MAURITIUS HEMP AND "LIKANGA" FIBRE FROM NYASALAND.

FOUR samples of Mauritius hemp and a specimen of "Likanga" fibre have been received recently from Nyasaland and are described below.

No. 1, Mauritius hemp, grown in the Shiré Highlands of Nyasaland, consisted of nearly white, fine fibre, of fair lustre, but contained a considerable quantity of tangled fibre or tow, and was of poor strength. The length varied from 7 feet 6 inches to 8 feet 4 inches.

The product was regarded as worth about £20 per ton with "good fair" Mauritius hemp at £21 to £21 10*s*. per ton. It was extremely towy, and its value was consequently depreciated. If properly cleaned, the fibre would be worth £21 10*s*. per ton.

No. 2, "grown under similar circumstances to No. 1, and more carefully prepared under European supervision," consisted of very pale buff-coloured fibre. It was superior to the others, as it was not so fine, was better cleaned, and did not contain fine tangled fibres. The strength was rather uneven, but somewhat better than that of the others. The length varied from 4 to 5 feet.

The fibre was valued at about £20 10*s*. per ton, with "good fair" Mauritius hemp at £21 to £21 10*s*. per ton. This was the best of the four samples, and was of very fair quality.

No. 3, "grown on the Lower River," was a fine fibre, well prepared, but inferior in colour and lustre to the other three samples. It was of poor strength, and about 5 feet long.

The product was considered to be worth about £20 per ton, with "good fair" Mauritius hemp at £21 to £21 10*s*. per ton.

No. 4, "grown on the Lower River," was a specimen of nearly white, fine fibre, of good lustre and well cleaned, and about 4 feet long. The strength was uneven, and, on the whole, poor.

The product was valued at about £19 per ton, with "good fair" Mauritius hemp at £21 to £21 10*s*. per ton.

"Likanga" fibre from Portuguese territory consisted of white, very lustrous, fine fibre, resembling that derived from leaves of

Sansevieria sp. It was of poor and uneven strength, and about 3 feet long. If of better strength, fibre similar to this sample would probably realise £20 to £25 per ton in London.

RUBBER FROM SOUTHERN INDIA.

A NUMBER of rubbers prepared from Ceara, Castilloa, and Para trees growing in the Government Experimental Gardens at Kullar and Burliar in the Nilgiri Hills, have been examined recently at the Imperial Institute, with the following results :—

CEARA RUBBER (*Manihot Glaziovii*).

This rubber was prepared at Kullar, and bore the following label :—

"No. 1. Ceara rubber from trees planted in the Government Experimental Garden, Kullar (1,300 feet), Nilgiris, in April 1902; collected February 1908." It weighed 9 oz., and consisted of six biscuits of pale amber rubber, clean and well prepared. The physical properties of the rubber were very good.

The results of the chemical examination were as follows :—

	Sample as received. *Per cent.*	Composition of dry rubber. *Per cent.*
Moisture	2·8	—
Caoutchouc . . .	80·2	82·5*
Resin	6·2	6·4
Proteid	9·5	9·8
Ash	1·3	1·3

* Soluble caoutchouc 76·5 per cent. ; insoluble caoutchouc 6·0 per cent.

The rubber was valued at 5*s.* 6*d.* per lb. in London. For comparison with this and the following valuations it may be stated that on the same date fine hard Para from South America was quoted at 5*s.* 1*d.* per lb., and plantation Para biscuits at 5*s.* 3*d.* to 5*s.* 9*d.* per lb.

This Ceara rubber is of very good quality, although the

percentages of resin and proteid are rather high. The biscuits varied somewhat in colour, and it would be an advantage if they could be obtained more uniform in this respect.

CASTILLOA RUBBER (*Castilloa elastica*).

Two specimens of this rubber were submitted, one from Kullar and the other from Burliar.

The sample from Kullar was labelled as follows:—"No. 2. Castilloa rubber from trees planted in the Government Experimental Garden, Kullar (1,300 feet), Nilgiris, in April 1902; collected June 1908." It weighed 6½ oz., and consisted of a rough sheet of dark brown rubber, containing a fair amount of vegetable impurity. The rubber was rather soft, slightly sticky and weak.

A chemical examination gave the following results:—

	Sample as received. *Per cent.*	Composition of dry rubber. *Per cent.*
Moisture	1·5	—
Caoutchouc	62·7	63·6
Resin	32·0	32·5
Proteid	0·9	0·9
Insoluble matter	2·9	3·0
Ash	2·29	2·4

The rubber was valued at 3*s.* 2*d.* to 3*s.* 4*d.* per lb. in London.

