natrun and Nukheila oases were thoroughly patrolled and surveyed, and all objects of the reconnaissance successfully accomplished."

#### *Dongola.*

470. By the death of Brigadier-General Sir H. W. Jackson, K.B.E., C.B., at Merowe on the 28th January, 1931, the province suffered irreparably; his loss is most deeply felt by every section of the community. General Jackson held the governorship of Dongola Province from 1902 to 1922, and since his retirement in the latter year had lived at Merowe, maintaining touch with old friends and constituting a focus of respect and affection.

471. The Nile flood of 1930, though sufficiently high to flood a fair area in Kerma, Argo and Letti basins, failed to irrigate any of the basins in the southern district. In addition, the rains failed, with the result that grazing was scarce during the first half of 1931, and numbers of cattle died of starvation. A severe outbreak of rinderpest lasting from November 1930 to July 1931 caused the death of 805 sakia cattle, thereby increasing the anxiety that food supplies would be insufficient.

472. Fortunately the 1931 flood was well above normal and after a late rise held up well. All the basins and a large area of island land were well flooded. The 1931 rains were exceptionally widespread and grazing was plentiful and easily accessible not only to the nomad tribes but also to the riverain people. Despite considerable difficulty in marketing their animals, only £E.75 of nomad tribute remained uncollected by the end of the year.

473. Immense swarms of hopping locusts during September and October were successfully dealt with by the province staff without outside assistance, and little serious damage to crops occurred.

474. Despite considerable damage to the date crop by rain, and the further fall in the price of dates, the general condition of the people is not unsatisfactory. The chief cause for anxiety is the shortage of ready money. This is reflected in the decrease of sugar consumption, from 53,195 bags or 47 lb. per head of the total population in 1930 to 36,226 bags or 28 lb. per head in 1931. Although taxes were paid in full—only £E.129 was outstanding at the end of the year—it is feared that this has involved much mortgaging and selling of lands and date trees, 861 transactions being registered as compared with 426 in 1930.

475. The four Government pumping schemes produced the record crop of 10,390 kantars of cotton, the yield on the Kulud scheme averaging 6.69 kantars per feddan. The amount purchased from sakia cultivators decreased from 3,704 kantars in 1930 to 2,060 kantars in 1931. Cotton at its price does not attract the sakia owner.

476. The first show of agricultural produce, domestic animals and native industries to be held in the province was held at Dongola in January and was a great success. It is proposed to hold similar shows at Merowe and Dongola in alternate years.

477. Education continued to progress. Boards of local authorities showed a keen interest in the schools and made some valuable suggestions for their improvement. Of the twelve khalwa teachers who attended an advanced training course in 1930, ten were considered to have improved their methods of teaching sufficiently to deserve an additional subsidy. Owing to the financial stringency it has been necessary to postpone the training of a further number.

478. Village courts dealt with a greater number of petty cases, chiefly civil disputes, and have shown great improvement in their methods of hearing and recording their cases. One court dealt with 336 cases in the course of the year. The extremely small number of appeals from the large number of decisions given prove the increasing prestige and popularity of the courts.

479. The assessment of basin and flood crops by boards of sheikhs, carried out for the first time in 1931, was satisfactory and will be given an extended trial.

480. Despite the shortage of money and the reduction of the police establishment by a sixth, public security remained good. There was only one case of culpable homicide. In August, however, a serious disaster overtook a salt caravan from Dongola to Bir Natrun, where it was attacked by a well-armed party of Gor'an and other outlaws, and lost four men, 103 camels and twelve rifles. A motor machine-gun battery based on Dongola was sent to protect the Wadi-el-Ga'b till the end of the year. In December a reconnaissance by motor cars and aeroplanes from El Fasher to Bir Natrun and Nukheila found both places deserted.

481. The general health of the people was satisfactory and there were no epidemics. Bilharzia, malaria and trachoma continue to be the most widely-spread diseases. 37,400 persons presented themselves for voluntary examination for bilharzia, compared with 26,100 in 1930. The percentage of bilharzia infections has dropped from 18 per cent. in 1928 and 9·3 per cent. in 1930 to the very satisfactory figure of 4·6 per cent. in 1931.

482. Revenue amounted to £E. 28,932 and expenditure to £E. 26,095, compared with £E. 29,900 and £E. 26,823 respectively in the estimates. Revenue showed a decrease of £E. 3,244 compared with 1930.

*Fung.*

483. Although health was good the material condition of the people was very poor; cash towards the end of the year was extremely scarce, and in places non-existent. Taxes were paid by selling grain crops and gold and silver ornaments, as the prices of the usual money crops, sesame, gum and tobacco, were so low. Mortgaging of crops for cash in advance was common. Towards the end of the year in some areas famine conditions were not far off, for much grain had been sold in order to obtain cash, and great damage had been done to crops by locusts and birds.

484. The rains of 1931, though good, were in certain localised areas of the north too heavy, and damage was caused to sesame. The main dura crop throughout the province, but for the damage referred to, would have been excellent; in the event it probably did not exceed 50,000 standard ardebs. The sesame crop was heavy and probably exceeded that of 1930 by 50 per cent.

485. Motor roads in the province were all maintained, and a new road was opened from a point approximately 7 kilom. from Bilbibilo on the Kurmuk-Bilbibilo road to the site of the newly-approved submersible bridge over the Yabus River, 6 miles from the Abyssinian frontier. There were eighteen ferries running in the province during 1931, eleven in the northern district and seven in the southern district. Aircraft landing-grounds were maintained at Singa, Roseires and Kurmuk, and a new one opened at Qeissan, near the Abyssinian frontier. River training was successfully carried out upstream of Singa towards Rosieres, and barges were able to reach Roseires and other markets to the south of Singa up to the end of February 1931.

486. The seven kuttabs of the province were maintained as in 1930, along with forty-nine subsidised khalwas, an increase of one over 1930.

487. Budget revenue stood at £E. 24,969, and expenditure at £E. 39,409, compared with £E. 52,090 and £E. 47,986 in 1930. The decrease is largely due to royalties being no longer credited to the province budget—that for gum amounting on an average to

£E. 18,000 or more per annum. Arrears of nomad tribute were greatly reduced by an energetic campaign of collection. Arrears of taxation prior to the 1st January, 1931, at the end of 1931 stood at £E. 6,691. Most of these arrears were on account of tribute.

488. The Abyssinian frontier remained quiet, but no arrangements have yet been found possible to bring about meetings between Abyssinian frontier chiefs and executive officials of the Government to settle several outstanding cases.

489. A comprehensive scheme was undertaken for the reorganisation of native administration units in the northern district, and is now being put into force.

490. Difficulties were again experienced in controlling the annual southward move of the nomads of the north-west into the southern district for grazing, and orders were frequently broken. The matter is receiving consideration prior to the 1932 move.

491. During the year no revival of the old slave traffic occurred. Freedom papers were issued to 272 persons, of which number only seventy-seven were of Sudan domicile, the remainder being runaway slaves from Abyssinia. Three cases of slavery offences were tried and heavy sentences inflicted.

492. One hundred and one unlicensed fire-arms were handed in during the year. It is believed that the southern district is now practically clear of such fire-arms. A special scheme for arming sheikhs and notables of frontier omodias in the southern district with confiscated fire-arms on special native administration permits was approved and completed; 200 such rifles were distributed.

493. The general health of the people remained remarkably good, with the one exception of an isolated outbreak of cerebro-spinal meningitis near Qeissan in the Southern Fung. Medical work in hospitals and dispensaries throughout the whole province has shown a very marked increase over that in 1930. In the north the number of operations performed showed an increase of some 500 per cent., and out-patient attendances have nearly trebled. The people would appear to be rapidly gaining confidence in hospitals, dispensaries and medical help in general.

494. The prices for agricultural produce were the lowest on record. Trade has been in a state of extreme depression, except in coffee, which showed an increase, but the price averaged only 170 piastres per kantar, compared with 220 piastres in 1930. Exports from the province by rail for some of the chief commodities were: sesame 2,056 tons, dura and dukhn 9,150 tons, and hashab gum 1,124 tons, as compared with the 1930 figures, which were: sesame 4,286 tons, dura and dukhn 3,927 tons, and hashab gum 1,230 tons. Sugar consumption fell from 659 tons in 1930 to 419 tons in 1931.

495. Rinderpest was kept well under control and never became epidemic over any wide area. Extensive vaccination was carried out for bovine pleuro-pneumonia, but no outbreak of the disease came under notice. Epizootic lymphangitis and African horse-sickness took a fairly heavy toll of mules. The year was marked by the partial replacement of veterinary police by tribal veterinary retainers, these latter seem to have a good grasp of their duties and responsibility.

*Halfa.*

496. Mr. H. C. Jackson retired at the end of March after twenty-four years of very valuable service, of which the last three were at Halfa. The province was left without a Governor until the arrival of Mr. P. Ingleson in November, Mr. C. A. G. Wallis taking charge for the intervening eight months. The period of Mr. Jackson's tenure of office was one of considerable progress. To his credit stand a great improvement in the amenities of the town of Wadi Halfa, the introduction of motor transport, the creation of a motor road from the Egyptian frontier to the southern end of the province, the improvement of river communications by the blasting of the cataracts, and a general reduction in taxation.

497. Wadi Halfa town is growing in importance as an air port and as a tourist centre. The first machine of the Imperial Airways African service arrived at Wadi Halfa on the 2nd March, 1931. Since then a weekly service has been maintained. The number of aircraft of all types alighting during the year averaged one a day compared with 304 in 1930 and 145 in 1929. The small but modern hotel, opened on the 1st June to deal with the aeroplane traffic, is proving a growing attraction to tourists, who appreciate the peace and cleanliness of Wadi Halfa with its flower-bordered streets and well-behaved populace.

498. The blasting of the cataracts by the Sudan Defence Force, referred to last year, has proved most successful. Of the fifty-four date-boats which attempted the passage between Dongola and Halfa only two were wrecked compared with ten in the previous season. Of these, one was over-loaded and the other was wrecked in Dal cataract, which has not yet been dealt with. Work on Dal cataract will commence in February 1932. The comparative certainty of a safe passage through the cataracts will enable merchants to give higher prices to date cultivators in the southern half of this province and in Dongola.

499. Weather conditions were kind to the dura and wheat crops, which gave average yields. Contrary to expectation locusts did not appear and the only pests were sparrows. The channel to Faras basin was opened by the villagers of Faras and an area of 218 feddans was irrigated. The inlet is good, but the drainage bad. Though the heightening of the Assouan dam will bring this basin below the new reservoir level, it may be still possible to use it if a sluice-gate is made.

500. Two new pumping schemes were started by private enterprise during the year and in both cases 6-inch pumps were used. The five small 3-inch pumps installed last year have not proved as successful as was hoped. 709

501. The prohibition of tobacco growing in the Batn-el-Hagar district, necessitated at the end of 1930 by the amount of tobacco smuggled into Egypt, deprived the inhabitants of their normal means of livelihood and came too late to permit of additional crops being planted. The situation was met temporarily by a free issue of grain. Without a lucrative money crop, the available land will not support the population of the area except in good years, but the Nubian clings to the Nile even where cultivation conditions are difficult. An offer has been made of free transport to vacant areas of rich land in Kassala Province in the hope of inducing some of the surplus families to move.

502. The revenue for the year was £E. 12,067 as compared with a budget estimate of £E. 13,950—the deficit is more than accounted for by the uncollected half of the date tax. The saving on expenditure was £E. 828. The quinquennial date-tree census completed during the year gave a total of 445,151 taxable trees.

503. The population of the province, which is not self-supporting, have two sources of ready money—remittances from those who have emigrated to work in Egypt or elsewhere in the Sudan, and the date crop which is used before it ripens as security for loans, and when ripe provides clothing and ready money for the year. This year, with the fall in wages, remittances have diminished in amount or ceased altogether, and the date crop, though only slightly below average, 25,000 ardebs as compared with 28,000 ardebs last year, fetched so low a price that the amount realised by the cultivator often did not suffice to meet the advances made to him by the local merchant on his crop and rarely provided for much clothing or ready money.

504. The lack of ready money is reflected in the sugar sales, the average of which for the year shows a decline of only 6 per cent. compared with 1930, whereas the decline since the date crop came on to the market in October averages 15 per cent. The amount of the date tax, based on the number of trees owned by the cultivator, bears no reference to the value of the crop. It would have amounted to half the value of the 1931 crop had it been collected in full. Hardship was averted by remission of half the tax.

505. The people have not benefited, as elsewhere in the Sudan, by a marked fall in the price of the staple articles of native diet. In the north of the province there is no grazing and such crops as are grown for fodder only suffice to feed the animals for sakia work and milking. Meat is imported. The long carry over the desert by rail keeps the price of meat, grain and of other imported articles comparatively high. The heightening works at present in progress on the Assouan dam are a contributory cause as they affect the price of commodities coming from Southern Egypt.

506. Native administration has made steady progress during the year. The people have learnt to take their disputes to the local courts, which are gaining in prestige; 90 per cent. of the criminal cases in the province were heard in this manner.

507. The health of the province has been good except for an outbreak of diphtheria in the Batn-el-Hagar and sporadic cases elsewhere. This disease is now endemic in the province.

508. The increase in air traffic and the collection of quarantine fees from private aeroplanes, undertaken on behalf of the Egyptian quarantine administration, made great demands on the time of the single medical officer in the province and left little opportunity for touring the outlying districts.

509. A British trade exhibition spent several days in Wadi Halfa in September. They were interested in the possibility of making date flour biscuits. Samples of dates have been sent for grinding in England.

510. The trade with Egypt in cattle and sheep is at a standstill. The quarantine staff have been reduced to a cadre and the British veterinary official replaced by a native overseer. Trade is generally bad and cannot improve until Egypt buys the commodities which the province exports.

511. The maintenance of public works has been taken over by the Sudan Government Railways and the representative of the Public Works Department has been withdrawn.

#### *Kassala.*

512. The Governor writes as follows: "The Gash flood came down in consistent spates at convenient intervals. Control was easy and there was no malaria. Large new basins from the northern canals gave a good proportion of clean land, but elsewhere weeds were again a nuisance.

513. "The results for 1929-30 and 1930-31 were:—

	1930.	1931.
Effectively watered feddans ...	55,000	38,000
Crop in big kantars ... ..	74,997	58,146

514. "These returns represent the rather low average of  $1\frac{1}{2}$  kantars to the feddan. As the cost and trouble of weeding sedge is not worth the yield at present prices, it was decided for 1931-32 to fallow the grassiest land after the harvest and to be content with a smaller watered area. Accordingly 74 per cent. of the large 1931 flood was allowed to pass by. The remainder effectively watered 24,000 more or less clean feddans, of which, however, 5,000 were stripped bare by locusts. The 19,000 feddans left should yield over 36,000 kantars, which shows how the absence of weeds raises the average yield. Hired labour is plentiful and cheap and there is a noticeable increase in family



self-help, even the shy Hadendowa women venturing forth to pick the bolls. A tenant of an exceptional 10-feddan plot expects a profit of £E. 14 this year, and £E. 4 to £E. 10 is still to be gained by the average diligent cultivator on clean soil.

515. "The installation of the Gammam pumps and pipes was completed in March 1931. In the driest month 1,500,000 gallons of water were distributed to cultivators and their animals. The heartening effect of handy water to persons who used to have to go miles for a drink must have gone far towards reconciling them to persevere with cotton.

516. "The weir and canals, constructed during the last thirty years in the neighbourhood of Kassala, have diverted the Gash from its natural tendency to scour a deep and narrow channel into deltaic formations opposite the town. The resulting deposits have raised the bed to almost the same level as the shore. Last August a serious disaster to buildings was only averted by feverish work on a flimsy protection bank. Apart from masonry spurs and a stronger bank, the engineers are encouraging the flood to resume its old course by confining the new programme to extensions from canals at the far north end of the Gash.

