Sketch Map of West Africa, showing the Route of the Boundary Commission on the Western Frontier of the Gold Coast Colony, and the Distribution of Filariasis.

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MEDICAL REPORT OF THE ANGLO-
FRENCH BOUNDARY COMMISSION
ON THE WESTERN FRONTIER OF THE
GOLD COAST COLONY—JANUARY, 1902—MAY, 1903

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THE Anglo-French Boundary Commission was sent out in November of 1901 to survey and define the frontier between the Gold Coast Colony on the east and the French territories of the Ivory Coast Colony and the French Soudan on the west.

It was composed of nine Europeans, three of whom were French.

The English party included three officers employed in the survey and transport, two N.C.O.'s in the Royal Engineers, and myself, the only medical officer.

We took with us a small army of 400 natives, comprising carriers, hammock-men, and, in case of opposition from the Hinterland tribes, an escort of forty Hausas of the Gold Coast Regiment and Senegalese tirailleurs.

The commission left the coast early in December 1901, and reached the most northern limit of the Gold Coast Colony, lat. 11° N., in September 1902, after covering a distance of, roughly, 600 miles.

The first 200 miles traversed lay through dense primeval forest, the remaining 400 through more or less open country, for the most part flat or undulating, covered with long grass and scattered with shrubs and trees, varying in size from

orchard-like growths to the giants which dominate the forest.

On the return journey, 200 miles of the Black Volta River, which forms a third of the western boundary, from lat. 11° N. to 9° N., were surveyed for the first time. From lat. 9° N. to the coast (5° N.) beacons were erected on every known path crossing the frontier. After an absence of nearly eighteen months, the commission reached the coast in the middle of April 1903.

During this period I was called upon to treat a variety of tropical and other complaints, and, in addition, saw many cases of interest among the natives through whose villages we passed. The health of the Europeans throughout the expedition was remarkably good, with the exception of occasional mild attacks of fever, which seldom lasted above two days. There were no cases of blackwater fever or dysentery among our party, and only one case of bilious fever.

This fact is to be chiefly attributed, firstly, to the excellent arrangements made by our commissariat officer, who kept us well supplied with what at home are considered luxuries, but in the tropics, particularly when on the march, are almost a necessity; secondly, to the marked hospitality we received in all the French posts at which we stayed.

We were also well provided with mosquito nets, and, unlike several others whom I met, used them regularly.

Quinine was taken as a prophylactic by all the members, either in small daily doses of three to five grains, or in larger doses of ten grains every four or five days.

With respect to our water supply, the English members always used filtered, and occasionally boiled and filtered water. The French were far less particular, and considered the addition of alum quite sufficient if the water was muddy.

When possible, we encamped outside the villages; but, particularly in the forest, this was often quite impracticable, as the French were unprovided with tents, and always lived in the native dwellings.

Only on two or three occasions were we really pestered by mosquitos, and, generally speaking, we were at other times scarcely aware of their presence. In all places where

Anopheles maculipennis was found, search was made for breeding pools, stagnant water-pots, and other likely places in and around our camp and the native villages, with the object of removing the nuisances and improving the sanitary condition of our surroundings.

In passing through the various French and English stations, I was occasionally called to see cases of fever and dysentery among the Europeans attached to the posts. The only case of blackwater fever I met with was in a French sergeant at Bonduku, who had been in the habit of taking fifteen grains (one gramme) of quinine every day!

He fortunately recovered, and was sent back to France on sick leave.

Among the 400 natives of the commission the following cases came under treatment:—

1. Guinea-worm, 156 cases.

Situation

Legs	54 per cent.
Feet	23 „
Arms	9 „
Abdominal wall	4.5 „
Scrotum :	4 „
Back and buttocks	3.3 „
Face	1 „
Penis	1 „

Towards the end of the expedition no fewer than 25 per cent. of our carriers were more or less crippled by the disease. This was not surprising, considering the liquid filth they frequently drank on the march.

In 54 cases there were from two to ten Guinea-worms; in 12 cases, eleven to twenty in each patient; and one man had as many as twenty-five scattered about in various parts of his body at the same time!

Further particulars of Guinea-worm I have given in my previous article (*vide* pp. 367—370).

