of x rays, and the rays are used only as a confirmatory diagnosis. A radiograph of a vesical stone is only likely to be confused with one of a stone in the lower end of a dilated ureter. The vesical stone usually lies with its long axis more or less transverse, while the ureteric stone has its long axis more or less in the line of the ureter. Scybala masses may cast shadows like vesical calculi, but these scybala are usually indented, whereas vesical calculi are usually oval with no indentation. The bladder can be made very distinct in a radiogram if it is filled with air while being radiographed.

FRACTURES.

Screen examination shows a gross fracture, but certain fractures cannot be recognized by screen examination. The latter include green-stick fractures, cracks in bones with no displacement, small chips partly detached from the bone, and fractures of the phalanges caused by crushing. Wherever there is displacement of fragments the fracture can be seen on screen examination provided one fragment does not cover exactly the other fragment. Therefore a fracture should always be looked at in two planes. Since the introduction of x rays metal splints should be used as little as possible, as a fracture cannot be shown satisfactorily through a metal splint. All splints and bandages should be removed whenever it is possible, as they cast shadows. Plaster-of-Paris, iodoform, adhesive plaster, thick layers of cyanide gauze, lead lotion, mercury ointment, and rubber protective tissue cast fairly deep shadows, and should always be removed before screen examination. The screen examination of every fracture can be made most conveniently with the x -ray tube below the couch. A cryptoscope should be used as little as possible. When it is not possible to darken the room it is best to make the screen examination at night. A fracture which will make a useful limb often looks very bad on the screen; therefore never let the patient examine the screen. The fragments should lie side by side—not end to end—in a well set fracture.

Fractures are practically never set end to end unless operated on. When set end to end the fragments unite usually at an angle and not in a straight line. The method of union is shown by the radiographs.

The redundant bone is absorbed where it is not required, and new bone thrown out where it is required. Callus and old bone are moulded so that, though the fragments united side by side, the final result is a straight or very nearly straight bone. It is not necessary to set a fracture while watching the result on the fluorescent screen.

In some cases, even under anaesthetic, it is not possible to bring the fragments end to end. This is specially true of fracture of the lower end of the humerus, involving the elbow. Even when it is possible to bring the bones end to end it is not possible often to keep them so. Harm can be done by too much x -ray examination, and too many trials to get the bones into better position. A well united fracture shows the line of fracture for years after good union has taken place.

The illustration shows a case of aneurysm. The patient had worked in the x -ray department for a year, while suffering from a slight cough and huskiness. On examining his chest by x rays a large aneurysm was discovered, as shown in the photograph. He was put to bed for six months and the aneurysm has not increased.

[Dr. Pirie showed a number of x -ray negatives to illustrate some of the points to which he referred.]

THE ninth International Conference on Tuberculosis will be held at Brussels from October 5th to the 8th. The principal subjects proposed for discussion are: Hereditary tuberculous contagion; the predisposition to the disease; the protection of children against tuberculosis; tuberculosis and the school; the part of women in the campaign against tuberculosis. Reports on the progress of the fight against tuberculosis in different countries, and others by the committees or sanatoriums, the milk supply, solar radiation, international statistics, and international marks indicating the condition of the lungs, will be presented. A number of communications are promised. Among them is one by Dr. Nathan Raw on the general measures recommended by the International Conference to the Public Authorities for the prevention of the spread of tuberculosis in different countries. All inquiries relative to the congress should be addressed to the Secretariat, Avenue Van Volxem, 253, Forest-Brussels.

THE SPREAD OF CANCER AMONG THE DESCENDANTS OF THE LIBERATED AFRICANS OR CREOLES OF SIERRA LEONE.

By W. RENNER, M.D.,

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I HAVE been rather struck within recent years by the increasing number of cases of cancer of various organs, especially of the breast, that have in the course of my practice come under my observation, and this particularly so among the descendants of the liberated Africans, commonly called creoles, who form the bulk and principal portion of the colony proper.