517. "At Tokar an effective area of 60,000 feddans produced 68,290 large kantars in 1931. This was about 14,000 more than the year before and caused an increase of £E. 12,000 over the estimated revenue of £E. 26,000. The result is, however, disappointing on closer scrutiny. The area actually sown was 90,000 feddans; but many cultivators were apathetic and abandoned the crops. The 1931 flood, though not spectacular, was good and even, and the effective area is 38,000 feddans. Heavy dust storms at the most critical period of the crops' growth may seriously reduce the yield. But owing to an opportune need of this type of cotton for motor tyres, the price has improved to about £E. 2.200 mms. the kantar. This fillip to the cultivator justifies the hope of a return not very far short of last year.

518. "The following are the figures in kantars for gum exported from Gedaref :—

				1930.	1931.
Hashab	...	...	...	32,584	30,634
Talh	...	...	...	34,197	27,289

519. "In spite, therefore, of a slump in the average prices from 150 piastres a kantar and 55 piastres in 1930, to 54 piastres and 18 piastres in 1931, the revenue from royalties was nearly £E. 15,000, well up to the high average of recent years. The crop of this season is late, but abundant; talh having sunk to under 10 piastres, is hardly being picked, but record quantities of hashab, though the price is under 30 piastres, are being carried to market by camel and lorry along the realigned forest roads.

520. "The Gedaref sesame crop was even larger than the previous record of 1930, 37,000 ardebs as against 28,000. Locusts have actually

assisted the output; for the cultivators, remembering how their grain was ravaged the year before, turned more to sesame, which is immune. The price to the cultivator, averaging about 90 piastres, though modest, gives hope of some profit. A local merchant assisted the trade by converting several thousand ardebs into fodder cakes, which he exported to Europe.

521. "The 230,000 ardebs of dura produced by the 1931 rains is quite a respectable total, though 50,000 less than the good crop of last year. Locusts did enormous damage, leaving Gedaref with only 80,000 ardebs, and Kassala, including the Gash, with but 9,000. Tokar was completely devastated and half the Butana crop was eaten. Altogether 130,000 ardebs must have been destroyed. Poison bran against hoppers, though generally successful, failed in some important places where grass was long, and nothing availed against the fliers. Only the heart of the Beja country escaped the invasion and here there was the peak of prosperity; rains fell even in the northern Bisharin country and the unheard-of crop of over 100,000 ardebs was harvested. At Gedaref the price was 35 piastres in January and 105 piastres in November. At Tokar it touched 140 piastres for a short time after the locusts, other wise it paradoxically decreased northwards down to 60 piastres after the Beja harvest. The quick rise and local shortages caused some demoralisation and anxiety. Animals were cheap and gold was dear, so that some thousands of pounds worth of jewellery was bought and sent home by Indian merchants, who alone among tradesmen will contribute normally to the taxes on last year's trade.

522. "The ban on the export of dura immediately allayed anxiety. If the price is still rather high in the town markets, where sedentary people are feeling the pinch, there is pocket-money to be earned, and a man has only to take his camel far enough afield to bring home all he requires at a moderate cost.

523. The stimulus given to hard work by lack of money is shown in the dom nut industry of the Beja area. Though the price temporarily fell to under £E. 2, the 3,210 tons collected in 1931, nearly 2,000 more than last year, brought over £E. 7,000 to the pickers, most of them Beja. Certain unsuspected means of livelihood came to light among the Northern Bisharin. They burn charcoal in their wadis for sale in Egypt, and the meagre scrub is protected from deforestation by a traditional interdict on the cutting of live wood. They also export sheep, fleeces, and even colocynth and henna.

524. "An unwonted enterprise was shown by the owners of the Kassala saktias (plots irrigated by water-wheels). They obtained the vegetable contract for the Port Sudan Hotel; they exported 40 tons of produce by train to other parts of the Sudan; they also sent two car-loads a day to Gedaref; finally they found a new market in Eritrea, where they sold £E. 735 worth of onions. The moving spirit is a retired Sudanese officer, who has acquired one of these farms and divides his time between tilling the soil, polo and public affairs. Before

the Mahdia there were 500 of these holdings ; twelve years after Omdurman, half a dozen ; now there are a 100. This free expanse of easily irrigated land offers a fair field for men of energy. Even the indolent peasants of Gallabat have been goaded by a local shortage of grain into gathering honey and underselling the Abyssinian importer ; while the enterprising West African nazir of Qala-el-Nahl has been sending samples of frankincense to the Department of Forests.

525. " Pasture was generally good ; the water centres filled ; disease was scarce and localised and herds thrive. Although the price of the average slaughter camel fell from £E. 6 to £E. 2, about 12,000 were again sold in the Egyptian market, while the modest but firm price of 50 piastres was still given locally for a fat sheep. Owing to the low prices of all kinds of meat, its consumption fell only slightly in 1931, but was maintained in the two cotton centres, Kassala and Tokar.

526. " Sugar consumption dropped heavily as follows :—

		1930.	1931.
		Sacks.	Sacks.
Southern area ...	...	24,331	11,240
Northern area ...	...	7,693	6,712

or a general drop of 44 per cent., but whereas the decrease in the northern area was only 12 per cent., in the southern area it was 54 per cent. Several cases of sugar smuggling were discovered and dealt with, and the police are taking a close interest in the caravan tracks from the Eritrean frontier.

527. " If the price of slaughter camels has fallen, the lively interest in the Butana camel races is raising the value of the first-rate dromedary. The winner of the ' 20 miles open ' once refused £E. 60 for his six-year-old thoroughbred. Keeness of the chiefs and attractive prizes (up to £E. 10 for important events), drew numerous entries and large crowds. Beja onlookers have passed the news to their fellows, and the Nazir of the Bisharin, whose famous breed seemed on the verge of extinction in this era of cars, is fully awake to the possibilities of the new situation.

528. " The figures for revenue and expenditure in 1930 and 1931 were—

		1930.	
		Budgeted.	Actual.
		£E.	£E.
Revenue ...	...	181,950	181,580
Expenditure ...	...	108,978	105,905
		<hr/>	<hr/>
Surplus ...	...	72,972	75,675

The budget revenue was diminished by the transfer of about £E. 40,000 of Gash cotton revenue to the equalisation fund.

		1931.	
		Budgeted.	Actual.
		£E.	£E.
Revenue	... ..	143,050	151,454
Expenditure	... ..	90,079	84,936
		<hr/>	<hr/>
Surplus	... ..	52,971	66,518

The 1931 revenue no longer includes gum royalties, transferred to the central budget; also the estimates for Tokar cotton were reduced from £E. 40,000 to £E. 26,000. The reduction of expenditure was partly due to real economies, such as retrenchment of two district commissioners, one mamur and fifty police, and partly due to elimination of paper payments to other departments. After fulfilling his obligations to the Government the taxpayer had not much cash left for shopping. The taxes on business profits accordingly fell from £E. 1,132 to £E. 600; yet, the tenacity with which tradesmen cling to their profession is shown by the insignificant drop in revenue from 'licences to trade'—£E. 2,527 to £E. 2,496. The administration by the nazir of the Shukria of his tribal budget in the first year of its full scope was marked by a voluntary increase, for development purposes, of £E. 2,400 in his tribute. This and economies produced a surplus of £E. 2,511 over and above his obligatory contribution of £E. 7,655. The accounts were kept with admirable care and method under the watchful eyes of the nazir himself and his brother. In other places so much assessment and collection of taxes and payment of personnel has been left to the native authorities, that the way is open for further devolution of accounting responsibilities and economy in Government staff—which is actually happening in the case of the Batahin Administration at Abu Deleig.

529. "At the announcement of the financial crisis at the end of the year, a deputation of southern nazirs offered to give up half their salaries 'in consideration of the capital spent on their territories'—and when only a portion was accepted, insisted on shouldering the cost of maintaining the roads. A correct but less quixotic attitude was shown by the Beja, whose logical turn of mind leads them to balance payments with minute exactness against services rendered.

530. "There were three mining operations in the province this year. At Qala-el-Nahl in the south a party was prospecting for chromite, &c., with unrecorded results. Seven hundred miles away in the north the ancient gold mine at Wadi Oyo showed satisfactory results.

531. "The development programme of 1931 was modest but successful. £E. 600 was allotted to Gedaref for wells to supplement

the seasonal hafirs. Two have already been completed on the way to gum forests. In the Butana 10,000 c.m. of hafirs were excavated at the rate of  $4\frac{3}{4}$  piastres per cubic metre, and 7,000 c.m. in the harder Beja country at the rate of  $6\frac{1}{2}$  piastres. The most successful experiment of the year was at Derudeb. By great efforts the Hadendowa were able to plaster a bursting dam which they had built across a khor so as to force the torrent into a derelict well-centre. A hundred wells amidst good pastures were produced, and also, by a chance overflow, an unexpected dura crop of 18,000 ardebs—all for a cost of £E. 217: elsewhere banks produced 10,000 ardebs, and two other smaller well-centres have been created by gifts of a few pounds to enterprising sheikhs. All over the province new work and maintenance has been done without cost to the Government. About 750 miles of new road were completed, chiefly to increase the mobility of the small Government staff. One of these roads, 350 miles long, passed through the northern half of the Bisharin district, an area five times as large as the Butana, but also under a single district commissioner. Another new road running 180 miles north from Kassala by the Eritrean frontier has opened up an important part of the southern Beja country, though an extension 65 miles further on to Tokar has become well-nigh impracticable owing to persistent sand-drifts. Cars economise the time of the eleven remaining members of the political service by taking them quickly across unprofitable distances to where people and camels await them at the other end; I myself found time for forty days' camel trekking during the season. Flying has become a general practice among senior officials. The advantage of aircraft in a province as large as Italy, in which settlements are as sparse as islands in an ocean, is too obvious for elaboration.

532. "Health was good, and the increase in the number of patients in 1931 was only due to the deserved popularity of the medical staff. In the south, hospitals and dispensaries shared in the increase, but among the Beja the attendances at rural dispensaries are decreasing, and the hospitals, however distant, are preferred. The figures for out-patients at dispensaries are as follows:—

	1930.	1931.
Southern area ... ..	114,648	131,283
Northern area ... ..	15,421	14,487

On the other hand, the propaganda of the expeditions sent into the wilds by the Medical Inspector, Port Sudan, has raised the northern hospital totals from 12,749 to 17,229. The northern doctors are precluded by their duties at Port Sudan from giving that attention to remote medical posts which has done such wonders in the southern area. It must be remembered that though the estimated population of 400,000 is roughly divided between the two areas, not only are dispensaries and hospitals of the south patronised by people from the north, but the mountains of the Beja country have bred a healthier race.

533. "There were an unusual number of hot weather affrays, including seven fatalities in two Beja areas, Tokar and the southern Hadendowa country. Viewed as a whole, however, the year's record of the Beja is remarkable for a decrease in the already small tale of offences against property and no appreciable increase in violence.

534. "Riff-raff from Abyssinia were responsible for a certain amount of crime in Kassala and Gedaref by pilfering from the inhabitants and murdering each other. Yet these same people, when employed with the bull teams which haul the road and reservoir gear, are invaluable, and their uncanny skill in training the bulls is not less astonishing than the humanity with which they treat them. Apart from the Abyssinian trouble, the record of the southern area under the rule of the chiefs was even more peaceful than in 1930.

535. "The question of depriving the Rashaida nomads (numbering 10,000) of the illicit fire-arms which they were strongly suspected of possessing was taken in hand. On the 4th April, 1931, nine of their encampments were simultaneously surprised and searched; seventy assorted rifles and pistols, with much ammunition, were extracted without untoward incidents. Some forty fire-arms were found by the Italian authorities, who cordially co-operated by dealing with fragments of the tribe in Eritrea. Conditional promises to release the prisoners arrested induced the tribe to deliver up what remained. When 491 fire-arms had been surrendered, the disarmament was considered adequate and the prisoners were set free. Since then the administration of the tribe has never been so hopeful or free from jars, and the district commissioner has found that they are putting their house in order by themselves. In the course of the searches for arms a newly-kidnapped boy was discovered with his master. The absence of any other trace of slavery in raids which surprised about one-sixth of a once notorious tribe confirms the belief that, save for an occasional deal with an Abyssinian poaching party, the traffic is practically dead.

536. "During the year the police were still further decreased by 52 to 530, their duties being taken over by chiefs' retainers. The economy has been made possible by our confidence in the latter, and by the arrangement with the Eastern Arab Corps to co-operate with the police when the native administration requires support. Retainers for the first time replaced police in parts of the Beja area as the guardians of public security. The success of the retainers is largely due to the pride taken in them by the chiefs to whom they are responsible. In the southern area most of them carry fire-arms for constabulary duties. The police have been reduced from 600 in 1927 to 420 at the time of writing, and retainers increased from 23 to 260, including sixty watchmen. Only seventy retainers belong to the Beja area, and for a few years to come Government police will continue to be the bedrock of security in that land of vast wastes and stubborn inhabitants, over whom the chiefs are gradually building up a stable administration. In the more advanced southern area, police are disappearing rapidly.

537. "The total number of convictions by all courts fell from 4,750 in 1930 to 3,618 in 1931. Of these, about one-half were on account of offences against persons or property and 70 per cent. of this half were by native courts; the balance includes thirty convictions by major courts, the same number as last year. The other half includes eighty convictions arising out of the Rashaida disarmament campaigns, one kidnapping case, a few cases of smuggling, all tried by magistrates, and numerous petty offences and infringements equally divided between the two jurisdictions. Native courts imprisoned rather more than last year, and fined rather less; partly because the culprits were too poor to pay fines and partly because the Beja courts were induced to modify their aversion to imprisonment when circumstances called for this deterrent. The Hadendowa courts actually increased their sentences of over twelve months from one in 1930 to fifteen in 1931. Five panels of this court were instituted for the five main canals in the Gash irrigation area, with powers of imprisonment up to six months. The personnel, West African and Beja elders with Hadendowa presidents, soon settled down to useful work.

538. "Civil suits heard by judges increased from 1,069 to 1,274 and by native courts from 574 to 917; the proportionate increase in the work of the native courts is even greater than the figures show, for they were instrumental in settling out of court as many cases as were heard in court. In 1930 creditors forebore to press their claims in the hope that times would mend. When these hopes failed they had recourse to elders rather than to judges. The best illustration of this is the year's work of the Mejlis Ahli of Tokar, a court renowned for its exact records; 327 suits appear in its register for 1931 against 232 in 1930, yet the suits heard by the official judge in charge of this area were only 33 and 42. The absence of appeals testifies to the weight of this court, whose decisions are accepted by the cosmopolitan litigants because they are based on the oriental principles of compromise and forbearance and not on the rigid rules of European jurisprudence. The same might be said about the canal courts of the Gash and the town bench of Kassala, though the awards of the latter continue to be unrecorded. Except in the Amrar, whose nazir is nervous of delegating duties outside his own family, tribal elements are enlisted in growing numbers to assist the chiefs in various forms of activity. Frequent meetings to which chiefs, henchmen, kadis, medical staff, &c., betake themselves by lorries and camels over hundreds of miles from every direction, create new friendships and new ideas. There is healthy rivalry, whether over the speed of racing camels or about administrative efficiency. The prestige of the big tribes is so established that the few small units still unattached are weary of remaining in the background. Some of the scattered Beja units joined the Hadendowa nazirates during the year, and even West African units have petitioned to be allowed to become the subjects of its distinguished ruler. Even the Rashaida are cultivating neighbourly relations, and I hazard the opinion that in time they will

decide to surrender their 'gipsy-like independence.' The town bench of Kassala, with its foot retainers, has already taken over the watch and ward of the town and the way is now clear for a town council, with larger administrative and judicial powers.

539. "Financial stress checked, but did not stop, progress in the policy of adapting education to the requirements of native administration. The Beja elders, anxious to catch up with the more advanced Arabs, showed the greater interest of the two. School boards provided pupils with food by local subscriptions; the Sinkat school produced a boy fit to fill the post of scribe to the nazir of the Hadendowa; there was an all-round improvement in the numbers and smartness of the boys at Metateib in the Gash. An experimental agricultural plot attached to this school failed owing to locusts, but is being renewed and extended. The venerable Amarrar Kadi, referred to in last year's report, showed that his advocacy of female education was not lip-service by having girls taught at his own khalwas. Equally keen are the West African nazirs of Gedaref, and they encourage the leading men to send their sons to local schools on which they spend their own money. Altogether, there has been some solid ground gained and there is a general spirit of interest and enquiry which must be fostered and guided.