2. Ulcers, wounds, and abrasions, 111 cases.

3. Gastric and intestinal disorders (including dyspepsia, constipation, colic, diarrhœa, and dysentery), 105 cases.

Diarrhœa, 30.

Dysentery, 8 only.

Acute colic, 4.

Jaundice, 2.

4. Respiratory disorders, 92 cases (chiefly bronchial catarrh).

Pneumonia, 4 cases. One followed by temporary insanity.

Pleurisy and hæmoptysis, 1 case.

Tubercular pneumonia, 1 case.

Whooping-cough and bronchitis, 1 case.

5. Muscular rheumatism and neuralgia, 85 cases.

6. Diseases of genital organs, 48 cases.

Gonorrhœa, 18.

Balanitis, 3.

Stricture of urethra, 2.

Primary syphilitic chancre, 2.

Condylomata of penis, 2.

Destructive syphilitic ulceration of penis and scrotum, 1.

Gummata of scrotum and testicle, 1.

Orchitis, 6.

Hydrocele, 4.

Varicocele, 2.

Guinea-worm $\left\{ \begin{array}{l} \text{of penis, 1.} \\ \text{of scrotum, 8.} \\ \text{of testicles, with hydrocele and abscess, 2.} \end{array} \right.$

7. Skin diseases, 46 cases.

Furuncles, 9.

Urticaria, 8.

Yaws, (a) general, 2; (b) local, on the soles of the feet, 13.

Tinea circinata and imbricata, 6.

Numerous cases of tinea versicolor.

"Craw crawl," an irritating form of papular dermatitis, 6.

Enlargement and curvature of both tibiae in a native of Kwita,
Gold Coast Colony.

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- “ Chiggers ” (*Sarcopsyllus penetrans*), only 1 case.
 Leucoderma, 1.
 Painful scar, 1.
 Keloid disease, following small-pox, 1.
8. Inflammatory swellings.
 Cellulitis, buboes, due to other causes than Guinea-worm, 40 cases.
9. Diseases of the joints, 26 cases.
 Synovitis: (1) Traumatic, 10—
 Knee joint, 8; ankle joint, 2.
 (2) Secondary to Guinea-worm, 15—
 Knee joint, 8; ankle joint, 5; elbow joint, 2.
 Gonorrhœal arthritis of the hip joint, 1.
 Ganglion of the extensor tendon sheaths of the wrist, 1.
10. Diseases of the bones, 4 cases.
 Curvature and enlargement of both tibiæ,¹ 2.
 Syphilitic periostitis, tibial node, 1
 Rheumatic periostitis, 1.
11. Diseases of the eye.
 Conjunctivitis, 5.
 Corneal ulcer, 1.
12. Diseases of the ear.
 Otitis media and otorrhœa, 3.
13. Caries of the teeth and dental abscess, 6.
14. Diseases of the throat.
 Tonsillitis, 2.
15. Thyroid tumour.
 Mediastinal tumour—patient died.
 Alcoholic cirrhosis of liver—patient died.
 Hernia, 2 cases—
 (1) Omental.
 (2) Scrotal.
 Tonic muscular spasm.

Fever, gastro-intestinal, and respiratory disorders and muscular rheumatism were most common among the natives during the months of November, December 1902, and January

¹ *Vide* illustration; also p. 390.

1903, when the Harmattan season prevailed, with its very cold foggy nights and hot dry days.

As with the Europeans, so with the carriers and escort, the attacks of fever were in the majority of cases of very short duration, lasting seldom more than one or two days, and very irregular in type. All responded well to the action of bi-sulphate of quinine given at the onset in 15 grain doses, and in subsequent smaller doses.

A few cases only intermitted one or two days before the recurrence of fever, and very few were ushered in by rigor.

The temperature in only three cases rose as high as 105° F.

Much to my regret I was prevented from making systematic blood examinations of cases of fever by the imperfections of my staining reagents, and by the fact that practically all my coverslips were used for work on filariasis.

Rarer tropical complaints other than Fever, Guinea-worm, and Yaws, occurring among the natives attached to the Commission.

1. Bilharzia hæmatobia of the bladder, 2 cases.
2. Ainhum, a disease in which spontaneous amputation of the toes takes place, 1 case.
Left little toe affected. First seen in March 1902, later in April 1903, when the toe was removed.
3. African lethargy, 1 case. Discharged in April 1902.