In consequence of this, I have been induced again to look into the returns of cases admitted into the Colonial Hospital, as well as into my private case-book, to see how far I would be justified in speaking of an increase of this disease among the creoles, its apparent rarity among the resident aborigines in the colony and in the hinterland of Sierra Leone, and how far this apparent increase is due to causes which may be traced to the influences of European civilization and the adoption of the European mode of living.

In pursuing the investigation of this subject, I would first consider the case of the resident aborigines in the colony and in the hinterland. From the fact that this disease is rarely seen or met with among the hundreds of female aborigines who are treated regularly every year in the Colonial Hospital, and that the medical officers of the protectorate districts, especially those who are stationed in large towns where there are established dispensaries at which the natives have been encouraged to attend for treatment, have in their official returns not shown the presence of new growths among their patients, we can safely assume that cancer as a disease is very rare among the aborigines. This is, however, only fairly, but not altogether, satisfactory, as there may be cases which are kept in the background by the people, and which, even when on his patrols in the district, the medical officer cannot get hold of. Therefore, in spite of the non-entry of cases of cancer in the official returns, I would rather not say that the aborigines are immune from the disease, but that the disease is rare among them.

With reference to the creoles in the colony proper, an examination of the records of hospital cases and those of medical practitioners would show that within the last forty years cancer as a disease has been spreading among them.

In 1900 I endeavoured, in a paper entitled "Prevalence of Malignant Disease among the Natives," which formed the appendix to the Colonial Hospital Medical Report, to tabulate cases of malignant new growths that were admitted into the hospital within the years 1870-1900—a period of thirty years. Out of 22,453 cases of all kinds treated in the hospital, only 20 cases of malignant disease were recorded. These cases were simply described as "malignant tumour," "carcinoma," "sarcoma," "malignant growth," but without any details being given as to the particular nature of the disease or of the organ or tissue invaded.

To illustrate my meaning fully I append an extract from the paper, showing in decades the number of cases treated and the number of malignant growths noticed at each period:

Period.	Total Number of Cases Treated.	Nature and Number of Malignant Growths Noted and Treated.
1870-1879... ..	6,509	Cancer of the breast 2 Sarcoma 1 Malignant disease of jaws ... 1 — 4
1880-1889... ..	5,334	Cancer of the breast 2 Cancer of the liver 2 Carcinoma 1 Malignant disease 1 — 6
1890-1899... ..	9,392	Malignant growths 2 Malignant tumour 1 Cancer of the liver 1 Epithelioma 1 — 5
Grand total		15

If to this third period (1890-1899) be added the 1,218 cases treated in 1900, and among which were:

Epithelioma of the lower lip	...	...	1
Scirrhus of the breast	...	...	2
Cancer of the pancreas	...	...	1

there would be for the period 1890-1900, 10,610 cases treated, including:

Epithelioma of the lower lip	...	...	1
Malignant growths	...	...	2
Malignant tumour	...	...	2
Epithelioma	...	...	1
Cancer of the liver	...	...	1
Scirrhus of the breast	...	...	2
Cancer of the pancreas	...	...	1

Tabulating the period under review, the proportion of disease of malignant nature to all the other diseases treated shows clearly as follows:

Year.	Total Patients Treated.	Diseases Malignant.
1870-1879...	6,509	4
1880-1889...	5,334	6
1890-1900...	10,610	10
	22,453	20

Between the dates 1900-09 there were 10,163 cases admitted into hospital. Of these there were:

Carcinoma of the breast	...	...	10
Adeno-sarcoma of the groin (recurrent)	...	...	1
Adeno-sarcoma of the breast (recurrent)	...	...	1
Carcinoma of the uterus	...	...	3
Papilloma of the bladder	...	...	1
Carcinoma of the rectum	...	...	3
Sarcoma of the shoulder-joint	...	...	1
Chondro-sarcoma of the upper jaw	...	...	1
Carcinoma of the oesophagus	...	...	1
Melanotic sarcoma of the foot (recurrent)	...	...	1
Epithelioma of the tongue	...	...	1
Sarcoma of the arm	...	...	1
Sarcoma of the eye	...	...	1
			26

These growths, that is, those collected between 1900 and 1909, have been verified by microscopic examination at the Cancer Research Institute of the University of Liverpool.