540. "A small but well-distributed supply of educated material in the native administrations has facilitated co-operation with the native official element. The brother of the Shukria nazir, who acts as his representative, is an ex-officer; a younger brother is an executive official in the Hadendowa area, and the ruling families of both tribes are on terms of personal friendship. These and similar influences spread the gospel of efficiency south and north. If the Shukria nazirate leads the way, it is by no means isolated. Nazirs old and young regard illiteracy as obsolete, and it is this steady combination of tradition and enlightenment which breathes life into these administrations and unites all classes for the common weal."

#### *Khartum.*

541. The Earl of Athlone, accompanied by H.R.H. Princess Alice and Lady May Cambridge, visited Khartum in March on returning to England from South Africa. The High Commissioner for Egypt and the Sudan, Sir Percy Loraine, Bt., K.C.M.G., and Lady Loraine visited the province in January.

542. The 2nd Battalion of the Middlesex Regiment relieved the 2nd Battalion the Royal Warwickshire Regiment early in the year and were in turn relieved by the 2nd Battalion the Royal Ulster Rifles at the end of November.

543. The first Imperial Airways air mail reached Khartum from England on the 7th March.

544. The Governor reports with deep regret the death of Sheikh Abdel Rahman Sayed-el-Awad, Omda of Omdurman, and Sheikh



Mahmud Musa, head sheikh of the Khartum Deims (native cantonments), both of whom were most useful and loyal servants of the Government.

545. The material condition of the people in the rural district was on the whole satisfactory, except in the northern half of the province, where the combination of a low Nile, the closing down of pumping schemes and destruction by locusts, caused definite hardship. The condition of the people in this area should improve considerably by the middle of 1932, as the winter saskia crops promise well.

546. The commercial element in the three towns, native and foreign, suffered severely as the result of general economic depression, and trade was stagnant. Many artisans and labourers were thrown out of employment and a certain amount of relief work had to be provided for the poorer classes of labourer. Every possible effort was made not only to prevent outsiders drifting into the three towns in search of work, but to send unemployed persons back to their villages of origin.

547. The educated and artisan classes presented a particularly difficult problem. Many of them found it impossible to obtain employment, and all of them found it hard to adjust their ideas to altered conditions and to accept when necessary a lower standard of living than that to which they had been accustomed for some time past. Times were difficult for all classes of the community, but the native element, faced with adversity, adopted an attitude of philosophical resignation which was deserving of the highest praise. The municipal council throughout proved its usefulness as a consultative and advisory body.

548. No accurate census was taken, but a closer estimate was made of the population in Khartum North, which was found to be considerably higher than previously estimated. The total native population of the province was estimated at 278,000—198,184 in the three towns and 84,872 in the rural district. The foreign population was more accurately checked than in 1930; it was finally estimated that there were 9,197 foreigners in the three towns and 32 in the rural district. These figures include 573 British, 1,965 Greeks, 885 Syrians, 3,447 Egyptians, 1,957 West Africans and Fellata, 398 Yemenese, and 121 Abyssinians.

549. Labour was plentiful throughout the year, and the rate for casual labour actually fell as low as 3 piastres per diem. Many domestic servants were thrown out of work, and the opportunity was taken to revise the rates of pay for servants engaged through the servants' registry and to put them on a more reasonable basis.

550. Generally speaking, tribal leaders and village sheikhs discharged their functions in a satisfactory manner and justified the increased powers and responsibilities entrusted to them. The year was spent in consolidating the advances already made and native courts continued to function in such a satisfactory manner that it is hoped to increase their numbers and to extend their scope next year. A court-

house was built for the Gamuiya tribal court at Goz Suleimania and a court-room was provided for the Khartum native bench of magistrates.

551. The boundary between Khartum Province and Kassala Province in the direction of Abu Deleig was adjusted and the Abu Harira lands belonging to the sections of the Batahin tribe domiciled in Khartum Province were included in Khartum Province.

552. The Nile flood of 1930 was below normal, with the result that the area of selluka cultivation on the banks of the main Nile was small; fortunately, the crops on the White Nile were very large, 13,853 feddans of selluka land being cultivated, as compared with 6,048 feddans the previous year. Rain-grown crops promised to be exceptionally good, but were almost completely destroyed at the end of September by flying locusts, which also caused severe damage to sakia crops.

553. The agricultural situation in the northern half of the province was somewhat serious towards the end of the year. Twenty per cent. of the people of this area depend for their support on pump schemes, most of which were out of action owing to the low price of cotton, rain crops had been destroyed and sakia cultivation severely damaged by locusts. To meet this situation a number of new sakiyas were erected, but agricultural depression will not pass from the northern half of the province until the pumps are once more at work.

554. A successful show of fruit and vegetables was again held with the object of stimulating the interest of native cultivators, this time in the new municipal gardens in Khartum North, which though only recently laid out have progressed rapidly and well.

555. The demand for education was, as might be expected, keener amongst the people in the towns than amongst those in the rural district; the former displayed a greater desire than ever for the education of girls. There is no doubt that the advantages of education are becoming more widely appreciated; but the people have become accustomed to expecting the Government to provide facilities for vernacular education free of cost. It is interesting to note that enthusiasm for new khalwas vanished when the people who demanded them were informed that they would have to finance them themselves at a cost of £E. 22 per annum for each khalwa. The people of Khartum North, on the other hand, raised a sum of £E. 120 by private subscription to provide accommodation for a new kuttab for girls. This, and two new boys' kuttabs in Omdurman, were opened during the year, but no additional khalwas were subsidised.

556. The native primary school in Omdurman and various other non-Government educational establishments were well attended and continued to do useful work.

557. The Church Missionary Society maintained a hospital, a welfare society and various girls' schools in Omdurman, where excellent and devoted work was done. An up-to-date and badly-needed out-patient department was added to the hospital, the cost of which

was met by a grant from the Lee Stack Memorial Fund; more patients were treated than ever before. In addition to running their hospital, the medical staff rendered most valuable service in administering the Stack Memorial Home for the indigent poor, and the leper colony until it was closed down, and in assisting with the distribution of poor relief in Omdurman. The Board of Missions of the United Church of North America and the Roman Catholic Mission authorities maintained a number of schools for boys and girls in a satisfactory manner, the latter opened a new school for non-native girls in Omdurman. There are now no less than seventeen non-Government educational establishments in the three towns.

558. Revenue for the last two years was as follows :—

	1930.	1931.
Province budget ... ..	68,354	74,431
Municipality ... ..	45,497	40,051
Total ... ..	113,851	114,482

559. Revenue from slaughtering fees was transferred from the municipal to the province budget; if adjustment is made for this, the province revenue shows an increase of £E. 1,143 and the municipal revenue a decrease of £E. 512 as compared with 1930.

Expenditure was as follows :—

	1930.	1931.
Province budget ... ..	129,881	115,607
Municipal budget ... ..	36,285	38,258
Plus special expenditure on town development ...	3,414	...
Total ... ..	169,580	153,865

560. It had been arranged in 1930 that a sum of £E. 5,000 per annum should be provided in the municipal budget for the development of amenities in the three towns and that the Central Government should also advance the municipality a sum of £E. 5,460 per annum on loan for the same object. Unfortunately, it was found necessary in 1931 to cancel both these credits. The municipality was therefore compelled to finance all expenditure on development out of its own slender surplus funds. It is, perhaps, fortunate that, with the help of the Central Government, many improvements were effected during 1929 and 1930.

561. A private experiment was made in sowing *acacia verek* (gum) in the sandy country west of the White Nile; the seed sown appears to have germinated well. The native authorities continued to control wood cutting and charcoal burning in a satisfactory manner; very little illicit felling of timber and charcoal burning now takes place, and the woods along the river banks and scrub forests are already beginning to show a noticeable increase in density. The sunt fuel reserve, established in 1930 near Goz Neseir on the west bank of the

White Nile, did very well; the people are so much impressed by it that there should be no difficulty in future in obtaining land from them on which to plant similar fuel reserves.

562. The number of persons tried on criminal charges decreased from 7,953 in 1930 to 7,669 in 1931, and the number of persons convicted from 6,708 in 1930 to 6,376 in 1931. The percentage of persons convicted to persons tried was eighty-three, compared with eighty-four in 1930. The decrease in the number of persons tried was largely due to stricter investigation of informations laid in respect of non-cognisable offences, with the result that many cases were dismissed or compounded before being brought to trial and a great deal of unnecessary work was avoided.

563. The benches of native magistrates discharged their functions in the most satisfactory manner; they tried 2,480 cases and 4,381 persons as compared with 3,222 cases and 4,827 persons in 1930. There were very few appeals against their decisions and most of the appeals failed. There was also a drop in the number of persons convicted in non-summary cases. Thirteen persons were convicted by major and minor courts as compared with sixteen in 1930. In view of the prevailing condition of economic depression and the number of persons out of employment, it is satisfactory to record that cases of theft and kindred offences showed no considerable increase; much of the credit for this is due to the police.

564. The probation system again worked successfully. During the year sixteen juvenile offenders were dealt with, of whom one had eventually to be committed to the reformatory, one ran away, one was discharged and thirteen remained on probation at the end of the year.

565. Economic depression and the general shortage of money was responsible for the number of civil actions, which increased from 2,588 in 1930 to 3,864 in 1931 and in the number of executions issued, which increased from 919 in 1930 to 1,618 in 1931.

566. Mr. W. Kinmonth, who had served in the province police for over nineteen years and had been in command of the force for sixteen years, retired in the middle of the year. The excellent state of the force is due to him more than to anyone else; his energy and unrivalled local knowledge will be sorely missed. He was succeeded by Captain Laidlaw, the commandant of the police training school. The strength of the police force has not altered materially; conduct and general health remained good, the standard of literacy and training showed a great improvement, and the efficiency of the force as regards its primary duty, the prevention and detection of crime, was well maintained.

567. There were no unusually large numbers of contraventions of Government ordinances except as regards road traffic. There were no less than 82 accidents during the year, 6 of which were fatal,

while 32 involved injuries to persons and animals and 44 damage to vehicles.

568. The average number of ordinary prisoners undergoing sentence in the central prison during the year was 426, excluding juvenile and female prisoners, the average number of persons of all kinds was 470. The administration of the prison was good; discipline was well maintained and remarkably few prison offences were committed. The health of the prisoners was on the whole good, except for outbreaks of cerebro-spinal meningitis, influenza and chicken-pox. The fact that the spread of these diseases was checked and that they were rapidly stamped out was a high testimony not only to the standard of health of the prisoners, but to the efficiency of the administrative and medical staff of the prison.

569. Owing to the general economic depression fewer orders were received and less work was carried out in the central prison workshops, but a great deal of useful extra-mural work was performed by prison gangs at a considerable saving to the Government.

570. On the whole the health of the province maintained a satisfactory standard without reaching that of 1930, an exceptionally healthy year. There was an all-round increase in the incidence of communicable diseases except for malaria and pulmonary tuberculosis. The most serious epidemic was an outbreak of cerebro-spinal meningitis, which started in the Khartum Deims at the end of February, and eventually spread to the three towns, the outlying villages, the prisons and the police lines, before dying out in the middle of July. The most strenuous efforts were made to combat the spread of the disease by vigorous propaganda and active measures to prevent overcrowding, and to make people sleep out of doors. Schools were closed, certain areas were put into quarantine, and over 21,000 persons were given prophylactic inoculation. The hygienic condition of Khartum was greatly improved by the closing down of insanitary eating-houses and coffee shops, and by preventing potty native merchants from using their small shops as dwelling-houses and accommodating large families in them at night. Fluctuations in the standard of public health are bound to occur from year to year, but better public health and sanitary services and improvements in local conditions are steadily raising that standard.

571. The rainfall was 8 inches, as compared with 8·87 inches in 1930. The highest maximum temperature was 116° (in May), as compared with 114·2° in 1930, and the lowest minimum temperature was 51·6° (in December), as compared with 44·8° in 1930.

572. The general health of the animals in the province was better than in 1930, although seven outbreaks of rinderpest and two outbreaks of contagious bovine pleuro-pneumonia occurred. There were two cases of rabies in dogs, and 1,850 stray dogs were destroyed in the three towns as a precautionary measure. Veterinary policemen poisoned 150 hyenas in the rural district. A Government

stallion was sent to stand at Geili for the first time and served thirty mares, while the Government stallions standing in Khartum gave a further 121 services.

573. The value of the private buildings erected during the year in Khartum and Khartum North was less than in 1930, but the value of the private buildings erected in Omdurman exceeded the 1930 figures by £E. 4,409, and totalled £E. 16,620. It was satisfactory to note the continued improvement in the class of building erected. Much less work on new roads and footpaths was done than in the previous year, but a great deal was carried out on new rain-water drains, and twenty new works of various kinds were put in hand and completed during the year. The adaptation of Tewfik Pasha Barracks for use as a municipal engineers' depot was completed; it now provides excellent accommodation, stores and workshops.

574. Arrangements were made for the Assistant Master of Works to visit the French Colonial Exhibition in Paris when on leave with the object of studying different types of African architecture. He brought back a large number of admirable sketches and studies, and it is hoped from them to evolve a number of African-type designs and to avoid in future the erection of unsightly buildings in steel and corrugated iron.

575. The whole organisation of the gardens section was overhauled and put on a more satisfactory basis. The citrus tree nursery established in the central prison gardens did not progress as well as was anticipated, and the trees will not be ready for budding until July. A further 122 citrus trees of good quality were planted in gardens surrounding Government officials' houses. Many old lebbak trees were felled, and 1,636 new trees were planted in the streets of Khartum and Omdurman.

#### *Kordofan.*

576. Only by comparison with less favoured areas can the condition of the people be said to be satisfactory. The 1930 grain crop was patchy and in general proved to be worse than the original estimate. In some parts there was a definite shortage, and nowhere was there any great exportable surplus. Gum and cotton prices were low. Cattle disease took a heavy toll in the early part of the year but died away later. Grazing for the northern nomads was good, but was discounted by the low price obtainable for animals. Trade was generally stagnant, though El Obeid fared better than most of the large towns of the Sudan. A curious phenomenon was immense building activity in El Obeid, partly due to improved conditions of tenure under the new leasehold scheme, and partly to the fact that merchants considered building to be a safer investment for their capital than ordinary trade.

577. The immediate future is not bright. Rains were very late, but were ultimately excellent in most parts. A successful war was waged against hopper locusts in cultivated areas. About October everything pointed to a bumper crop, but from then onwards continuous swarms of flying locusts did enormous damage, and in the end the crops were generally well below the average. Grazing in the south is bad. Trade shows no signs of improvement.

578. The estimated rain-grown American cotton crop for 1931-32 is 150,000 small kantars, as against 162,000 in 1930-31. The price at which Government could buy the crop had to be drastically reduced to an average of about 26 piastres per kantar. It is impossible at present to estimate what effect this reduction, if continued, will have on the demand for seed for 1932. It is clear that people employing paid labour cannot make a profit at these prices, but cotton assures to the peasant cultivator at any rate cash with which to pay his taxes.

579. 374,895 kantars of gum were sold in province markets in 1931, as compared with 297,314 in 1930. Prices were depressingly low, ranging from a maximum of 56 piastres in January 1931, to 32 piastres in June 1931. Shortage of money among the producers alone keeps the trade alive at these low rates.

580. As was to be anticipated, revenue showed a falling off both on 1930 results and on the original 1931 estimates. Gum royalty is now credited to the Central Government and not to the province, and this has to be deducted from 1930 revenue to obtain a fair comparison. On this basis the figures are: 1930, actual revenue £E. 136,518 (excluding £E. 77,315 royalties); 1931, estimates £E. 128,650, actual £E. 110,565. Expenditure showed a considerable reduction both on 1930 results and on 1931 estimates, viz., 1930, £E. 171,291; 1931, estimates £E. 144,372, actual £E. 136,685. All things considered the results are not unsatisfactory.