Surgical Operations.—36 performed.

1. Guinea-worm. In 22 cases incisions were made for cellulitis and abscess in the arm, leg, back, buttock, abdominal wall, or scrotum.
2. Other abscesses :—
Plantar, 3.
Whitlow, 1.
Inguinal bubo, 2.
Perineal, 1.
Axillary, 1.
Suppurating gumma of scrotum, 1.

FIG. 1.—Leprous boy of Soko, in Ivory Coast Colony. (Well-marked changes in skin of face and limbs.)

FIG. 2.—Leper of Dehango, in north of Ivory Coast Colony. (Well-marked cutaneous changes in face and trunk.)

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3. Excision of bullets, 2 :—
from (1) Chin. Received in the Ashanti War, 1900.
(2) Left elbow. Received in native fight ten years previously.
4. Hydrocele tapping, 2 cases.
5. Amputation of left little toe (Ainhum).
6. Relief of strangulated hernia.

CASES OF INTEREST SEEN AMONG NATIVES OF THE TOWNS AND VILLAGES THROUGH WHICH THE COMMISSION PASSED.

Tropical Diseases.

I. Leprosy = *Kukerri* (Fanti). Thirty cases seen.

Forms—

(1) Cutaneous. Twelve cases.

Desquamation, nodules, patches of ulceration, pigmentary changes with symmetrical distribution, areas of anæsthesia, early destruction of finger and toe nails.

(2) Amputating and Cutaneous.

Destruction of fingers and toes, together with cutaneous changes in the face, limbs, and trunk.

Careful inquiries were made as to whether dried fish formed part of the native food; but the replies given were quite insufficient to provide any reliable data in support of Mr. Hutchinson's theory.

The natives appear to entertain no fear of the contagion of leprosy. The few lepers I saw were not isolated, but lived with the other villagers, and, unless crippled, worked in the fields. I heard of the case of a leprous chief, who had eight wives and many children, none of whom had the disease.

II. Sleeping sickness. Only four cases seen.

(1) Gold Coast carrier. Discharged as unfit. Duration of symptoms, one month. Drowsiness on sitting down, and general languor.

(2) Youth, æt. circ. 16. Native of Bolé, in Gold Coast Northern Territory. Duration of symptoms, one month. Falling asleep at meals, and on sitting down.

(3) Girl, æt. circ. 12. In north of Ivory Coast Colony. Duration of symptoms, one year (?). Inability to work or sit down at meals without falling asleep.

(4) Youth, æt. circ. 17. In north of the Ivory Coast Colony. Duration of symptoms, three months. Rapid course. Extreme lassitude; inability to stand without support or to feed himself; falling asleep on sitting down; very heavy, drowsy expression; saliva dribbling from the lips. Pulse, 120, small volume; temperature, 100° F. Blood examinations¹ were made in each case in search of *Filaria perstans*, but proved negative.

III. *Bilharzia hæmatobia* of Bladder. Two cases occurred among our carriers. Symptoms—Hæmaturia; frequent and occasionally painful micturition. On microscopical examination of the urine the characteristic ova were found.

The disease in both cases was chronic. The administration of mild diuretics gave temporary relief.

IV. Ainhum. Four cases seen. The disease is characterised by a slow separation and atrophy of one or more toes, most commonly the little toe, as the result of contracting cicatrisation following the chronic ulceration in the skin-fold on the plantar surface.

I have already mentioned the case of one of our carriers who was partly crippled by the disease, and whose little toe I removed.

V. Though elephantiasis is very common on the coast and fairly common in the interior, I met with but one case. In this the left leg was affected. Only one embryo of *Filaria nocturna* was found in a blood-film taken at 6 P.M.

The results of blood examinations for Filariasis in over seven hundred natives are given below.

VI. I met with one case of Mycetoma, affecting the right foot and ankle (madura foot) and the head of the right tibia. The man was a native of Soromani, in the interior of the Ivory Coast Colony. Duration of disease, six years. The right foot and ankle were much swollen, with many fluctuat-

¹ This was at a date previous to the discovery that trypanosomiasis is the cause of sleeping sickness.