I have, in compiling this return, not taken in any figures from the Princess Christian Mission Hospital, of which I am one of the consulting surgeons, as these records are not available, having been destroyed last year (1909) by a destructive fire which consumed the entire building. But I am in a position to say that a large number of cases was subjected to operation by me and the other surgeons of that institution.

The above figures are interesting as indicating the presence of cancerous and other malignant growths in the descendants of the liberated Africans or creoles in this colony. I admit that it is not safe to base definite conclusions as to the extent of the increase or spread of this disease upon statistics alone, and therefore I do not consider the figures in the last preceding table as accurately representing the extent of the increase or spread of the disease. For a number of cases must exist which, unfortunately, the general practitioners do not come across, and there must be many sufferers who do not seek the aid of the hospitals. These latter are more or less in the hands of the native fetish doctors, who lull them with the false hope of cure by stating that their disease is a result of witchcraft, and that they (the fetish doctors) are the only persons capable of treating their disease and giving them the desired relief. Some of these patients have remained in their hands trusting still in their occult powers until either becoming hopelessly incurable, the fact at last dawns in their minds that they might seek other aid, or they arrive at that stage where nothing remains for them but to long for that relief from their terrible sufferings which death alone can give.

The existence of cancer and other malignant growths among the creoles, and its absence or rarity among the aborigines, are due in my opinion to the civilized habits of, and the civilizing influences operating upon, the former, and to the primitive mode of living of the latter. The

creoles have adopted the mode of living, the food and dress, of the European—have to a great extent discarded the simple food of their forefathers, have been craving for and indulging in preserved and imported foreign food—have substituted the European for the natural African environment, and entailed on themselves in their eager pursuit for wealth and luxury the anxieties and worries incidental to civilization and consequent liability to premature decline.

Reverting to the question of food, while the creoles in a tropical country like Sierra Leone consume a large quantity of meat which is absolutely unnecessary, the aborigines—the Timnes, the Mendis, Kurankos, and others—confine themselves mostly to grain and vegetables, which really should form the bulk of the dietary of the native in the tropics, and eat very little of flesh or meat, with the result that the latter are on the whole healthier, and are free from the tendency to engender and propagate foreign diseases.

On the question of the relation of diet to disease, some medical authorities have asserted that butcher's meat is undoubtedly one of the means by which cancer is propagated. Although I cannot yet, for want of sufficient data, absolutely accept this theory, yet the fact that cancerous growths are common among the well-to-do creoles who can with ease afford meat and other articles of European diet as portion of their daily dietary, strongly appeals to me as lending a support to that theory.

Epitheliomatous growths are very rare among both creoles and aborigines. By this I mean epithelioma of the lip, tongue, cheek, etc., such as have been met with among the negroes of the West Indian Islands, the Southern States of North America, and in India, and are considered to be the result of local irritation. This rarity is possibly due to the fact that the creoles are not great smokers of clay pipes, and are to a large extent the possessors of good teeth. I have, however, noticed a marked tendency to degeneration of the teeth among all classes from children upwards—a condition which was certainly absent twenty-five years ago, and which I put down to the use of European articles of diet, as saccharine foods, preserves, and sweets. If this tendency is not checked I would not be surprised if in another fifty years epithelioma of the tongue should become as common a disease as cancer of the breast in this colony.

But in the aborigines also there is a marked absence of these epitheliomatous growths, and yet both men and women and even children are great clay pipe smokers. Their teeth are, however, kept beautifully, and pearly white, and that tendency to decay which has been noticed in the creoles is altogether absent in them.