581. There were no military operations during the year. The possibility of trouble in the more backward Nuba areas cannot yet be disregarded, but every year without it marks an advance in mutual confidence. Public security in general was good. There were three convictions in slavery cases. Petty theft continues prevalent as a result of bad trade conditions.

582. Districts were further reorganised to get the best distribution of a reduced staff. Southern Kordofan district was abolished and divided between Western Kordofan, Western Jebels and Eastern Jebels. This reorganisation made it possible to dispense with two district commissioners and various other personnel and services.

583. No spectacular advances have been made in native administration, but the year has been one of steady progress and consolidation. One blacksliding has to be reported, which led to the resignation of Sheikh Adam Hassan, Nazir of the Northern Gawamaa, the conduct of

whose court had been most unsatisfactory. Good, however, came of it in the voluntary amalgamation of this section with the main tribe under the nazirship of the much-respected Sheikh Omar Ahmed.

584. In view of the criticism sometimes heard that a prosecution before a native court amounts to a conviction, it is interesting to note the high percentage of findings of "not guilty" in the records of some courts. One must also remember that many courts do not proceed to the formality of a trial unless the guilt of the accused is certain. In doubtful cases they prefer the native method of compromise and settlement out of court. Another sign of confidence in the native courts is the increase of Sharia cases heard by them. The imposition of fines, which people cannot now pay, has, in the practice of many courts, been replaced by a sentence of imprisonment.

585. The Governor reports with regret the death of many prominent men, among whom are Sheikh Hassan Khalifa, Nazir of the Hawawir, Sheikh Mohammed Hamad Bey Fetin, Nazir of the Hamar Degagim, and Sheikh Nur Hanua, Nazir of the Hawazma Halafa. The list also includes two reputed centenarians in the persons of Mek Isa Deif, Mek of Dilling, and Sheikh Tamar Agha, Omda of Katul.

586. There have been no important changes in primary and elementary Government education. The Dilling kuttab was closed, and it is hoped to open an experimental village kuttab under native administration auspices in Eastern Kordofan. A Government-trained kuttab master was attached to the Nazir of the Kababish at the latter's expense as tutor to his sons and relatives. Financial considerations made it necessary to concentrate on improving the standard of existing subsidised khalwas rather than on increasing their number.

587. The demand by pagan Nubas for education, noted last year, is growing. The problem bristles with difficulties in regard to finance, staff and language; but at least a policy has been laid down and a modest start is being made in training a few selected lads by the Sudan United Mission in Arabic, in Roman characters, with a view to their employment as clerks to Nuba native courts.

588. The general health of the people has been satisfactory. The only serious epidemic was one of small-pox at Tira-el-Akhdar in the eastern Jebels district. The incidence of malaria was above the average in most districts owing to heavy later rains. A new out-patient block, stores and British wards were added to El Obeid hospital, and Dilling hospital was considerably enlarged.

#### *Mongalla.*

589. The American cotton crop yielded 24,800 kantars, as against 31,500 in the previous year; it is expected that the price realised for the 1931-32 crop will be only 25 piastres, as against 45 piastres previously. Whether it will be possible to maintain the industry at this price is still uncertain: its cessation would be a grave economic and administrative setback.



590. Widespread swarms of flying locusts appeared in March and April, and the resulting hopper swarms in May practically destroyed the whole cereal crop and the province was within sight of famine on a large scale. Very large quantities of ground nuts, sweet potatoes, beans and cassava were planted and, though there was very great hardship until these were harvested, the situation was just saved and there was very little actual starvation. The cash reserves in the people's hands from the cotton industry, enabling them to buy imported grain at high prices, was a very important aid in tiding over the crisis. The fact that the hopper swarms seem to have died out shortly before reaching maturity enabled the second cereal crop to be harvested: provided there is no further locust visitation the food situation should be generally satisfactory.

591. Seventy acres of young coffee were planted out in the Yei district, and young coffee in the Acholi country came into bearing with satisfactory financial results to the chiefs concerned. There seems every reason to suppose that coffee can be grown successfully.

592. The opening of the Imperial Airways service has done much to mitigate the remoteness of this province and to improve communication with Uganda, previously almost non-existent. The Juba landing-ground was serviceable throughout the year, except immediately after heavy storms.

593. Work continued on the all-weather road from Juba to Nimule and it should be completed before the 1932 rains. A new section of the Juba-Amadi road should provide much needed all-weather-communication between those places. The Amadi bridge, a wooden box bridge over 150 yards long, was rebuilt. In the subsequent floods it was completely submerged, but stood the strain successfully. Towards the end of the year the Equatorial Corps began the clearing of a road towards Mount Kombo and Mount Kaiserin, in the south-eastern unadministered area. Wireless telegraph stations at Torit and Kapoeta have done much to improve communications.

594. There was no apparent slackening of the demand for education, and the number of pupils in the mission schools was well maintained. English classes for the police are popular, but it is difficult to provide either adequate teachers or continuous instruction. A beginning has been made in the employment of clerical staff recruited from the southern Sudan, but they still need a great deal more training and experience.

595. Revenue and expenditure amounted to £E. 17,244 and £E. 38,992, as opposed to £E. 18,126 and £E. 51,600 in 1930. Considering the prevailing scarcity, there was surprisingly little difficulty about poll-tax collection.

596. The Conservator of Forests inspected the eastern area of the province and was much impressed with the possibilities of teak growing at Kagelu.

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597. A small reconnaissance of the Equatorial Corps, Sudan Defence Force, from Kapoeta reached Mount Kaiserin and joined up with the King's African Rifles' post near Lake Rudolf. They endured great hardships, and after their return over 25 per cent. of those engaged developed kala azar. The object of this reconnaissance was to study measures for the prevention of raiding by Abyssinian tribes in the unadministered area near the Kenya and Abyssinian frontiers.

598. Public security remains good. A gang of brigands based on Abyssinian territory who reached the Nile north of Mongalla, was intercepted and broken up by the District Commissioner of Kapoeta; he also surprised and broke up a poachers' village. Lotugoi, a notorious leader of brigands, was arrested through the efforts of His Britannic Majesty's consul for Western Abyssinia.

599. Border courts were held with the Uganda and Belgian Congo authorities. Frontier questions are generally satisfactory, but it has not yet been found possible to demarcate the Kajo Kaji section of the Uganda boundary. The danger of sleeping-sickness infection necessitates the close control of trans-border movements.

600. Meridi district was abolished as an administrative unit and partitioned between Mongalla and Bahr-el-Ghazal Provinces on tribal lines.

601. Increased contact has been made with the Toposa, whose administration was undertaken in 1927 and has progressed satisfactorily. A cattle dispute between the Latuka and Toposa, which might have assumed serious proportions, was satisfactorily settled after pressure had been put on the latter tribe.

602. Probably for the first time there was in every district a political officer who could speak the local language, Toposa, Latuka, Acholi (Shilluk), Bari, Bangala, Moru and Zande being the languages represented.

603. For the first time also the principal chiefs have received salaries and their administrative responsibilities have been increased; they now pay their own staff and collect poll tax, with reasonably satisfactory results. Native courts have improved in efficiency and prestige.

604. Deeper study of native institutions, with a view to the establishment of smaller native courts on a more definitely tribal basis, has greatly added to our knowledge of the tribes. The disruptive effects of the changes of the past hundred years, slave traders, Egyptians, Dervishes, Belgians, Uganda, the advent of the present Administration and that of the missions, become increasingly apparent. To what extent the old tribal life can be rebuilt and remoulded is still uncertain.

605. The supply of labour has been satisfactory, even with a reduction of normal daily rates.

606. The activities of the medical service were widespread and much appreciated. No fresh cases of sleeping-sickness have been detected and the number of patients remaining in the camps is only eighteen. In the central district a leper village has been voluntarily organised by the people, at no cost to the Government except the wages of the native medical attendant and the cost of the drugs. This is a new departure and the results so far are hopeful. Dysentery has provided the only serious epidemic. In the Meridi district at least 750 people are estimated to have died. Guinea worm continues to cause much disability. Malaria is universal, except in the eastern district, and there were eight cases of blackwater fever during the year. The existence of kala azar in the eastern district is firmly established. Forty-six cases have been treated in the past two years, besides the twenty men of the Eastern Mongalla reconnaissance referred to above.

607. Trade suffered from the universal depression. An attempt has been made to open up a trade route with Maji, in South-Western Abyssinia, but considerable difficulties will have to be surmounted before it can be operated successfully.

608. It is with great regret that the retirement is recorded of Major Maynard, D.S.O., who, with the exception of the war period, has been District Commissioner of Yei since 1913; and of Kaïmakam Derwish Bey, assistant medical officer, sleeping-sickness area, who has seen, and been largely instrumental in bringing about, the virtual eradication of sleeping-sickness in the province.

*Port Sudan-Suakin Administration.*

609. The general lack of trade and tightness of money has had some repercussion on the people. But in the case of Port Sudan the effect is lessened by the mixed and migratory nature of much of the population. The riverain Sudanese and local nomad Arabs return to their villages and to their flocks as the demand for labour ceases. The West African element are always a floating population, either proceeding on or returning from the pilgrimage. Further, as living is very cheap it cannot be said that there is any marked degree of distress in the town.

610. The development of market gardens continues. There are now six oil engine pumps in these gardens and several more are projected. One hundred and fifty-three feddans are at present under cultivation. The annual vegetable show continues to be a marked success, and the number of exhibitors has increased. Abnormal rains during the summer, as well as winter rains, have given the cultivators two large crops of melons. Quantities have been sent to inland towns. The spill-way on the Shata embankment at Suakin was seriously damaged by exceptionally heavy floods, but the damage has been made good. Two large swarms of locusts visited Port Sudan early in December, but were driven off before they had done much damage.

611. The Port Sudan-Suakin road has been badly damaged by traffic after heavy rains; the best means of dealing with the problem are under consideration. In Port Sudan town a further 1,500 metres of macadam spray-mex roads have been completed, making a total of 4,650 metres. In addition, 3,500 metres of coralline road have been laid.

612. Port Sudan primary school has 121 pupils, of whom thirty-nine are boarders. The Port Sudan kuttab school has 266 pupils and that at Suakin has 136 pupils. The four Government-aided khalwas in Port Sudan have a total of 181 pupils and that at Suakin eighteen pupils. Education is now a charge against the budget of this administration, and to avoid new local taxation the municipal council have voted a sum of £E. 800 from local funds towards the total cost of £E. 1,236.

613. Revenue and expenditure were as follows :—

		Budget Estimate.	Actual.	Difference.
		£E.	£E.	£E.
Revenue	...	16,150	16,014	- 136
Expenditure	...	41,459	39,121	- 2,338

614. The experimental afforestation area of 28 feddans is now complete. Areas have been planted with casuarina, nim, kakamut and mesquite. In addition, 100 cocoanut palms have been planted. The trees planted last year now require no further watering. It will be of considerable interest to see the result of this experiment in three or four years' time.

615. The total number of pilgrims who started on the 1931 pilgrimage from Suakin was 2,414, of whom 961 were natives of the Sudan and 1,453 natives of West Africa. The agreement with the Khedivial Line for the transport of pilgrims at reduced rates was continued. An arrangement has been agreed to as between the Sudan Government, the Nigerian Government and His Britannic Majesty's Legation at Jedda to facilitate and expedite the performance of the pilgrimage by West Africans and their return to Africa. The Khedivial mail line has agreed to issue reduced return fare pilgrim tickets to certified pilgrims throughout the year, instead of the limited period called the "pilgrim season."

616. The quarantine buildings and accommodation at Suakin are excellent, and the supply of fresh water ample. Only seventeen pilgrims were admitted to hospital while in quarantine; of these, seven were suffering from small-pox, two of whom died. A pilgrim office and medical officer's office are available in the quarantine for the use of pilgrims.

617. Public security has been good, both Port Sudan and Suakin have been remarkably free from serious crime,

618. Darra and Rawaya salt concessions produced 5,292 and 6,123 tons respectively. The amounts exported to Abyssinia via Gambia were 707 and 700 tons, while Rawaya also supplied the Congo with 165 tons of salt. The granting of a salt monopoly by the Abyssinian Government to the Jibuti Salinieres has reduced the export of salt by these concessions via Gambia from 4,520 tons in 1930 to 1,407 tons in 1931.

619. The local Mission to Seamen continues to be a welcome rendezvous for the crews of ships in port.

620. The general standard of health in Port Sudan and Suakin has been very good and there have been no epidemics during the year. The total number of out-patients treated was 68,782, a decrease of 20,000 on the number treated in 1930, though 20,000 more patients were treated in Suakin in 1931 than in 1930. The admissions to hospital in 1931 were 2,126 as against 2,494 in 1930. The incidence of endemic diseases remains much as in past years. The laboratory in the civil hospital, Port Sudan, under a British laboratory assistant, has been doing consistently good and useful work. A new X-ray apparatus was installed during the year.

621. There have been no local infections of malaria, though fifty-seven imported cases were treated. An outbreak of rabies occurred in Port Sudan and Suakin, and under the Rabies Ordinance all stray dogs were destroyed; many owners of dogs voluntarily brought them for destruction. Seven persons were treated for bites by rabid dogs. No cases of plague or cholera are reported. Certain restrictions were enforced on ships from Persian Gulf ports during the last four months of the year in view of the cholera epidemic in that area.

622. Motor transport is now used for all sanitary work in the town. In all nine lorries are used, of which one is specially fitted with a tank and pump for dealing with effluent pits and collections of fluid from the meat market, slaughter-house, &c. The trench system of disposal of night soil has been a definite success. Exceptional heavy rains in August and November provided a severe test, which was successfully met without any disorganisation.

623. Varieties of culex and stegomy mosquitoes are found in pools caused by seepage from the sea. A few isolated anopheles have been found, but have been in each case traced to water jars in trains arriving from Kassala.

624. The water supply has continued to be satisfactory, both in quality and quantity. Periodical bacteriological examinations are made. Ships have taken less water, and the consumption has fallen from 537,474 tons to 479,314 tons, and the revenue by £E. 2,400. Excellent rains have fallen during the summer in the hills, and the present supply is ample for the demand. Rainfall in Port Sudan was 105.4 mm. and in Suakin 195 mm.

625. The new post office has been completed and will, it is hoped, be opened for public use early in 1932. The English church, the building of which is being supervised by the Public Works Department, is progressing satisfactorily; it will be completed, in so far as funds are available, and consecrated in March 1932.

626. The average number of prisoners in the central prison has been 933. The general conduct of the convicts has been good and punishments have been considerably less. The workshops have continued to turn out good work, the demand for which has been well maintained. In several cases men trained in these shops have, on release, found suitable employment at the trade they have learnt. The extra-mural gangs have been employed regularly on quarrying and road making. The general health of the prisoners has been good and there has been no outbreak of infectious disease.

*Upper Nile.*

627. Mr. C. A. Willis, C.B.E., Governor of the province since 1926, retired from the service and was succeeded by Mr. A. G. Pawson. Mr. Willis's tenure of office was marked by the settlement of the turbulent Nuer tribes, to which reference has been made in the reports for preceding years. The foundations of administrative progress have now been laid and it is satisfactory to record that there have been no untoward domestic incidents during the year under review.

628. The state of affairs, however, on the Abyssinian frontier gave cause for some anxiety. There were outbreaks of hostility between the Gaajak section of the Nuer and the Anuak. The latter tribe is divided between the Sudan and Abyssinia, while the Gaajak, although essentially a Sudan tribe, annually visits Abyssinian territory for purposes of grazing. Clashes occurred between the Abyssinian Anuak and these Nuer in Abyssinian territory: the intervention, therefore, of the district commissioner, whose assistance was invoked by the Abyssinian frontier representative, was limited to advice. Though these disorders, which are due to the absence of effective administration on the Abyssinian side of the border, have so far had no serious repercussion on the Nuer administration, yet in existing circumstances the situation on this part of the frontier will have to be carefully watched.

