

## THE PREVALENCE OF BLACKWATER FEVER IN THE BAHR-EL-GHAZAL.

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THE Bahr-el-Ghazal district, one of the most southerly provinces of the Anglo-Egyptian Sudan, can be roughly said to be contained between lat.  $4^{\circ}$  and  $9^{\circ}$  N., and long.  $25^{\circ}$  and  $31^{\circ}$  E., and to be bounded on the north by the Bahr-el-Arab River, on the south by the watershed between the tributaries of the Nile and Congo and that part of the Bahr-el-Ghazal district which is at present leased to the Congo Free State, the Lado Enclave, on the east by the White Nile, and on the west by the French Congo.

The indigenous population is made up entirely of negro or negroid races, the Dinka tribes being the most numerous in the north of the district, while the Nyam-Nyam or A'Zandi race comprise the bulk of the population in the south. All these indigenous races appear to be quite immune to blackwater fever.

The permanent European and Egyptian population during the past twelve months, from October 1st, 1905, to September 30th, 1906, is estimated, for the purposes of this article at 180 men.

The European population numbers about forty, being made up of about sixteen British officers serving with the Egyptian Army, twelve priests belonging to the Sudan Catholic Mission, and not more than a dozen traders, the majority of the priests and traders being of Italian and Greek extraction.

The Egyptian population is made up of the Egyptian officers and men serving in the district, and the civil employees of the Sudan Government; some of these last are, however, really Asiatics, being of Syrian birth and education. This population numbers about 140 men. Under the term "Egyptian population" is also included several persons of mixed Egyptian and Sudanese blood. It may be mentioned here that, with the exception of the Egyptian officers serving with Sudanese battalions, and the Egyptian officers and men of the detachment medical corps doing duty in the district, no Egyptian troops regularly serve in the Bahr-el-Ghazal, owing to prevalence of malarial fevers, to which the Egyptians are peculiarly liable.

From the above it will be seen that the combined European and Egyptian population comes up to the number of 180 men. It is

among these that the cases of blackwater fever occur, the natives, as has been before mentioned, being immune to this disease. It is, of course, well known that Europeans are liable to blackwater fever, but it is perhaps not generally known that Egyptians, Syrians, and people of mixed Egyptian and Sudanese blood are as liable, if not more so, to this disease as Europeans. It has been stated by certain authorities that the black races themselves are not immune to blackwater fever, if they happen to have been born and bred in districts free from this disease. This may be true of some parts of Africa, but my experiences in the Bahr-el-Ghazal certainly lead me to an entirely opposite view, namely, that, as far as the Anglo-Egyptian Sudan is concerned the black races are immune to blackwater fever. Many of the Sudanese troops serving in the Bahr-el-Ghazal are, indeed, related by blood to the indigenous tribes dwelling within it, but the great majority of them have been born and have grown to manhood in the northern provinces of the Anglo-Egyptian Sudan, where blackwater fever has not yet been proved to exist, and a strong minority of our Sudanese troops are by birth natives of Egypt, the descendants of the thousands of negroes who were formerly held as slaves everywhere in Egypt. In addition to the Sudanese troops, hundreds of blacks from Omdurman and Khartoum, towns where blackwater fever, or, for that matter, tropical diseases, are uncommon, come up to the Bahr-el-Ghazal every year in the capacity of servants, labourers, transport drivers, &c., and from the Sudanese troops and these men, all of whom come under our observation when sick, not a single case of blackwater fever has occurred during the last twelve months, and neither is there any record of any case having occurred in a man of pure Sudanese extraction. These men are certainly not immune to malarial fevers, and, indeed, suffer frequently from fevers of this type during their first six or eight weeks of residence in the Bahr-el-Ghazal, after which period they appear to enjoy a degree of immunity far in excess of that ever acquired by Europeans or Egyptians. It is with much diffidence that my experiences concerning the immunity of Sudanese who have been born and grown to manhood in districts where blackwater fever is not endemic, have been here put on record, especially as such authorities as Phlen and Sambon hold a different belief on this point; but at any rate, this is my opinion, based on a year's residence in a district where blackwater fever is far from uncommon.

The following tables give the number of cases of blackwater fever which have occurred in the Bahr-el-Ghazal district for a period

of twelve months, from October 1st, 1905, to September 30th, 1906, from the military and civil population respectively.