FIG. 1.—Photograph of a female carrier who had suffered from extensive syphilitic ulceration, followed by large areas of leucoderma on the back, chest, face, and limbs, attributed by her to use of native remedies.

FIG. 2.—Case of unilateral gundu. Native of Enchi, Gold Coast Colony.

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ing points and discharging sinuses. Microscopical examination of the whitish particles contained in the sero-purulent discharge showed the presence of the fungus, composed of a peripheral ring of clubs, enclosing a central mycelium. Over the head of the right tibia was a firm swelling, which had developed in the last few months. It was the size of a small lemon, did not fluctuate, and had no discharging sinuses.

VII. Gundu or Anakhre=*Shwimpo* (Ashanti); literally, "nose lump"; belongs to one of the rare tropical diseases occasionally met with in West Africa and the West Indies.

The first cases were described as the "Horned men of West Africa." The disease is characterised by the formation of a symmetrical very hard growth, usually on each side of the nose, immediately below the orbit and involving the nasal bones. Its pathology has yet to be discovered.

In the only case which I saw the tumour was unilateral; it resembled a hen's egg in size and was as hard as bone, and painless. Its growth dated from boyhood and had probably lasted at least thirty years. I could learn nothing from the past history to account for its formation. It was situated over the junction of the right malar and nasal bones; thrusting the nose to the left, it almost completely hid the right eye, reducing the palpebral aperture to a mere slit.

In addition to this case of Gundu, which probably belongs to the osteomata, I saw two others of multiple bony tumours.

The nodes were symmetrical in distribution and situated, in one case, above the left orbit, above and below the right orbit, and in the centre of each clavicle. In the other case, the tumours were situated on the forehead on each side of the middle line. There was also marked thickening of the nasal bones at their junction with the frontal bone, thickening of both olecranon processes, and prominence of the tuberosities of both tibiæ.

Both of these cases were very possibly syphilitic.

VIII. One case of ulcerating granuloma following primary syphilis five years before, and causing complete destruction of the penis and front of the scrotum.

IX. Cases of yaws were seen in most of the villages

through which we passed, except in the most northern part of the colony.

X. Guinea-worm occurs in all parts of the colony.

Examples of other than tropical diseases were frequently seen, and included :—

I. Tumours.

(1) Two cases of large fibromata attached to the lobule of the ear.

(2) One case of multiple fibrocartilaginous tumours symmetrical in distribution, over both olecrana—on each side of the thorax—over the head of each tibia.

(3) Large lipoma of the shoulder.

(4) Congenital nævoid hypertrophy of the lower lip (illustration).

II. Goitre. Eight cases seen among inhabitants of the more hilly districts in the north.

III. Bony deformities. Curvatures.

(1) Angular curvature of the dorsal spine, due to caries.

(2) Two cases of enlargement and curvature of the tibiæ (*vide* illustration, p. 385).

(3) One case of rickety curvature of the long bones.

(4) Rachitic dwarf.

IV. Tuberculosis.

(1) Pulmonary, 5 cases.

(2) Spinal caries, 3 cases.

V. Diseases of the Eye.

(1) Tumour of the right eyeball, bulging through the cornea and causing marked exophthalmos. Duration, six months. Twice seen at intervals of six months; no obvious change.

(2) Ectropion and keratitis of both eyes in a leper.

(3) Interstitial keratitis.

(4) Pterygium.

(5) Granular lids and entropion.

(6) Panophthalmitis of the right eye in a chief of a river village in the north of the Ivory Coast Colony, cured by enucleation of the eye under cocaine. Seen again three months after the opération; the wound had healed well, and the other eye appeared healthy.

Congenital naevoid hypertrophy of lower lip in native woman of Sumbala,
near Bonduku, in Ivory Coast Colony.

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VI. Diseases of the Nervous System.

- (1) Paralysis agitans. Man, æt. circ. 55.
- (2) Infantile paralysis. (a) Child, æt. 3; right leg affected.
- (b) Child, æt. 8; left leg affected.
- (3) Left hemiplegia. Man, æt. circ. 30.
- (4) Epilepsy followed by coma, and temporary insanity.
- (5) Amyotrophic lateral sclerosis (?) in a man æt. circ. 40. Affecting chiefly left arm and leg. Marked wasting of interossei, supinator longus, flexor muscles of forearm, and of deltoid; also of the peronei, and tibialis anticus muscles of the left leg; marked increase of patellar, supinator and triceps reflexes; thigh and ankle clonus; inability to walk.