This rubber is of inferior quality, owing to the large percentage of resin present. The trees from which the sample was obtained were, however, only six years old, and it is probable that the quality of the rubber will improve as the trees become older.

The specimen from Burliar bore the following label:—"No. 3. Castilloa rubber from the Government Experimental Garden, Burliar (2,400 feet), Nilgiris, February 1908." It weighed 5¾ oz., and consisted of rough sheets of rubber varying in colour from light to dark brown, and containing traces of vegetable impurity. This rubber was much stronger than the preceding specimen from Kullar. On analysis it gave the following figures:—

	Sample as received. *Per cent.*	Composition of dry rubber. *Per cent.*
Moisture	0·2	—
Caoutchouc	86·1	86·2
Resin	12·8	12·9
Proteid	0·5	0·5
Ash	0·4	0·4

The rubber was valued at 3*s.* 6*d.* to 3*s.* 8*d.* per lb. in London.

This sample of Castilloa rubber from Burliar is much superior in composition and physical properties to the specimen from Kullar. No information was furnished regarding the age of the trees from which the rubber was obtained.

PARA RUBBER (*Hevea brasiliensis*).

Specimens of Para rubber were received from both Kullar and Burliar.

The sample from Kullar was labelled as follows:—"No. 4. Para rubber from trees planted in the Government Experimental Garden, Kullar (1,300 feet), Nilgiris, in April 1902; collected June 1908." It weighed $7\frac{3}{4}$ oz. and consisted of two large biscuits of dark brown rubber, containing traces of vegetable impurity. The rubber was rather deficient in strength.

The results of the chemical examination are given in the following table:—

	Sample as received. *Per cent.*	Composition of dry rubber. *Per cent.*
Moisture	0·8	—
Caoutchouc	92·0	92·8*
Resin	2·6	2·6
Proteid	3·0	3·0
Ash	1·6	1·6

* Soluble caoutchouc 88·8 per cent.; insoluble caoutchouc 4·0 per cent.

The rubber was valued at 5*s.* to 5*s.* 2*d.* per lb. in London.

This rubber is very satisfactory in composition but the biscuits are dark coloured and contain specks of vegetable impurity. The value of the rubber would be enhanced if it were lighter in colour.

The specimen of Para rubber from Burliar was labelled as

follows:—"No. 5. Para rubber from the Government Experimental Gardens, Burliar (2,400 feet), Nilgiris. Trees planted November 1898; rubber collected November 1907." It weighed 17½ oz. and consisted of two biscuits and three long narrow strips of rubber, rather uneven in colour, and containing traces of vegetable impurity. The rubber was in good condition and possessed fair strength. It had the following composition:—

	Sample as received. *Per cent.*	Composition of dry rubber. *Per cent.*
Moisture	0·4	—
Caoutchouc	91·5	91·9*
Resin	3·9	3·9
Proteids	3·7	3·7
Ash	0·5	0·5

* Soluble caoutchouc 90 per cent.; insoluble caoutchouc 1·9 per cent.

The rubber was valued at 5*s.* 4*d.* to 5*s.* 5*d.* per lb.

This sample of Para rubber was much lighter in colour than the preceding specimen, but like the latter it contained minute vegetable fragments which should be removed from the latex by straining. The rubber was very satisfactory in composition.

RECENT DISCOVERIES OF GRAPHITE IN BRITISH AFRICAN COLONIES.

NUMEROUS occurrences of graphite and graphite-bearing rocks have been reported recently from African Colonies, and in many cases specimens have been forwarded for report to the Imperial Institute.

The mineral usually occurs in the ancient crystalline rocks, either as a constituent of the rock itself or in veins. In the former case the material is of no commercial value till it has been separated by washing or other mechanical means in the manner described in this *Bulletin* (1906, **4**. 353, and 1907, **5**. 70).

East Africa Protectorate.

In September 1907 some specimens of graphite gneiss from the right bank of the Tsavo river, five miles below the Tsavo

station on the Uganda Railway, were received. The deposit was associated with carbonate of copper. It appeared to be of no commercial value as a source of graphite. Specimens of quartzite containing flakes of graphite have also been found on the line of the railway in this Protectorate.

Uganda.