629. In another part a serious violation of the frontier was committed in August by certain Abyssinian Anuak, who raided a village inhabited by the Burun tribe in Sudan territory. The Anuak not only carried off stock and a sum of money, but also killed four of the Burun, including a woman and a child, and burned the village. The same Anuak had previously delivered a treacherous attack on a party of Burun who were visiting Abyssinian territory for the purpose of trade. On this occasion eight Burun were killed.

630. There was also some unrest amongst a section of the Anuak inhabiting the Adonga area on the Sudan side of the Akobo river, which here forms the frontier with Abyssinia. Two prominent chiefs,

Sham Medda and Sham Akwei, adopted an attitude of defiance towards the Government. After committing a series of raids on their fellow tribesmen they found shelter in Abyssinian territory. The matter threatened a setback to the administration of the Sudan Anuak, especially in view of the fact that Sham Medda was in possession of certain ceremonial objects (the "royal emblems" of the Anuak), which are essential attributes of chieftainship and therefore of importance from the point of view of tribal administration. Following on representations made to the Abyssinian Governor of Gore, Sham Medda was ordered to leave Ethiopian territory, and both recalcitrant chiefs have since made their peace with the Sudan Government.

631. Considerable progress was made in native administration for the Nuer of the Zeraf valley, and of Nasir and Abwong districts, and for the Bul Buer of the western Nuer district.

632. The Shilluk courts are not yet so successful as could be wished and steps are being taken to improve them.

633. The problem of illicitly held firearms remains unsolved. It is reported that large quantities of rifles and ammunition are available on the Abyssinian frontier. The present hostility between the Anuak and the Nuer has the one happy result of checking the arms traffic. The consensus of opinion is that the amount of ammunition in possession of our tribes is small, though the border tribes possess many rifles.

634. The police, especially the mounted police, maintained a high state of efficiency.

635. In the economic sphere the outstanding event was the coincidence of a shortage of grain with a widespread outbreak of cattle plague. The 1930 rains had failed in certain areas, and the Bor and Yirrol Dinka and the Shilluk were in danger of famine. Relief had to be provided for the latter, though they have made an effort to help themselves by planting the largest area of cotton yet recorded, the total yield of which is not expected to be above the average. The price of 29 piastres per small kantar provides no great incentive to the Shilluk, but he appreciates each purchase by Government and so continues to grow it. Very little cotton has been sown by Western Nuer and no seed was issued for the Akobo area.

636. Steps are being taken to increase the dura production of the province by introducing or reviving harig cultivation—this method consists in burning the old and new grass in the early rains and so clearing large areas for sowing dura. Locusts did considerable damage to the early crops of 1931, especially in Yirrol district. Crops were good, however, in Renk and Melut district and fair in the rest of the province, except in Yirrol and Shilluk districts, where a shortage of grain prevails.

637. The road grading programme was continued. The year saw the completion of the graded roads which had been begun at the end of 1929 between Malakal and Bor, and from Fathai (on the former road)

to Akobo and part of the way to Pibor post. The Egyptian Irrigation Department regraded the Nasir road as far as Nyanding and from here they graded a new road to Akobo. Better communications are the key-stone of the administration of this province, more than ever now that the maintenance of public security falls entirely on the province police.

638. There was a considerable drop in revenue, due mainly to the low price of cattle, by which most of the revenue is collected; in addition, heavy losses of cattle and shortage of grain made it necessary to remit taxes in several districts.

639. As a result of the visit in 1930 of Archbishop Hinsley, Apostolic Delegate in Africa, a considerable increase in the activities of the Roman Catholic Mission and their schools has been noticed. This mission is starting an experimental agricultural farm at Detwok, where a 6-inch pump is being installed. The Church Missionary Society have begun building their new station at Lier, about 13 miles inland from Adok in the Western Nuer district.

640. Public health was good and there was no serious epidemic. Malaria amongst the Government staff in Malakal was much less prevalent than in previous years.

641. The Egyptian Irrigation Service produced a plane-table map of the Pibor River and Khor Nyanding. The aerial survey by the Air Survey Company under contract with the Egyptian Irrigation Service was continued. The maps of the area between Malek and Pibor post were delivered and the photography of the Bahr-el-Jebel River from Mongalla to Lake No and the whole length of the Bahr-el-Zeraf was completed.

642. It is estimated that the losses among cattle caused by disease were some 100,000 above normal. The export of hides was nearly 300 tons above normal, this is estimated to represent 75,000 head, and large numbers of skins remain in the hands of the natives owing to the poor prices obtainable. The serum station produced 73,000 doses of anti-rinderpest serum, which is 13,000 in excess of the original programme. Some serum was unfortunately ineffective, but this failure is counterbalanced by undoubted success elsewhere. Experimental rinderpest vaccine was also used and gave encouraging results.

#### *White Nile.*

643. After a total of over thirteen years' service in the White Nile Province at different times as District Commissioner, Deputy Governor and Governor, Mr. A. G. Pawson was transferred in March 1931 to be Governor of the Upper Nile Province. He was succeeded by Mr. J. A. Reid.

644. Despite the slump in prices of agricultural produce, animals and gum, the condition of the people remained satisfactory, though their purchasing power was materially decreased.



645. The rains were late, but abundant. The best conditions were obtained for the dura and sesame crops; but dukhn failed to germinate satisfactorily and there was a shortage of seed for ground nuts. Unfortunately, the promise of a bumper year was once more marred by the depredations of flying locusts. In Geteina district three-quarters of the dura crop was eaten and damage was nearly as severe in the area round Kosti and in the Ahamda country in the south-west of the southern district. In the end the total crop was estimated at 170,000 ardebs of dura, 10,000 dukhn, 23,000 sesame, 8,000 ground nuts, as compared with 140,885 ardebs of dura, 7,222 dukhn, 15,200 sesame and 12,000 ground nuts in the preceding year.

646. The Nile flood of 1930 was under average, but, owing to the rapid fall of the river and the absence of pests, a good safra crop was obtained in 1931 despite the small area available. An assessment of 27,600 ardebs was made compared with 4,000 in 1930. As regards the 1931-32 crop, most of the land having been cultivated in the previous year, a yield of only 20,630 ardebs is expected.

647. The pump scheme at El Dueim continued its successful career. Its value as an experiment for growing sakellarides cotton on the soil of the White Nile Valley has been more than justified by results; politically, there is little doubt that it is the most popular move made by the Government in this province since the reoccupation. The 1930-31 crop amounted to 836 kantars or three and a third kantars per feddan, and that of 1931-32, despite a severe attack of thrips, is expected to be fully as good.

648. The main markets for agricultural produce are situated at Tendelti, Kosti, Jebelein and El Dueim. In all of them the greatest care is taken to safeguard the interests of the Arab cultivator. All produce for sale is weighed, the cultivator is given a receipt showing exactly what money is due him from the purchaser, and he is paid in cash on the same day. The fact that a market like Tendelti handled 8,671 ardebs of dura, 1,575 dukhn, 24,323 sesame, 2,854 ground nuts and 62,370 kantars of gum during 1931 shows the confidence of the producers in the system.

649. There are six boys' kuttabs and two girls' schools in the province with an attendance of 700 pupils. In addition, there is a primary school at El Dueim with forty-five pupils. These comprise the educational facilities provided for the town and riverain population. Generally speaking, there is a demand for education among the trading and official classes. During the year it was decided to place the kuttabs on the province budget and to set up local boards of notables to help in their management.

650. Outside the towns there are sixty-seven khalwas, with 1,632 pupils. These are designed to give rudimentary education to the outside Arab population. They vary very much in quality. The best of them are not far short of the first year in a kuttab, whilst the worst

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does not produce 5 per cent. literate pupils. A khalwa flourishes or languishes according to the interest taken in it by the local Arab sheikh. It is therefore essential to bring home to the latter that his khalwa is just as important a part of his duties as his court or other administrative activities. Steps in this direction have already been taken by making khalwa teachers draw their pay from the native administration chief and leaving it to the latter to decide, within certain limits, what pay each teacher should receive. Moreover, the establishment of a khalwa-kuttab at the residence of the nazir of both the northern and southern administrations should help the cause of education.

651. The revenue of the province amounted to £E. 45,035 and the expenditure to £E. 42,175. Assessment and collection of the main taxes was left almost entirely to the native authorities. Rain crops were assessed in the northern district according to area and yield of plots, which were divided into three classes; in the southern district there was a flat rate cultivation-poll-tax, which was varied between area and area according to crop yields. Both systems showed certain defects which it is proposed to remedy next year. Herd tax was checked by the Arab sheikhs, with general supervision by district commissioners. The result was an increase of £E. 3,000 in revenue. Tax collection was most successful. The only arrears were a small sum of about £E. 1,000 in herd tax, which was more than compensated for by the collection of £E. 6,568 of the 1932 cultivation tax. The expenditure of the province, owing to the financial stringency, was most carefully scrutinised, with the result that towards the end of the year it was possible to reduce the 1932 estimates by nearly 20 per cent.

652. During 1930 great strides were made in native administration and in freeing it as far as possible from bureaucratic control. The sub-districts of Geteina, Tendelti and Gebelein were withdrawn, the heads of the two native administrations were given definite financial responsibility and they assessed and collected their own taxes. 1931 has been a year of consolidating these advances. The most important step has been the giving to the two nazirs budgets of their own on the expenditure side. Each nazir now pays his own omdas, sheikhs, scribes, retainers and other members of his administration, he manages and pays for his roads and fire-lines, and he administers his minor local services, such as repairs to temporary buildings, feeding and working of short-term prisoners and clothing of minor retainers. It is hoped that next year it will be possible to go further and give each nazir his own complete budget with a definite percentage of revenue to be credited to his administration.

653. On the judicial and administrative sides also there has been steady progress. In each of the two districts there is a main nazir's court and this court is divided into a number of local panels presided over by vice-presidents, who are generally relations of the nazir. Under the panel courts are the omdas, with small punitive powers to deal with minor offences. Thus, there is a complete chain of judicial

machinery starting with the omda's court and ending with the main court presided over by the nazir. Similarly, on the administrative side, the nazir has his executive agents, who generally coincide with the vice-presidents of the panel courts. Under them again are the omdas. In both native administrations the underlying principle is a confederation of tribes united either by consanguinity or by historical associations.

654. Public security was satisfactory, although both the Hassania and Baggara are prone to crimes of violence generally connected with drink or women. During the year eighteen such crimes occurred and of these thirteen resulted in deaths. The native administrations have effectually dealt with local thieves, but the semi-professional criminals who operate from province to province present greater difficulties. These, no doubt, will be overcome when the local administrations begin to co-operate and co-ordinate with each other to a greater degree than they do at present.

655. The health of the province, except for a bad outbreak of malaria during the heavy rains, has been good. Additional wards and an operating theatre have been added to the Dueim Hospital and there are now eight dispensaries in large outside villages. Bilharzia is still a serious problem, but the provision of wells in villages which previously drew their water from the contaminated river, has made a marked improvement. Unfortunately, owing to financial exigencies, the provision of funds for wells has been temporarily suspended.

656. The medical inspector and his staff continue to play an important part in the life of the province and by their presence at tribal gatherings and visits to the residences of the chief omdas and sheikhs contribute materially to the feeling of confidence in the Government. There are eight tribal dressers attached to the native administrations, and these should form the nucleus of an extended service in the future. The bilharzia quarantine at Kosti examined 11,651 persons. The general administration of the quarantine has been handed over to the district commissioner.

657. Trade has gone through a most trying period. Gum prices for the first few months of the year remained steady round about 60 piastres per kantar, but with the advent of the new crop prices sank to below 20 piastres per kantar. If they do not improve, collection of gum will undoubtedly fall off, although trees are yielding heavily. Sesame and ground nuts commanded prices which were fairly satisfactory in view of general economic conditions. The price of grain, owing to locust ravages and demands from southern provinces, rose sharply towards the end of the year and reached a price of 11 piastres per keila.

658. A serious epidemic of rinderpest swept the province at the beginning of the year and is estimated to have accounted for 7,000 deaths in cattle. Owing to reduction of veterinary staff and difficulty of obtaining a sufficient supply of serum, the veterinary inspector had to

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fight a losing battle. Steps are being taken to meet a recurrence of the disease. Nine new veterinary retainers were appointed and were trained by the veterinary inspector during October and November. They were selected by their own nazirs and omdas, the only stipulation being that they should be literate. These were posted to their districts as soon as they were trained and have been a great success, and in the case of an outbreak would save the large losses of last year. They are used for reporting outbreaks, arranging quarantine work and giving inoculations. As a result of their appointment and the very sympathetic attitude of the veterinary inspector, the whole feeling of the Arabs, and especially the Baggara, towards cattle plague is quickly changing. Whereas of old it was characteristic of the Baggara to conceal rather than to report outbreaks, he is now very ready to bring in news of them and still more eager to have his cattle injected with serum.

659. The White Nile Baggara keeps cattle for the pride of keeping them and is unwilling to part unless he gets an inflated price. Egypt now takes only a very small number of cattle from the Sudan, and these, from fear of overstocking the market, have to be rationed over the year. The cattle owner in Darfur and French West Africa is willing to sell his animals at a very low price, with the result that very few Baggara cattle are sent forward for export. The Gezira, with its annual demand for fat bulls, ought to provide an important home market, but Baggara pride has in the past proved a stumbling-block. This year it is satisfactory to note that considerable numbers of White Nile cattle were sent to the Gezira market, but export to Egypt is still a negligible factor. One can only hope that with better methods of combating disease the number of cattle may increase and automatically reduce local price levels, and that the demand from Egypt may become greater, and better facilities for the export of White Nile cattle be granted.

#### CHAPTER XIV.—GAME PRESERVATION.

660. Captain H. C. Brocklehurst, F.Z.S., relinquished the post of Game Warden in August, after nine and a half years' service in that post, during which time he had done valuable work for the preservation of game in the Sudan. His departure is a heavy loss to the department.

661. The budgetary provision for the year was £E.4,054. Expenditure amounted to £E.4,112, but the revenue, estimated at £E.4,350, amounted only to £E.2,719. The drop in revenue is to be attributed to various causes. In the first place there was a considerable decrease in the sale of licences, owing to the smaller number of tourists. Thus only two parties visited the Dinder during 1931, whereas in normal years all vacancies there are booked months ahead. The reduction in the number of officials also led to a corresponding reduction in the number of licences sold. In the second place, owing to low price of ivory, fewer "A" licences were taken out, and the receipts for

elephants killed were considerably reduced. It is also to be noted that a sum of £E. 738 for animals sold to the Giza Zoological Gardens in December was not credited to the Government during 1931.

662. Belated returns were received of game killed in 1930. These amounted to 126 head, killed by 21 visitors. In 1931, 191 head of game were killed by 20 visiting sportsmen, and 1,277 head were killed by 207 officers, officials and residents.

663. 3,013 kilog. of hippopotamus hide were exported during 1931 under permits from the department, compared with 3,852 kilog. in 1930.

664. The amount received in entrance fees at the Khartum Zoological Gardens was £E. 289, compared with £E. 404 in 1930. The number of persons who visited the gardens was 41,784, compared with 54,827 in the preceding year.

665. The gardens received, amongst other game species, the following animals and birds: one male and one female giraffe and one female greater kudu from the Roseires and Singa depots, a large consignment of birds from the American Mission station at Doleib Hill.

666. During the year the Game Warden visited Mongalla and Bahr-el-Ghazal Provinces, and the Assistant Game Warden the Dinder. In Mongalla large numbers of elephants were seen in the Opari district and game was plentiful along the river around Mongalla. A proposal is at present under consideration to make a game sanctuary in the triangle formed by the River Nile and the Mongalla-Ngala Ngala and the Juba-Ngala Ngala roads.

667. A new sub-species of *situtunga* was discovered by Major P. M. Larken in the Yambio district and has been named *Limnotargus Spekei Larkenii Subs N.* A yellow-backed duiker was killed in Yambio district by the Game Warden.