VII. Tertiary syphilis, or *kokuram* (Ashanti).

Several cases were seen of ulceration and destruction of the nose and face. Also of extensive loss of pigmentation, scarring, and ulceration on the legs, hands, thighs, and back.

VIII. Hernia.

Umbilical hernia is excessively common in childhood, and often attains an extraordinary size, projecting as much as 6 inches, with a downward curve. Though occasionally seen in adults, it is far less common than would be expected from its prevalence in early life. Its frequency is certainly due to the fact that the native mother never fastens a binding cloth round her infant's abdomen. Of other forms of hernia I only saw two in adults both scrotal, one of which has been already described.

IX. Development of the mammæ in males.

I saw several youths with marked development of one or both breasts.

X. Leucoderma is very common, particularly on the hands and feet, less often on the back, face, and chest (*vide* illustration).

XI. Keloid disease is very common as the result of the irritation of dirt and foreign matter introduced in the process of tattooing over the back and neck. Many of the natives presented a most unsightly appearance; one of the carriers was covered with a number of keloid scars, which had developed after an attack of small-pox.

XII. Albinism is by no means uncommon, and appears in several forms:—

(1) Skin quite white; hair, fair and curly; eyes, light brown.

(2) Skin, lemon-yellow; hair, fair.

(3) Skin, brick red; hair, auburn and curly; eyes, dark brown.

Albinism is usually regarded by the natives as due to fetish influence on the parents.

FILARIASIS.

During the fifteen months spent in the colony I made over 1000 blood examinations on 730 natives from many parts of West Africa, and as the result of inquiries into their previous histories, I obtained information as to the relative distribution of yaws, Guinea-worm, and small-pox.

The results of my investigations are published in the tables below.

The natives examined included carriers and hammock-men from the Gold Coast Colony and interior, from the interior of the Ivory Coast Colony, from the German Togoland, the French Sudan, and Sierra Leone. In addition, examinations were made:—

(1) From Hausas forming the escort of the British Commission, and the garrisons of the British posts of Sikasiko, Bolé, and Wa on the western frontier.

(2) From French native tirailleurs composing the escort of the French Commission, the garrisons of Bonduku, and Buna on the Ivory Coast Colony, and of Gawa in the French Sudan. To avoid the error introduced by influence of locality, blood films were also taken from the natives of the various places at which any stay was made.

A comparison is thus drawn between the distribution of filariasis in the districts through which we passed, and the distribution among our carriers, escort, and post garrisons who came from widely scattered parts. In the case of the escort and garrisons, information was also obtained as to their country of origin and the other posts in which they had

served. In some instances the numbers coming from distant parts were too small to provide any reliable data.

As many natives as possible were examined both in the morning and evening. But owing to the difficulty of getting them to attend at night, I was never able to take blood films later than 9 P.M., and in the majority of cases the films were taken between 6 and 7 P.M.

This will of course admit of some error in drawing conclusions as to the distribution of *filaria nocturna*.

Of the different filarial embryos which have been described, it was possible to recognise two varieties; those of *Filaria nocturna* and *Filaria perstans*.

The two varieties may be thus differentiated :—

	<i>F. nocturna.</i>	<i>F. perstans.</i>
Presence in the blood .	During the hours of sleep.	At all times.
Microscopical features :		
1. Size*	Large { $\frac{1}{16}$ in. in length. $\frac{1}{32}$ in. in breadth.	Small { $\frac{1}{16}$ in. in length. $\frac{1}{32}$ in. in breadth.
2. Covering and form	Enclosed in a sheath which becomes cast off during death. Caudal and tapering.	No sheath. Caudal and round of.
3. Mobility . . .	Writhes and twists without altering its situation.	Travels from place to place, forcing a way among the blood corpuscles.

* Manson's Tropical Diseases.

As the result of my examinations, I have drawn the following conclusions with all due reserve :—

1. On the Gold Coast filariasis is more common than in the interior of the colony.

2. *F. perstans* is found slightly¹ more often, and *F. nocturna* far more often, on the Gold Coast than in the interior of the colony.