A specimen from Bukunga in the District of Mugema on the slopes of Ruwenzori, four miles south-west from Entebbe, Toro Province, was received in October 1905. It consisted of dull greyish black graphitic schist containing disseminated flakes of graphite. The percentage of carbon amounted to 16·7 only. Specimens forwarded to the Imperial Institute in December of the same year from the hilly country near Kitana's Camp, half-way between Hoima and Butiaba, Unyoro Province, were roughly cylindrical in form, about 6 inches long and 2 inches in diameter, having been shaped and polished by hand. They contained 31·2 per cent. of carbon and 6·4 per cent. of volatile matter other than water.

In August of 1905 a sample of kaolin, containing patches of graphite, from a pit near the village of Ajali, north of the Diangbi Hills, Nimule, Nile Province, was received. The graphite did not appear to be present in sufficient amount to be of commercial value.

Another specimen forwarded from Uganda in September 1905 was simply stated to come from Ruwenzori. It does not appear whether it was from the locality already mentioned. It consisted of graphitic schist and contained only 32·68 per cent. of carbon.

In January 1906 two further specimens were received. One of these was stated to come from an altitude of 7,000 feet on Ruwenzori and the other from Unyoro. They consisted of graphitic schist and were of no intrinsic economic value.

Nyasaland.

In August 1906 the Mineral Survey in operation in the Protectorate in connection with the Imperial Institute, observed near Njobvualema Camp, in the north-west of the Upper Shiré District, seven different parallel bands of graphitic gneiss, in

which the graphite was interfoliated in large flakes with the other minerals of the rock. A number of samples were forwarded to the Imperial Institute and proved to contain from 70·6 to 91·6 per cent. of carbon. A sample was submitted to a firm of mineral brokers, who reported that in its then state it was of little value, but that if carefully cleaned it would probably yield flake graphite worth about £40 per ton. A commercial firm made a similar report.

In February 1908 a specimen from a deposit near the M'koma Mission in the Angoniland District was received. It consisted of practically pure graphite, mainly in the form of coarse flakes up to 2 inches in length. The only impurity was a ferruginous film occurring on or in some of the flakes. A firm of graphite brokers to whom the specimen was submitted stated that they had seen nothing approaching it in quality from Africa. They described it as soft and flaky and classed it as "ordinary lump of superior quality," worth from £32 to £34 per ton. A firm of manufacturers stated that it closely resembled good Ceylon graphite. Steps are being taken to work this deposit.

Rhodesia.

A quartz schist from North-eastern Rhodesia containing a small amount of graphite was examined at the Imperial Institute in 1905, but the mineral was found to be present in too small amount to be worth extracting. It was suggested, however, that it might be taken as an indication of the occurrences of workable deposits in the neighbourhood. Specimens of graphite were also collected by Mr. L. A. Wallace in North-east Rhodesia and presented to the Imperial Institute in 1905. The graphite in these is combined with a considerable amount of schistose material, and would have no commercial value unless it were concentrated.

In November 1907 a parcel of graphite from the same region was received. It was of a lustrous black colour and possessed a coarsely crystalline structure resembling that of Ceylon graphite. An average sample was found to contain 79·57 per cent. of carbon and 16·85 per cent. of ash, representing mainly felspathic material, which would detract seriously from the value of th mineral. A clean piece of graphite picked out from the rest o

the parcel contained 99·33 per cent. of carbon and only 0·65 per cent. of ash, thus comparing favourably with the best graphite from Ceylon and Canada.

Natal.

In August 1907 a sample of graphite was received from Greytown. It was stated to form part of a deposit 6 feet thick. It proved on examination to contain finely-divided graphite disseminated through non-graphitic material. It yielded only 31·35 per cent. of fixed carbon.

Another sample of similar character received in January 1908 was found to contain only 24·3 per cent. of carbon.

A specimen of compact fissile slaty graphite from a mine near Ladysmith was received in March 1908. A firm of graphite brokers to whom it was submitted stated that it would have no commercial value in this country but might be employed locally.

Northern Nigeria.

Soft graphitic schist is also found in Northern Nigeria, where it is known as Baki-n-Koli or Black Antimony. The non-graphitic constituents have been apparently decomposed by the action of the weather. On analysis it proved to contain only 5·34 of carbon and is of no economic value.

Graphitic schist has also been reported from the Sudan and Cape Colony, and the mineral is no doubt widely distributed through the ancient crystalline rocks of Africa. Valuable graphite in large flakes is, however, of rare occurrence.