668. An enormous migration of game from north to south near Moru Agippi in May and June was reported by His Britannic Majesty's consul at Maji. The game was coming from the uninhabited country east of Bor and going in the direction of the Lotigipi swamp. Tiang were seen in thousands, also lesser eland, zebra, giraffe, oryx beisa and Grant's gazelle. Later in the year a large migration on the same line of Nile lechwe was noted headed by an albino bull. The game returns north about November.

669. Two giant eland, a bull and a cow were procured for the American Natural History Museum by Mr. J. Clarke in the Amadi district.

670. In the southern district of the White Nile Province there is a marked increase in the game in the last few years. This is attributed to the reduction of fire-arms in native possession. Roan antelope are reported common, south of Kerrikerra.

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## CHAPTER XV.—STORES AND ORDNANCE.

671. The main feature of the year's working was the economy effected by retrenchment. A revised system of stores control was introduced which, without sacrificing efficient control over consumption, secured great simplification in procedure. The cost-accounting methods were discontinued in favour of a system of free services to provinces and to departments not organised on a commercial basis. Largely as a result of these changes, twenty-five posts for classified officials were cut out of the budget.

672. Approved establishments of stores, and a classification of the stores vocabulary into consumable and non-consumable, were also introduced; appreciable economies in consumption were effected, together with the reclamation and return to store of large stocks which became surplus in provinces and departments.

673. The immediate results of these changes are reflected in the cash disbursements of the department for the year, which were £E. 1,670 for local purchases as against £E. 10,109 in 1930, and £E. 17,634 for purchases abroad, compared with £E. 104,026 in 1930. 95 per cent. of the purchases abroad were made in the United Kingdom. The prices of commodities purchased from the United Kingdom generally remained at the 1930 level.

674. The cost of printing and stationery amounted to £E. 14,853 compared with £E. 29,585 in 1930, and further economies are anticipated in 1932.

675. The value of stocks on hand at the end of the year was £E. 168,000, of which £E. 84,000 was in arms, ammunition and explosives.

676. The ordnance workshops were fully occupied, but the general trades workshops of the department were affected by the lower consumption of stores and by the return of the surplus stocks, and it became necessary to dispense with the services of 50 per cent. of the personnel.

677. The arms of all Sudan Defence Force units and of the police were inspected by British inspecting armourers. The police of Kordofan and Dongola Provinces were rearmed with the magazine rifle. The annual inspection was carried out of ammunition and explosives on charge of all British army units in the Sudan, also periodical inspections of cordite and gun cotton.

678. At the end of the year the department took over the stocks and duties of the main supply depot of the Supplies Department, Sudan Defence Force.

## CHAPTER XVI.—SURVEYS.

*General.*

679. For the second year in succession reductions in survey work have to be reported as a result of the financial situation and of the

general depression in trade. The latter restricted the demand for development and other surveys from private individuals and companies; town building operations decreased and a greatly reduced number of building petitions were submitted, for instance, in Omdurman. Considerable reductions in staff have therefore been made and more are contemplated.

680. The British staff has been reduced by four inspectors of surveys; the post of a British superintendent will also be suppressed on the retirement of the present holder. Two surveyors attained the age limit and retired; six more native surveyors were compulsorily retired in the interest of economy.

*Triangulation.*

681. In February it was decided that no survey work beyond that required to maintain existing surveys could be carried out. This decision involved the postponement of all triangulation and topographical surveys throughout the country, and the work of the topographical office has been limited to collecting and checking information obtained from sources outside the department and incorporating it in the office copies of the topographical maps.

*Astronomical Observations.*

682. A motor machine-gun battery of the Sudan Defence Force carried out a cross-country reconnaissance of a possible motor route from Khartum to El Fasher, across Northern Kordofan. An inspector of surveys went with it. He fixed the position of seven stations along the route by means of astronomical observations for latitude and wireless time signals for longitude. This cross-country journey added to and improved much of the topography on existing maps, which had been plotted from route reports. The wireless outfit rendered it possible to fix camp positions each night and to correct the positions of wells, some of which were up to 5 miles in error. Furthermore, it will make it possible for reports of a number of journeys in the north-west direction across the route to be readjusted and replotted more accurately.

683. The number of route reports and sketches contributed by officials, officers and others outside the survey department was much the same as last year. These form a very valuable source of information and the detail shown on the topographical sheets of areas not yet completely surveyed by the department is very largely obtained from these reports. Eighty-one sketches and thirty-eight reports were received.

*Production of Maps.*

684. Twenty-five of the official 1/250,000 topographical sheets were revised and republished and one of the 1/1,000,000 sheets. Corrections for the 1/1,000,000 and 1/3,000,000 maps of the Sudan

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were sent to the War Office for incorporation in new editions. Forty-three special maps and drawings were produced for the administrative authorities, including a road map of the Sudan, which had not hitherto been attempted, and a map showing tribal distribution.

685. A set of the maps produced by the Air Survey Company (Limited) for the Egyptian Government, based on the aerial survey of the region lying in the triangle Mongalla-Pibor-Bor in Mongalla and the Upper Nile Provinces, was received from the Inspector-General of the Egyptian Irrigation Service in the Sudan. The information on these maps, which does not appear on the official 1/250,000 series, is being incorporated in the sheets concerned as they come up for revision and republication.

686. The new edition of the gazetteer has reached the proof stage; it is hoped that copies will be available for circulation early in 1932. Proofs have all been returned to England, where the book is being printed by His Majesty's Stationery Office.

#### *Cadastral Section.*

687. Work on the Kawa rainland settlement was continued. The computation of the areas of 4,730 plots, covering a total of 206,745 feddans, was completed; the details of these plots were entered in the area books, adjusted and checked; 213 plans on the 1/4,000 scale, covering 149,800 feddans, have been prepared, checked and are now ready for tracing; 24 key maps, scale 1/20,000, were compiled. The replacement of the missing and the repair of the damaged minute of arc beacons in the featureless Gezira Plain was completed in April. The whole area of registered land has now been dealt with except a narrow fringe along the White Nile, marked out by temporary beacons, which will not be required when the projected Gebel Aulia reservoir is filled. Over 2,000 beacon sites were inspected; 94 beacons were found to be missing and were re-established, and 554 were repaired.

#### *Town Surveys.*

688. The survey of Juba, referred to last year, was completed in February and six plans on a scale of 1/500 have been prepared and issued. The triangulation control of the three towns of Khartum, Khartum North and Omdurman, which were formerly referred to different data, have been co-ordinated with reference to the Khartum origin and the three separate town-traverse systems have been linked up. A new 1/5,000 scale plan, for use principally as a lands and registration plan, was prepared and published; a further plan on the same scale, showing Khartum business and residential areas, for which there is a public demand, is now in course of preparation. Wad Medani was re-traversed and the village of Derig, outside the town boundary, was completely surveyed. Traverse extensions have been made to include recent development in the towns of Port Sudan, Singa, Torit and Wadi Halfa; the surveys of Tokar, Rufaa, Hag Abdullah, Malakal and Roseires have been revised.



*Province Offices.*

689. Except for certain town surveys no work was carried out in the Provinces of Mongalla, Bahr-el-Ghazal, Upper Nile, Fung and Kordofan, and the survey office in El Fasher, the capital of Darfur, was closed as a measure of economy in August. In other provinces maintenance of existing surveys was kept up to date, but no new work of any magnitude was undertaken. Work in connexion with the survey of the Gezira irrigated area kept the Blue Nile Province office fully employed, and the Gebel Aulia dam project led to additional work in the White Nile Province. In the northern part of Halfa Province, where river lands will be affected by the heightening of the Assuan dam, a level survey is now being carried out by an Egyptian survey party.

*Technical Education of Surveyors.*

690. For the second year in succession the summer school of instruction was held in Omdurman instead of at Sinkat, during the leave season. Officials attended this school voluntarily during their leave, principally in order to qualify in the "efficiency bar." As most of the officials now serving have passed the examinations, the numbers attending the school are falling each year and may be expected to continue to do so. Eleven officials attended, of whom six wished to qualify for the junior examination and five for the senior. One candidate also presented himself for coaching for the final survey examination. Seventeen candidates entered for the "efficiency bar" examinations, which were held in Khartum and Omdurman during September; six were successful. An inspector of surveys conducted the practical test of the fourth-year engineering students of the Gordon College in the use of the theodolite and level for the Sir Edgar Horne prize for proficiency in survey work.

*Printing Section.*

691. Two of the printers in this section were instructed in colour printing on the new rotary printing press which was installed last year. This had not previously been attempted, the colour printing of large size maps being done on the smaller machine on two or more sheets, which were subsequently joined. The new system is much more satisfactory and is more economical. Though the general reduction of work was felt in this section and the output fell below that of last year, yet over 25,000 sheets, valued at £1,807, were turned out during the year.

## CHAPTER XVII.—PUBLIC WORKS.

*General.*

692. The pressing need for economy in public expenditure had a very marked effect on the activities of this department. In the year under review expenditure was restricted to the maintenance services and to the completion of projects already in hand, no new works of any

magnitude being initiated. The total expenditure incurred amounted to £E. 941,028, as compared with £E. 648,179 in 1930, and £E. 540,139 in 1929. These figures are not as included in the ordinary accounts, but have been reduced to a true expenditure basis, all accounting provision for interest and renewals fund charges on water supply schemes having been omitted, as well as all expenditure on the purchase of motor vehicles and stores for direct issue to other departments. The expenditure of £E. 648,179 incurred in 1930 represented the high-water mark of departmental effort and the execution of so large a programme of work in that year was only rendered possible by the reorganisation which had gradually been effected. The cancellation of credits in 1931 introduced many difficulties, and it was no easy task quickly to reduce the departmental organisation to the needs of the smaller programme of work without doing serious damage to the administrative machinery.

#### *Revenue.*

693. The revenue departmentally earned in 1931 was £E. 34,848, as compared with £E. 35,952 in 1930 and £E. 29,892 in 1929. Although the decrease, as compared with 1930, amounted to £E. 1,004 only, the deficit on the budget for the year amounted to £E. 2,485. Of this deficit £E. 2,078 was due to the falling off in the demand for water at Port Sudan. The El Obeid water supply and the small pumping schemes in various parts of Kordofan and Darfur provinces actually earned more revenue than was anticipated, but this increase was set off by reduced demands elsewhere.

#### *Maintenance of Buildings and Works.*

694. The upkeep and maintenance of Government buildings, both civil and military, was carried out at a total cost of £E. 41,949, as compared with £E. 56,346 in 1930. It is worthy of note that in spite of the budgetary maintenance provision having been reduced by some £E. 15,000, a saving on that reduced budgetary provision of £E. 12,830 was effected. Although it has been impossible to give the same attention to decoration as in previous years, the buildings have been well maintained structurally.

#### *New Buildings.*

695. The total expenditure on new buildings, including those for the occupation of British troops and the Royal Air Force, amounted to £E. 160,837, as compared with £E. 405,764 in 1930. In Khartoum the principal work in hand was the provision of accommodation for the Royal Air Force under the general programme estimated to cost £E. 71,000, the sum of £E. 34,176 being expended during the year. Not only were the old Said Pasha barracks remodelled and modernised, but new buildings were erected, comprising main stores, workshops, and motor transport sheds; also parachute stores, salvage stores,

magazines and bomb-proof shelters. A scheme was prepared for modernising the barracks at Khartum North, which had for some time past been occupied by British troops, though not designed for the purpose and in many respects unsuitable. A preliminary programme estimated to cost £E. 8,800 was settled and by the end of the year one of the barrack blocks had been remodelled. At Omdurman buildings were erected to serve as a training school for midwives at a total cost of £E. 6,872.

696. In the Blue Nile Province a new botanical laboratory was completed at the Gezira Research Farm, a large hospital was built at Abu Usher costing £E. 14,625, and also new buildings for the Irrigation Department at a cost of £E. 11,929. At El Obeid, in Kordofan Province, the new house for the Governor was finished, and at the hospital £E. 4,813 was expended on a new out-patients' block and on a two-storey building of which the ground floor is to be used as the province store for medical comforts and the upper floor is designed for the accommodation of two first-class paying patients. Many other small building works were carried out in Kordofan Province, noticeably at Dilling, Kadugli and Rahad. In Darfur Province many works were in hand, the largest being the completion of the new fort at Nyala.

697. In the Upper Nile Province building work was undertaken at Malakal, Nasir and Akobo. At Shambe, on the Nile, an old rest-house was converted into an open-type hospital ward, a new dispensary was built, and a house for the medical officer, at a total cost of £E. 1,457. To show the difficulty of constructing permanent buildings at Shambe, it may be mentioned that all bricks had to be brought 855 miles by river from Khartum. At Juba, in Mongalla Province, the building of the new station, which has been in progress for the last three years, was finished, the last major item being two houses for the headquarters of the district commissioner and the senior medical officer. It is worthy of note that this latter house was constructed entirely by local artisans, thus proving that given experience and careful supervision it is possible to produce good workmen from these southern races. In Bahr-el-Ghazal Province most of the works provided for in the large programmes of 1929 and 1930 were completed. The major items carried out during the year included two large pavilion wards at Wau hospital, a house for the assistant district commissioner and a district office at Tonj, a house for the district commissioner and a theatre block for the hospital at Rumbek.

698. At Port Sudan a new post office was built at a cost of £E. 9,321. At Gebeit camp a start was made on further improvements in the accommodation for British troops. Under an arrangement by which the Sudan Government bore the capital cost, on the understanding that the British army would pay for the current consumed at certain agreed rates, a complete electrical installation, including generating plant, was provided at this camp; this has been working for some time with satisfactory results. Elsewhere in Kassala Province no important

works were in progress, but various small buildings have been erected at Kassala, Gedaref and other stations.

*Water Supplies.*

699. Port Sudan water supply did not have such a successful year as in 1930, the revenue amounting to £E. 14,922, as against £E. 17,313 in 1930, and an estimate of £E. 17,000. The reduction in demand was almost entirely due to diminished trade in the port. Whereas in 1930, 395 ships filled their bunkers with Port Sudan water, in 1931 the number fell to 305, the average amount taken also fell from 94 to 63 tons. As a result of the decreased import and export trade it was possible to reduce the railway services and the amount of water demanded for locomotives: and the needs of the port generally were very much reduced. On the other hand, this was the first year in the history of the scheme in which the maintenance of the wells and pipelines gave no cause for anxiety. There were good rains over the water-shed; and in the bed of the river, whence the supply is derived, the water table was maintained at a higher level than for some years past. In these favourable conditions it was possible to make considerable economies on maintenance expenditure. There was no sensible decline in the public demand, and the number of metered house connexions actually increased from 573 to 660.

700. The Tokar water supply again had a very disappointing year, the revenue earned amounting to £E. 1,273 as compared with £E. 1,387 in 1930 and £E. 2,513 in 1929. The decline in demand is attributable to two causes: first, the continued deterioration in the quality of the water; second, the lack of general employment and consequent willingness of the local population to transport water from outlying wells at a cost much lower than before. Active steps were taken to remedy the defect in quality. It was found that whereas the quality of the deep waters showed few signs of improvement, there were at higher levels better quality waters which could be extracted in small quantities without fear of serious deterioration. Two open wells were sunk to a depth of some 22 metres only, and over these windmill pumps were erected. It was found that a fair average quality of water could be obtained by allowing these windmill pumps to work for a definite number of hours daily, and augmenting the supply by only occasional recourse to the power-driven pumps on the deep wells. Not only was better quality thus obtained, but considerable economy was also effected by reducing pumping hours on the deep wells from 1,800 to 1,100. Recently measures have been taken to remove the restriction on the retailing of water by householders with metered connexions: and to reduce the cost of water sold from the public stand-pipes. It is hoped that these measures, together with the improvement in quality, will soon lead to a revival of the old demand.

701. The El Obeid water supply for the first time fulfilled its purpose as a measure of insurance. During the summer practically all the open wells in this large town ran dry and both the inhabitants

and much of the neighbouring population became dependent on the Government water supply, and on it alone. Revenue amounted to £E. 3,170 as compared with £E. 2,340 in 1930 and an estimate of £E. 3,000. For the first time in the history of this scheme the revenue estimate was exceeded. The supply is obtained from a number of deep well pumps which deliver water into a collecting tank, whence, after chlorination, it is lifted into an overhead distribution tank. At one time all these pumps were working to their fullest capacity and any serious breakdown might have had dire results.