Both *F. nocturna* and *F. perstans* are found more commonly in natives from Kwita and Accra than in natives from any other coast town, and more often at Kwita than at Accra.

¹ Excepting at Sikasiko and Kumasi, where *F. perstans* is very common.

3. Filariasis is not common among natives of the Ivory Coast Colony.

4. *F. nocturna* occurs as often among Sierra Leone as among Gold Coast natives.

5. Among the Hausas of the Gold Coast regiment filaria perstans is probably more common in those who have been stationed at Sikasiko and Kumasi than at Accra and Gambaga (a post on the N.-E. of the northern territories), while filaria nocturna probably occurs more often among those who have been stationed at Gambaga and Accra than elsewhere.

6. Owing to the impossibility of my examining the natives in Hausaland and Northern Nigeria, deductions as to the local influence of the country of origin in the case of Hausa soldiers cannot be relied upon.

It may be conjectured that in the Moshi and Grunshi countries (*vide* map), *F. perstans* is found more often than in other parts, while in the Kanjaga and Grunshi countries *F. nocturna* occurs more commonly than elsewhere in Hausaland.

7. Among the French native tirailleurs, drawn from the Senegal and French Western Sudan, *F. perstans* is found more often in those from the north of the Ivory Coast Colony (Buna) and in the Sudan, than in those from the Senegal. The reverse is probable in the case of *F. nocturna*.

8. From the medical histories obtained from natives, it would seem that yaws, Guinea-worm, and small-pox have been more prevalent in the Senegal, Ivory, and Gold Coast Colonies than in the Sudan; that yaws and small-pox have been more common than Guinea-worm in the Ivory and Gold Coast Colonies and in the Sudan; that small-pox and Guinea-worm have been more prevalent in the Hausa country than yaws.

RESULTS OF BLOOD EXAMINATIONS FOR FILARIASIS, AND INQUIRIES INTO THE MEDICAL HISTORY.

I.—*Natives: Carriers and Hammockmen of the Commission.*

	NUMBERS.	TIME OF EXAMINATION.	FILARIASIS.	YAWS.	GUINEA- WORM.	SMALL- POX.
(a) <i>Gold Coast Colony</i> —(1. Coast) . . .	125	9-11 A.M. 6-8 P.M.	<i>F. perstans</i> . . . 14 <i>F. nocturna</i> . . . 10 Total . . . 24 = 20%	94	66	77
(2. Interior). . .	246	5 P.M.	<i>F. perstans</i> . . . 24 <i>F. nocturna</i> . . . 2 Total . . . 26 = 10.5%	132 (out of 156)	80 (out of 156)	88 (out of 156)
(b) <i>Krachi: German Togoland</i> . . .	17	5 P.M.	<i>F. perstans</i> . . . 2 = 11.7%	14	9	3
(c) <i>Ivory Coast Colony</i> —(Interior) . . .	80	5-6 P.M.	<i>F. perstans</i> . . . 1 = 1.25%	25 (out of 31)	15 (out of 31)	24 (out of 31)
(d) <i>French Sudan</i>	19	9 A.M. 5 P.M.		...	...	...
(e) <i>Sierra Leone</i> (Mende)	20	6 P.M.	<i>F. nocturna</i> . . . 2	10	5	2
Total	508		Filariasis . . . 55 = 10.7%	275 (out of 350)	175 (out of 350)	194 (out of 350)
Totals			<i>F. perstans</i> 41 = 8.7% <i>F. nocturna</i> 14 = 2.7%			

II.—(*Hausas forming the Escort of the Commission, and the Garrisons of Sikasiko, Bolé, and Wa*).