## TROOPS AND CIVIL GOVERNMENT EMPLOYEES.

Station	Month of the year	Number of cases	Remarks	Result
Wau ..	October, 1905 ..	1	An Egyptian soldier .. ..	Recovery.
„ ..	November, 1905..	1	An Egyptian officer .. ..	„
„ ..	January, 1906 ..	1	A civilian employed as postmaster —a man of mixed Egyptian and Sudanese blood	Death.
Rumbek	April, 1906 ..	1	An officer of mixed Egyptian and Sudanese blood	Recovery.
Wau ..	May, 1906 ..	1	An Egyptian warrant officer ..	„
„ ..	June, 1906 ..	3	Egyptian soldiers .. ..	„
„ ..	July, 1906 ..	2	„ .. ..	„
„ ..	September, 1906..	1	An Egyptian soldier .. ..	„

## CIVIL POPULATION.

Station	Month of the year	Number of cases	Remarks	Result
Wau ..	November, 1905..	1	An Italian priest .. ..	Death.
„ ..	December, 1905..	1	An Austrian priest .. ..	Recovery.
Mabilli ..	June, 1906 ..	1	An Italian priest .. ..	Death.
Kyango ..	August, 1906 ..	1	„ .. ..	„

From the above tables it will be seen that fifteen cases of blackwater fever occurred altogether, and that of this number four were fatal, making the total percentage of fatalities as 26·6, while of the whole population liable to be attacked by blackwater fever, in number about 180, 8·3 per cent. acquired this disease. In fairness, however, to the medical staff of the district, it must be mentioned that it is hardly just to include the priests of the Sudan Catholic Mission in the above statistics. These brave and devoted men, until recently, frequently stayed more than two years without change of air to a healthier climate, and have no medical service whatever of their own, although two of their stations, Mabilli and Kyango, are twenty-five and forty-five miles distant from Wau, the only place from which they can get medical assistance. Two of the three fatal cases recorded from among the members of this Mission occurred at these two outstations; the case which was acquired at Mabilli was moribund on the arrival of a medical officer sent out to look after him, and died two or three hours after his arrival; the other, which occurred at Kyango, was in the person of a priest who had been two years

in the district without change of air, and who, in addition to having suffered, according to his own statement, from a mild attack of blackwater fever some time during the previous year, was also said to be suffering from chronic nephritis. This priest died of suppression of urine, which in view of his previous history was not in any way surprising. These priests also seem to have very little knowledge of sanitation, or of how to preserve their health in a tropical country, and are in consequence much debilitated from repeated attacks of malarial fevers, which they only recently have begun to avoid by taking prophylactic doses of quinine. On account of this it is perhaps only fair that the priests should not be included in working out the percentages of mortality from blackwater fever during the past year, from October 1st, 1905, to September 30th, 1906. If this is allowed the rate of mortality falls to 1 in 11, or 9.09 per cent., which is perhaps what the death-rate from this disease ought not to exceed in properly treated cases under favourable conditions. It must also be stated that up to the present the conditions under which the European and Egyptian populations have been living cannot be described as favourable, as no permanent buildings, hospitals, &c., have been yet completed. They are now, however, in process of construction, and it may with confidence be expected that not only will the number of cases of blackwater fever diminish, but that the case-mortality will also decrease when these buildings are completed.

The treatment adopted in all the eleven cases which occurred among the troops and civil employees was of the symptomatic variety, and no quinine whatever was given, with the result that only one case was fatal, which result will be considered very satisfactory by physicians to whom this disease is familiar.

It will be seen from the tables that out of all the cases which occurred they all, with one exception, occurred at Wau, or in the near vicinity of that station. The exception which is recorded took place at Rumbek in the month of April, a station 160 miles south-east of Wau. No authentic cases occurred at any of the other out-stations of the district. It should not, however, be concluded from this that blackwater fever is practically confined to Wau, and that the out-stations are free from it. Wau is the headquarter station, and contains far more of the population liable to this disease than any of the other out-stations, and it is probably on this account that Wau presents the majority of cases of blackwater fever. When down on the Congo Free State frontier in the beginning of last year an opportunity was given me of questioning some of the Belgian

officers concerning the prevalence of this disease in their territory, and they informed me that it was far from uncommon. This information must, however, be accepted with caution, as they do not appear to have any properly organised medical corps, if they have one at all on the frontier, and it is always best to be careful about accepting the statements of non-medical men concerning the prevalence or otherwise of blackwater fever.

The Bahr-el-Ghazal district was partially reoccupied by the Egyptian troops in the year 1900, and one or two cases were recorded soon afterwards, but there does not appear to be any certain record of more than five or six cases altogether having occurred from the year 1901 to the end of September, 1905. This district, which has now been fully reoccupied, was, previous to the rebellion begun by the Mahdi and carried on by the Khalifa Abdullah, well known to Europeans, as the writings of Schweinfurth and Gaetano Casati testify; but in their books, which, however, I cannot pretend to have very closely studied, no mention of a disease resembling blackwater fever is made, and this must be my apology for writing this article, as I do not think that the existence of blackwater fever in this part of Central Africa has ever yet been sufficiently put on record.

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