702. The Kordofan, Darfur and White Nile water supplies had a very busy year. The revenue earned amounted to £E. 7,386, as compared with £E. 7,129 in 1930 and £E. 3,180 in 1929. Undoubtedly, the year 1931 stands out as the busiest on record. The people are coming more and more to depend on the pumping stations as a measure of insurance when their own rudimentary methods of storing water are no longer available to them. Rains did not become general in Kordofan until the middle of July and heavy demands were made on all pumping stations up to that time; indeed, from April until July many of these deep-well pumps were working for sixteen or more hours a day. The maintenance and operation of these small water supplies scattered all over the country, some of them 300 miles and more away from their base at El Obeid, caused very grave anxiety to those concerned. For instance, a large population of men and animals had taken up their quarters at Ghabeish, so that the output of the two deep wells, never as copious as elsewhere, was taxed to the utmost. Both pumps broke down at once. The damage was beyond the skill of the engine drivers to repair. An urgent message was sent 90 miles to Nahud to be telegraphed to El Obeid, a further 130 miles away. Expert mechanics travelled night and day over bad roads and tracks, but by the time they arrived a catastrophe was in sight. But, by the enterprise and foresight of the native in charge, the small quantity of water in the tank when the pumps broke down had been reserved for human consumption; the mechanics, working feverishly, had one pump repaired within three hours of arrival; and no lives were lost, though between 200 and 300 cattle died of thirst. The distribution tanks have since been enlarged, both at Ghabeish and at another inaccessible station, as an insurance against the repetition of so serious an emergency.

#### *Juba Water Supply.*

703. The plant and machinery for this permanent supply were installed and put into operation. The Nile water at Juba is very heavily charged with silt and requires treatment. The plant consists of a specially-designed sedimentation tank, settlement tanks, alum precipitation tanks, Paterson filters and a chlorinating apparatus. Both low-lift and high-lift pumps are installed, and the water is

distributed to all parts of the town. The total cost of this scheme was £E. 9,100.

#### *Roads.*

704. The roads maintained by this department during 1931 comprise the road from Juba to Libogo on the boundary of the Belgian Congo, together with the connexion between that road and the Juba ferry, the earlier-constructed portion of the Juba-Nimule road and the Erkwit roads in the Red Sea hills. The total amount expended on maintenance was £E. 4,439. Two new steam-rollers, which had been purchased for the maintenance of the Juba-Libogo road, were erected and put into operation.

705. Good progress was made towards the completion of the Juba-Nimule road, the length of road formed and gravelled during the year almost equalling the length of road so constructed in the two years 1929 and 1930. Not only was the standard of construction higher than that of the earlier portions of this road, but this higher standard was achieved at less cost. It is claimed by the road engineer immediately in charge that the Juba-Nimule road will be one of the best roads in Equatorial Africa and that its cost per mile will be considerably less than that of most of the arterial roads in the East African colonies. The bridge over the River Kit, consisting of two spans of 75 feet each, was finished in April and much work was done on the Assua bridge. The building of this latter bridge is the major item of work on the road. It will consist of four spans each of 100 feet. By the end of the year the abutments and the three piers had been completed. one of the 100-foot steel spans had been erected in its final position, and the steel-work of two other spans had been erected ready for launching into position. It is hoped that this bridge will be completed by the end of April 1932. Concurrently with the completion of the Assua bridge the road work will also be completed and an important link in the road communications of Equatorial Africa will have been forged.

706. Further progress was made with the mechanical grading of roads in the Upper Nile Province. Three graders were employed and a new road was constructed from east of Fathai to Akobo and thence some 20 miles south towards Pibor, where it joined a road graded northwards from Pibor by the Egyptian Irrigation Service. Maintenance grading was done on the earlier constructed portion of the road between Akobo and Fathai and between Fathai and Malakal.

#### *Departmental Organisation.*

707. Owing to the general reduction of Government activities, both inside and outside the department, there was much less demand on the stores and mechanical engineering sections; there was also some decline in the demands on the civil mechanical transport section, due to the fact that fewer new vehicles had to be put into commission. In

the stores section the total expenditure brought to account during the year amounted to £E. 102,954, compared with £E. 276,550 in 1930.

708. In the mechanical engineering section, the total value of work carried out amounted to only £E. 27,412, compared with £E. 41,760 in 1930. This section continued to take complete charge of the operation, maintenance and repair of all the irrigation and drainage pumps in Khartum; there are now twenty-nine of these pumps situated in all parts of the town. The usual assortment of small works was dealt with, the only project demanding special mention being the erection of a 10,000-gallon petrol storage tank in the defensible area at El Fasher.

709. As stated above, the central garage was called upon to equip fewer new vehicles than in previous years, thirty-eight in all: in most cases these vehicles were required to replace the old type Fords which could no longer be run economically. The central garage in Khartum had a busy year, but in spite of this it was found possible by reorganisation to reduce personnel and therefore labour charges. The subsidiary garage at Wad Medani had again to expand its activities as the Sudan Irrigation Department decided to curtail their own motor repair organisation and to rely on the facilities offered by this subsidiary garage. All Government vehicles in the Blue Nile Province are now serviced completely by the Wad Medani garage: accurate records being available of the running costs of these vehicles, it is possible to assess the economy which can be obtained by this system of servicing.

710. The Director of Works, in his capacity as engineer for the Government under the concession agreements entered into with the Sudan Light and Power Company and the Wad Medani Light and Power Company, has had to give much time and thought to the affairs of these commercial undertakings. This especially applies to the Wad Medani Light and Power Company, which during the year has been putting down an entirely new installation both for the generation and supply of electricity and for the filtration and distribution of water. These new works have necessitated constant collaboration between the office of the Director of Works and the general manager of the company as regards the plans for work to be carried out locally, the specifications for that work and the placing of local contracts for its fulfilment.

## APPENDICES.

### APPENDIX I.

TABLE 1.—GENERAL SURVEY OF FINANCIAL POSITION.

—	1926.	1927.	1928.	1929.	1930.	1931.
<i>Revenue.</i>	£E.	£E.	£E.	£E.	£E.	£E.
I.—Normal administrative revenue .. .. .	2,153,764	2,159,848	2,566,077	2,493,352	2,624,460	2,340,163
II.—Receipts from Government commercial undertakings (pumping schemes and ginning factories in connexion with cotton cultivation, forage farms, water supply schemes and public utility services) .. .. .	135,014	117,933	151,208	180,618	143,711	168,791
III.—Irrigation Department receipts .. .. .	703,212	721,411	814,009	1,008,038	669,426	611,843
IV.—Net revenue from Railways Department .. .. .	401,951	428,617	398,894	402,995	506,026	361,000
	3,393,941	3,427,809	3,930,188	4,085,003	3,943,623	3,481,797
V.—Contribution from Egyptian Government .. .. .	750,000	750,000	750,000	750,000	750,000	750,000
Total Revenue .. .. .	4,143,941	4,177,809	4,680,188	4,835,003	4,693,623	4,231,797
Draft on General Reserve Account .. .. .	..	..	..	..	..	166,821
						4,398,618



<i>Expenditure.</i>						££.	££.	££.	££.	££.	££.
VI.—Normal administrative expenditure	..	..	..	..	..	2,109,130	2,203,918	2,333,979	2,535,747	2,719,561	2,590,042
VII.—Expenditure on Government commercial undertakings detailed under II above	..	..	..	..	..	100,319	107,542	142,373	165,689	170,239	165,661
VIII.—Irrigation expenditure—											
(a) General and current expenses	..	..	..	..	..	116,846	119,098	167,414	197,208	207,923	205,653
(b) Rent of land	..	..	..	..	..	30,602	33,432	42,800	59,809	70,890	74,628
(c) Interest and sinking fund payments on loans	..	..	..	..	..	571,477	568,881	603,795	713,487	729,009	742,822
(d) Allotments to special funds and reserves	..	..	..	..	..	50,000	..	..	..	19,423	..
Total of VIII	..	..	..	..	..	762,925	721,411	814,009	970,504	1,027,245	1,023,103
IX.—Military expenditure—											
(a) Exclusive of Pensions Fund	..	..	..	..	..	789,965	765,482	780,230	772,097	757,378	602,555
(b) Payments to Pensions Fund	..	..	..	..	..	..	..	8,000	18,750	19,200	17,257
Total of IX	..	..	..	..	..	789,965	765,482	788,230	791,747	776,578	619,812
Total Expenditure	..	..	..	..	..	3,768,330	3,798,353	4,078,591	4,463,687	4,693,623	4,398,618
X.—Surplus of revenue over expenditure transferred to General Reserve Account	..	..	..	..	..	375,602	379,456	601,597	371,316	..	..

## APPENDIX I.—TABLE 2.

*Comparative Statement of Finances for 1930 and 1931.*

	1930.		1931 (11).	
(a) Revenue.				
(A) Provinces—	£E.	£E.	£E.	£E.
Date tax .. .. .	23,076		18,271	
Taxed land .. .. .	27,667		20,952	
Ushur .. .. .	90,028		36,155	
Poll and hut tax .. .. .	70,530		71,198	
Animal tax .. .. .	150,913		127,985	
Tribute .. .. .	51,477		40,135	
Traders' licence and business profits tax .. .. .	36,695		33,310	
Royalties—				
Gum .. .. .	145,298		(12)	
Other articles .. .. .	7,651		(12)	
Rent from Government lands and properties—				
Tokar .. .. .	37,545		37,125	
Kassala .. .. .	15,000		55,000	
Other .. .. .	48,934		48,769	
Timber and firewood .. .. .	10,437		5,294	
Miscellaneous.. .. .	186,155		183,620	
		901,406		377,814
(B) Departments—				
Legal .. .. .	24,838		26,866	
Customs .. .. .	663,538		455,701	
Agriculture and Forests .. .. .	111,163		112,132	
Veterinary Service .. .. .	8,279		9,630	
Public Works.. .. .	35,851		57,875	
Posts and Telegraphs .. .. .	184,316		134,558	
Other Departments and Services .. .. .	86,870		134,616	
		1,114,855		931,378
(C) General Central Services—				
Sugar .. .. .	499,651		520,000	
Interest .. .. .	110,728		96,095	
Profit on bank-notes .. .. .	38,901		45,754	
Payment by Sudan Light and Power Company (Limited) .. .. .	52,800		56,000	
Other items .. .. .	7,095		6,629	
Contributions from Egyptian Government .. .. .	750,000		750,000	
Traders' licence and business profits tax .. .. .	42,735		12,763	
Railways Department (net receipts) .. .. .	506,026		361,000	
Royalties—				
Gum .. .. .	..		152,795	
Other articles .. .. .	..		9,726	
		2,007,936		2,010,762
(D) Gezira Revenue, Irrigation Department .. .. .	669,426	669,426	611,343	611,343
Total Revenue .. .. .	..	4,693,623	..	4,231,797
Draft on General Reserve Account .. .. .	..	..	..	166,821
		4,693,623		4,398,618

(11) The system of "free services" was instituted in 1931.

(12) Transferred to General Central Services, *q. v.*

TABLE 2—(continued).

	1930.		1931 <sup>(1)</sup> .	
(b) <i>Expenditure.</i>				
Provinces .. .. .	1,032,442	1,032,442	824,295	824,295
Departments and Services—				
Audit .. .. .	8,511		7,511	
Central Economic Board .. .. .	9,988		6,560	
Civil Secretary's Department .. .. .	39,741		34,457	
Customs Department .. .. .	47,448		38,086	
Education Department .. .. .	194,956		166,634	
Finance Department .. .. .	68,007		58,081	
Game Preservation Department .. .. .	5,778		4,104	
General Central Services .. .. .	314,358		417,704	
Gezira Agricultural Research .. .. .	..		24,995	
Governor - General's Office and Council .. .. .	23,509		17,248	
Public Security Intelligence Branch .. .. .	15,815		14,502	
Legal Department .. .. .	108,244		86,128	
Posts and Telegraphs .. .. .	247,031		229,316	
Public Works .. .. .	153,116		185,282	
Stores and Ordnance .. .. .	33,909		112,991	
Secretariat for Education, Health, &c. .. .. .	3,447		2,816	
Sudan Agency, Cairo .. .. .	10,759		9,642	
Medical Services .. .. .	254,239		263,566	
Surveys Department .. .. .	48,961		40,039	
Veterinary Service .. .. .	51,557		43,511	
Agriculture and Forests .. .. .	217,984	1,857,358	168,235	
Total Expenditure of Provinces and Departments .. .. .	..	2,889,800	..	1,931,408
Irrigation (Gezira Scheme) .. .. .	..	1,027,245	..	1,023,103
Military Expenditure .. .. .	..	776,578	..	619,812
Total Expenditure .. .. .	..	4,693,623	..	4,398,618

(<sup>1</sup>) The system of "free services" was instituted in 1931.

## APPENDIX II.

*Reserve Account Situation, 1931-32.*

			££.
Unallotted balance as at date of 1930 Report ... ..			687,112
No. of Vote.	<i>Votes in 1931.</i>		££.
654.	Excess on Juba construction programme ... ..		2,000
655.	Province roads and hafirs ... ..		5,000
656.	Minor capital demands ... ..		8,000
657.	Posts and Telegraphs Department . . . . .		3,530
658.	Nimule-Torit and Kapoeta roads ... ..		8,000
659.	Contingent loss on southern rain-grown cotton ... ..		45,685
660.	Transfer to Working Cash Balance Reserve... ..		100,000
661.	Transfer to Gezira Equalisation Account ... ..		80,446
662.	Loss on Northern Group seed levy ... ..		384
663.	Mechanical transport ... ..		1,100
664.	Subscription to the Imperial College of Tropical Agriculture, Trinidad ... ..		500
665.	Depreciation in values of securities held by Sudan Government ... ..		10,341
665A.	Draft to equalise 1931 Budget Account ... ..		166,821
			431,807
			255,305
<i>Add—</i>			
(a)	Transfer from Gezira Reserve for interest and commit- ments ... ..		387,543
(b)	Interest earned, cancelled credits and various receipts in 1931 ... ..		174,348
			561,891
Unallotted balance at January 1, 1932 ... ..			817,196

APPENDIX III.

SUDAN LOANS.—*Summary of Position.*

	Description.	Extent of Guarantee by His Majesty's Government in the United Kingdom.	Date of Issue.	Nominal Amount.	Amount Outstanding on December 31, 1931.	Issue Price.	Net Proceeds.	Dividends due.
(A) Sudan Guaranteed Loans ...	1. 5½ per Cent. Guaranteed Bonds, 1929-59	Interest ...	October 1919...	£ (sterling). 3,500,000	£ (sterling). 6,092,100	95½	£(sterling) 3,342,500	} May 1, November 1.
	2. Ditto ....	Interest ....	February 1921	2,850,000		92	2,649,600	
	3. 4½ per Cent. Guaranteed Stock, 1939-73	Principal and interest	January 1923	3,250,000	} 3,763,400	93	3,022,500	} February 1, August 1.
	4. Ditto ...	Ditto ....	May 1924 ....	513,400		95½	489,012	
	5. 4 per Cent. Guaranteed Stock, 1950-74	Ditto ....	November 1924	1,500,000		86	1,290,000	
(B) Loans of construction companies in which the Sudan Government is the sole shareholder and for the service of which the Sudan Government is responsible :—								
1. Kassala Railway Company (Limited). Shares, £1 each, authorised and fully paid up, £300,000. Sudan Government sole shareholder. Interest payable out of proceeds Debenture Stock to 31st December, 1925	4½ per Cent. Guaranteed Debenture Stock, 1934-53	Principal and interest (Trades Facilities Act, 1921)	January 1923	1,290,000	} 1,440,000	93	1,199,700	} February 1, August 1.
Ditto, ditto ....	Ditto ....	Ditto ....	January 1927	150,000		91	136,500	

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APPENDIX III—(continued.)