TOTAL, 122.	PREVIOUS STATIONS.	COUNTRY.	FILARIASIS.	YAWS.	GUINBA-WORM.	SMALL-POX.
Exams. 8-9 A.M.	Gambaga . 71	Moshi . . 23	20	24	48	51
„ 5-6 P.M.	Accra . . 36	N. Nigeria . 19		19.6%	39.2%	41.8%
	Kumasi . 13	Grunshi . . 17	<i>F. perstans</i> 16			
		Kanjaga . . 16				
		Northern Territories of Gold Coast 16				
		Dagati . . 7				
			<i>F. nocturna</i> 4			
			Accra . . 8			
			Gambaga 4			
			Kumasi . 4			
			Noshi . . 7			
			Grunshi . 5			
			Kanjaga . 1			
			Zaria . . 1			
			Wa . . . 1			
			Gambaga 4			
			Guruma.			
			Kanjaga.			
			Moshi.			
			Grunshi.			

Total—Filariasis	16.4%	<i>F. perstans</i>	13.2%	<i>F. nocturna</i>	3.2%
(1) Possible Conclusions as to the Influence of Localities—					
(a) Previous Stations—At Kumasi	in 34% of inhabitants.			At Gambaga	in 17.7% of inhabitants.
„ Accra	„ 22.2				
„ Gambaga	„ 5.5				
(b) Country of origin—In Moshi	„ 30.4			In Kanjaga	in 6% of inhabitants.
„ Grunshi	„ 29.4			„ Grunshi	„ 5.7
„ Kanjaga	„ 6			„ Moshi	„ 4.2
„ Gold Coast N. Ter.	„ 6			„ N. Nigeria	„ 5
„ N. Nigeria	„ 5				
(2) Statistics obtained from Examination of Hausas—					
Present Station—Travelling “Escort”	in 18% of Hausas.			Of Travelling “Escort”	in 0% of Hausas.
At Sikasiko	„ 22			At Sikasiko	„ 4
„ Bolé	„ 0			„ Bolé	„ 16
„ Wa	„ 0			„ Wa	„ 26
(3) Compare Statistics for Influence of Locality—					
Obtained from examination of natives				At Accra	in 12.5% of inhabitants.
At Accra	in 12.5% of inhabitants.			„ Kumasi	„ 0
„ Kumasi	„ 24			„ Sikasiko	„ 0
„ Sikasiko	„ 27.5			„ Bolé	„ 0
„ Bolé	„ 0			„ Wa	„ 0
„ Wa	„ 0				

III.—*French Native Tirailleurs, comprising the Garrisons of Bonduku and Buna in the Ivory Coast Colony and Gawa in the French Sudan, and the French Travelling Escort.*

TOTAL, 100.	PREVIOUS STATIONS AND COUNTRY.		FILARIASIS, 18 PER CENT.	
Examinations, 5-7 P.M.	Bonduku . . .	25	Sudan . . .	58
	Buna . . .	29	Buna . . .	5
	Gawa . . .	30	Bonduku . . .	2
	Escort . . .	16	Fula . . .	2
	Senegal . . .	32	Morocco . . .	1
<p><i>F. perstans</i>, 13 per cent. <i>F. nocturna</i>, 5 per cent.</p> <p>PREVIOUS COUNTRIES.</p> <p>Sudan . . . 9=17.2% Senegal . . 4=12.5 % Buna . . . 3=60 „ Sudan . . 1= 1.75 „ Senegal . . . 1=3.2 „</p>				
<p>PRESENT STATIONS.</p> <p><i>F. perstans</i>, per cent. <i>F. nocturna</i>, per cent.</p> <p>Bonduku . . = 0 Bonduku . 4=16 Buna . . . 5=17 Buna . . . =0 Gawa . . . 4=13.3 Gawa . . 1=3.3 Escort . . . 4=25 Escort . . =0</p>				
<p>Compare native statistics for influence of locality. Bonduku—no Filarial embryos found in 43 examinations of natives. Gawa „ „ „ 19 „ „</p>				

Deductions—*F. perstans* is far more common in the North of the Ivory Coast Colony and in the Western Sudan than in the South of the Ivory Coast Colony and in Senegal. *F. nocturna* is more common in Senegal than in the Sudan.

IV.—*Totals.*

TOTAL CASES EXAMINED.	FILARIASIS.	YAWS.	GUINEA-WORM.	SMALL-POX.
730	93=12.7 per cent.	348	248	283
	<i>F. perstans</i> . . . 70=9.6 per cent.	out of 572.	out of 572.	out of 572.
	<i>F. nocturna</i> . . . 23=3.1 „	60.7 per cent.	43.3 per cent.	49.4 per cent.