	Description.	Extent of Guarantee by His Majesty's Government in the United Kingdom.	Date of Issue.	Nominal Amount.	Amount Outstanding on December 31, 1931.	Issue Price.	Net Proceeds.	Dividends due.	
(1 <sup>2</sup> )	Sudan Construction and Equipment Company (Ltd.). Shares, £1 each, authorised, issued and fully paid up, £10. Sudan Government sole shareholder. Interest payable out of proceeds. Debenture Stock to 31st December, 1926	4½ per Cent. Guaranteed Debenture Stock, 1931-45	Principal and interest (Trades Facilities Acts, 1921-24)	February 1925	540,000	485,000	96½	321,100	February 1, August 1.
(1 <sup>3</sup> )	Gedaref Railway and Development Company (Sudan) (Ltd.). Shares, £1 each, authorised, issued and fully paid up, £100. Sudan Government sole shareholder	5 per Cent. Guaranteed Debenture Stock, 1932-62	Principal and interest (Trades Facilities Acts, 1921-26)	February 1927	2,160,000	2,129,400	100½	2,170,800	March 1, September 1.
(C)	The Sudan Government is also interested in the under-mentioned company and has guaranteed the Debenture issue shown :—								
(1 <sup>4</sup> )	Sudan Light and Power Company (Ltd.). Nominal share capital (£1 shares), £450,000. Issued and fully paid up, £408,000. Interest payable out of proceeds of Debenture Stock to 30th June, 1928	5 per Cent. Guaranteed Mortgage Debenture Stock, 1931-55	Principal and interest (Trades Facilities Acts, 1921-25) and also by Sudan Government	July 1, 1925 ... (Taken up by Prudential Assurance Company)	400,000 Proceeds paid in to Sudan Light and Power Company's account with Overseas Bank (Ltd.)	400,000	97	...	January 1, July 1.

(\*) Payments due on Sinking Fund Account were duly made in 1931.

## ANNEX.

**Lee Stack Indemnity Fund.***Fifth Annual Report for the year 1931.*

1. The present allocation of expenditure on capital and running account is contained in enclosure No. 1.

2. Statements of account showing the position of the fund as at the 31st December, 1931, are given in enclosure No. 2. It will be noted that the value of securities held has been written down to their market price as at the 31st December, 1931.

## ITEMS CHARGED TO CAPITAL ACCOUNT.

*Item 1A.—Stack Medical Research Laboratory, Khartum.*

During the year a small sum has been expended from the reserve for the provision of a refrigerator and other minor fittings.

*Items 5 and 6.—Medical Work (South).*(a) *Permanent Hospitals.*

Final accounts for the hospital at Juba have now been received, the amount actually expended being £E. 15,796·285 mms., against the £E. 15,800 estimated.

(b) *Sleeping Sickness Work.*

Of the £E. 600 approved for the general work of this service, the sum of £E. 395·787 mms. was expended in 1929. Since that date no further expenditure has been incurred, and the balance of £E. 204·213 mms., not being required, has been retransferred to unallotted capital.

(c) *Unallotted.*

The sum of £E. 222·680 mms., shown in last year's report, has been retransferred to unallotted capital and the item removed from the schedule.

*Items 8 and 14.—Hospital Ship and Barge.*

As explained in last year's report, the need for a new hospital ship to replace the "Lady Baker" (Item 14) was carefully examined, and it was found that, as a result of opening up of new roads, medical work in the southern provinces bordering on the river could be carried out more expeditiously and economically by road transport and that the necessity for a new hospital ship had disappeared. The hull has been taken over by the Sudan Government Railways and the

expenditure debited to the fund has been recovered. Replacement of the hospital ship "Lady Baker," shown in enclosure 1 submitted with last year's report, is therefore now removed from the schedule.

With regard to item 8, the barge, which has been taken over by the medical department, was specially fitted up as a medical dispensary (in which capacity it is proving extremely useful) and has been in use on the upper regions of the Nile since February 1931. The final figure of cost of the barge and medical equipment amounted to £E. 3,213·903 mms., and the balance, viz., £E. 1,786·097 mms., has been retransferred to unallotted capital.

*Item 11.—Library and Museum.*

As explained in last year's report, the building of the library and museum has been postponed as the interest on the capital approved for this purpose is required temporarily as a subvention for certain medical services which cannot otherwise be provided.

*Item 13.—Stack Memorial Tower, Khartum Cathedral.*

The tower and peal of bells were completed early in 1932. The amount approved is £E. 9,000, but the final expenditure figure is not yet known, and will be shown in the report for 1932.

*Item 15.—Extensions to Church Missionary Society Hospital at Omdurman.*

The extensions to the hospital have been completed and the whole of the sum of £E. 4,200 allotted has been expended on this project.

*Item 16.—Stack Memorial Tower, Wad Medani Church.*

A sum of £E. 2,000 was approved during the year, against accumulated interest, to meet the cost of the erection of a Stack memorial tower for the Wad Medani church. The church and tower have been completed.

ANNUAL GRANTS FROM THE INDEMNITY FUND.

*Items 2 to 6.—Medical Work.*

A period of financial stringency threatened the curtailment or even cancellation of important medical services unless a further subvention from the fund was forthcoming. Approval was consequently obtained to abandon or postpone certain projects approved by the committee, to reduce the capital set aside for another proposal, and to apply £E. 5,000 of the interest on capital thus released as an additional subvention to the Medical Service for the years 1932 and 1933. This temporary reallocation of funds will be reviewed at the close of the year. The Medical Service thus received a subvention to its budget of £E. 18,400 for work on bilharzia, ophthalmia, sleeping sickness and other endemic diseases.



*Item 10.—General Charity Fund.*

A further reduction in annual grants to Governors for purposes of charitable distribution, envisaged in last year's report, was carried out and the sum invested to provide an income was reduced to £E. 80,000, as it was felt that an annual sum of £E. 1,500 would meet the needs of Governors. The total sum utilised in 1931 amounted to £E. 1,017·001 mms.

*Item 12.—Almshouses, Omdurman.*

The annual grant of £E. 800 provided for the maintenance of the almshouses, Omdurman, was continued. The excellent work done in this connexion is much appreciated, and during 1931 the number of inmates was eighty-six, compared with forty in 1930. A sum of £E. 617·811 mms. was expended, which included an honorarium to the Church Missionary Society for supervision.

(Signed) H. A. MACMICHAEL  
(for President),  
*Lee Stack Indemnity Fund,*  
*Supervisory Committee.*

## Enclosure 1.

## LEE STACK INDEMNITY FUND.

*Capital Grants.*

Item.		£E. mms.
1 A	Stack Medical Research Laboratory, Khartum—	
	Present building (completed) ... ..	21,117,357
	Reserved for extensions ... ..	3,882,643
1 B	Travelling Railway Laboratory (completed) ...	4,503,658
2	Travelling Ophthalmic Hospital (completed) ...	3,017,365
3 & 4	Bilharzia Work (completed) ... ..	2,180,550
5 & 6	Medical Work (South)—	
	(a) Permanent Hospitals—	
	Torit (completed) ... ..	3,341,972
	Yei (completed) ... ..	3,091,383
	Juba (completed) ... ..	15,796,285
	(b) Sleeping Sickness Work—	
	Lorries (completed) ... ..	700,000
	Travelling Hospitals (completed) ...	1,052,431
	General (completed) ... ..	395,787
7	Leper Hospital, Omdurman (completed) ... ..	1,979,113
8	Hospital Barge (completed) ... ..	3,213,003
9	Education Buildings, Southern Provinces—	
	Wau School and furniture (completed) ..	4,243,711
	Unallotted ... ..	15,756,289
11	Library and Museum (allotted, but postponed) ...	40,000,000
12	Almshouses, Omdurman—	
	Completed ... ..	1,493,755
	Reserved for extensions ... ..	1,500,000
13	Stack Memorial Tower, Khartum Cathedral (grant made from accumulated interest) ... ..	9,000,000
14	Extension Church Missionary Society Hospital, Omdurman (completed) ... ..	4,200,000
15	Stack Memorial Tower, Wad Medani Church (grant made from accumulated interest) (completed) ...	2,000,000
	Total ... ..	142,466,202

Enclosure 2.  
LEE STACK INDEMNITY FUND.  
Balance Sheet as at December 31, 1931.

LIABILITIES.				ASSETS.			
Capital Account—		£E. mms.	£E. mms.			Nominal	
Section "A" Unspent .. ..	.. ..	61,859·760		Investments at Cost—		Value.	£E. mms.
Section "B" Unallocated .. ..	.. ..	341,636·720	402,996·480	5 per Cent. War Loan, 1929-47 .. ..	.. ..	£ stg.	159,618·265
			7,576·551	5 per Cent. Conversion Loan, 1944-64 .. ..	.. ..	250,000	240,804·687
Sudan Government .. ..	.. ..	.. ..		Treasury Bills .. ..	.. ..	15,000	14,428·038
General Charity Fund .. ..	.. ..	14·177		Interest accrued .. ..	.. ..	.. ..	2,835·163
Almshouses, Omdurman .. ..	.. ..	95·860	110·037	Cash at Bank of England .. ..	.. ..	.. ..	1,727·675
Revenue Surplus Account—							
Brought forward as per Balance Sheet							
dated December 31, 1930 .. ..	.. ..	31,170·121					
Less—							
Excess of expenditure over							
income transferred from							
Income and Expenditure	£E. mm.						
Account .. ..	.. ..	11,439·361					
Transfer to Capital Account							
Section "B" in respect of							
Allotments 13 and 16 .. ..	11,000·000	22,439·361	8,730·760				
			419,413·828				419,413·828

(Signed) H. A. MacMICHAEL, *For President, Supervisory Committee.*

We certify that the money has only been expended on schemes approved by His Britannic Majesty's Secretary of State for Foreign Affairs and has reached the intended recipients.

(Signed) H. A. MacMICHAEL, *For President, Supervisory Committee.*

(Signed) C. W. STANWAY, *Auditor-General, Sudan Government.*

I have audited the accounts, of which the above is the Balance Sheet, and I certify that, to the best of my belief, it represents a true and correct statement of the position of the Fund.

(Signed) C. W. STANWAY, *Auditor-General, Sudan Government.*

NOTE.—The above certificates are given on the understanding that the Foreign Office will approve the retention in the Capital Account of the expenditure on the Hospital Barge.

Enclosure 3.

LEE STACK INDEMNITY FUND.

Capital Account as at December 31, 1931.

SECTION "A."

Expenditure to Dec. 31, 1930.	Expenditure in 1931.	Recovery in respect of Service for which Sudan Govt. assumed liability.	Total Expenditure to Dec. 31, 1931.	Item.		Amount approved to Dec. 31, 1930.	Amount approved in 1931 transferred from Section "B."	Credits cancelled in 1931 transferred to Section "B."	Economies on completed Transactions transferred to Section "B."	Net Amount approved to Dec. 31, 1931, less Economies.
£E. mms.	£E. mms.	£E. mms.	£E. mms.			£E. mms.	£E. mms.	£E. mms.	£E. mms.	£E. mms.
20,699,056	418,301	..	21,117,357	1 A	Medical Research Laboratory— Present buildings expenditure .. 21,117,357 Pledged balance 178,299 —————21,295,656  Unpledged balance for extension .. .. 3,704,344					
						25,000,000	..	..	..	25,000,000
4,503,658	..	..	4,503,658	1 B	Travelling Railways Laboratory ..	5,000,000	..	..	496,342	4,503,658
3,017,365	..	..	3,017,365	2	Travelling Ophthalmic Hospital ..	5,000,000	..	..	1,982,635	3,017,365
2,180,550	..	..	2,180,550	3 & 4	Bilharzia Work .. ..	4,500,000	..	..	2,319,450	2,180,550
				5 & 6	Medical Work (South)— (a) Permanent Hospitals— Torit .. .. .. Yei .. .. .. Juba .. .. ..	3,341,972 3,091,383 15,800,000	.. .. ..	.. .. ..	.. .. 3,715(*)	3,341,972 3,091,383 15,796,285

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700'000	..	..	700'000		(b) Sleeping Sickness Work—	700'000	..	..	..	700'000
1,052'431	..	..	1,052'431		Lorries .. ..	1,050'000	..	..	7'569	1,052'431
395'787	..	..	395'787		Travelling Hospitals .. ..	600'000	..	..	204,213 <sup>(14)</sup>	395'787
..	..	..	..		General .. ..	222'680	..	..	222,680 <sup>(14)</sup>	..
1,979'113	..	..	1,979'113	7	(c) Unallotted .. ..	2,000'000	..	..	20,887	1,979'113
3,000'660	213'243	..	3,213'903	8	Leper Buildings, Omdurman .. ..	5,000'000	..	..	1,766,097 <sup>(14)</sup>	3,213'903
4,243,711	..	..	4,243'711	9	Hospital Barge .. ..					
					Education Buildings, Southern Pro- vinces—					
					Wau School and furniture .. ..	4,243'711	..	..	..	4,243'711
					Unallotted .. ..	15,756'289	..	..	..	15,756'289
22'185	..	..	22'185	11	Library and Museum, Khartum .. ..	40,000'000	..	..	..	40,000'000
1,493'755	..	..	1,493'755	12	Almshouses, Omdurman .. ..	1,500'000	..	..	6'245	1,493'755
					Reserved for extensions .. ..	1,500'000	..	..	..	1,500'000
7,008,202	1,748'785	..	8,756'987	13	Stack Memorial Tower, Khartum					
					Cathedral .. ..	7,600,000 <sup>(15)</sup>	1,400'000 <sup>(15)</sup>	..	..	9,000'000
16,177,930	688'248	16,861'178	..	14	Replacement of hospital ship "Lady Baker" .. ..	21,600'000	..	21,600'000	..	..
..	4,200'000	..	4,200'000	15	Church Missionary Society Hospital, Omdurman .. ..	..	4,200'000	..	..	4,200'000
..	2,000'000	..	2,000,000	16	Stack Memorial Tower, Wad Modani Church .. ..	..	2,000'000 <sup>(15)</sup>	..	..	2,000'000
88,567'498	9,400'127	16,861'178	81,106'442			163,516'035	7,600'000	21,600'000	7,049'833	142,466'202
70,115'414	Balance as per Balance Sheet of Dec. 31,	1930.	61,359'760		Balance carried to Balance Sheet.	4,833'128	Economies	deducted to	1930.	
158,682'907			142,466'202			158,682'907				142,466'202

<sup>(14)</sup> Transferred to Section "B" in 1931.

<sup>(15)</sup> Approved against Revenue Surplus. A corresponding transfer was made from the latter to Capital Account, Section "B."

### SECTION "B."

To amount transferred to Section "A" ..	£E. mms.	7,600'000	By balance as at December 31, 1930 ..	£E. mms.	314,420'015
To balance transferred to Balance Sheet ..	..	341,636'720	By transfer from Section "A" in respect of credit cancelled .. ..	..	21,600'000
			By transfer from Section "A" in respect of economies during 1931 .. ..	..	2,216'705
			By transfer from Revenue Surplus Account in respect of allotments 13 and 16 .. ..	..	11,000'000
					<u>349,236'720</u>
					<u>349,236'720</u>

## Enclosure 4.

## LEE STACK INDEMNITY FUND.

*Income and Expenditure Account for twelve months ending December 31, 1931.*

EXPENDITURE.		INCOME.	
	£E. mms.	£E. mms.	£E. mms.
Combined grant-in-aid of the Sudan Medical Service for work against Bilharzia, Ophthalmia, Sleeping Sickness and other endemic diseases, Items 2, 3, 4, 5 and 6 ...	18,400·000		
General Charity Fund, Item 10 ...	1,031·178		
Alms Houses, Item 12 ...	663·671		
Alms Houses, Honorarium, Item 12 ...	50·000		
		20,144·849	
Depreciation on value of securities held as at December 31, 1931, according to the mean market price at that date ...	...	12,097·007	
		32,241·856	
			20,802·495
			11,439·361
			32,241·856