The presence of cancer of the breast among the creoles of the colony nullifies, in my opinion, the theory advanced by Dr. Hearsey, Principal Medical Officer of British Central Africa, in his paper on The Rarity of Cancer among the Aborigines of British Central Africa (published in the BRITISH MEDICAL JOURNAL of December 1st, 1906), in which he states:

Of the various theories advanced to explain the origin of cancer, the theory that it is purely local in origin appears to have obtained the widest acceptance. Premising that cancer of the breast is local in its origin, that for physiological reasons the breast is subject to great and sudden alternations in its functional activity, both at puberty and during pregnancy and lactation, it appears to me that any disturbance of the physiological functions of the breast during lactation would act as an exciting causative agent of no small value in the production of cancer. All native children have of necessity to be brought up on the breast. In civilized communities, even among the poor, there is a marked and growing tendency to wean infants at the outset. In consequence of the physiological increase of supply of blood to the breast during lactation, the artificial suppression of the latter may act as a powerful exciting cause in the production of cancer. If this is not so, how is it to be explained that aboriginal women, who are always compelled to suckle their young, are so immune from cancer of this origin that it is practically unknown amongst them?

To this I have to observe that the cases of cancer of the breast which I have enumerated above as occurring between the years 1900-9 have all come within my personal observation and knowledge. They were all multiparous women who had nursed their infants from twelve to eighteen months each time before weaning, and they had become again pregnant after an interval of from three to twelve months, so that the mammary glands in them were in a state of constant excitement and activity. The physiological activity of the mammary glands is not

in my opinion a reasonable theory to account for the apparent immunity or rarity of cancer of the breast amongst the native women of British Central Africa. The presence and apparently increasing prevalence of this disease amongst the civilized native women descendants of the liberated African in Sierra Leone must point out that we must look for some other means brought about by their contact with and embracing of civilization.

The important fact of hereditary predisposition has not been lost sight of, but so far I have been unable to trace the existence of any growth whatever in their family history of the majority of the cases examined. In one case, however, there was distinct hereditary origin, for which I can vouch, as I treated the grandmother for cystic adeno-sarcoma of the right breast, the granddaughter for carcinoma of the uterus, and the great-granddaughter for recurrent adeno-sarcoma of the groin.

It may be interesting, as bearing upon the question of civilization as a contributory cause to the origin and spread of cancer and other diseases among aboriginal population, to compare the history of two African peoples on the West Coast of Africa—the Sierra Leone creoles and the Fantis or natives of the Gold Coast.

In the case of the Sierra Leone creole, his ancestors of various tribes and languages, different habits and social customs, and of various temperaments, dispositions, and idiosyncrasies, had, as an outcome of the suppression of the slave trade and slavery, been brought and located in Sierra Leone. Possessing nothing of the elements of a nation in common, they could not combine and unite and so become a distinct entity and evolve, if not a language, a common social custom and mode of living best suited to their state and condition as children of the tropics. Their eagerness in their ignorance to forsake their own native social customs and to embrace and adopt the language, dress, and mode of living of their benefactors—an eagerness largely born of gratitude—was only paralleled by the earnest solicitude on the part of their benefactors to help them to throw off what was "native," and which was unwisely regarded by the latter as relics of barbarism and heathenism, and assist them in the adoption of their language, customs, and mode of living. As ignorance and tribal differences slowly gave way to education and inter-marriages, the tendency not to assimilate what was best in their native brethren or to unite, but to imitate, adopt, and practise what was foreign, grew and grew until, by the process of evolution, the Sierra Leonean had become more English than any other people on the West Coast of Africa. The initial cause of this was the absence of a common nationality, tribal origin, or clan ship; for how different would the creoles have been if their forefathers were all from the same country and of the same tribe! They would have preserved their language, traditions, customs, and habits, and have been better able to resist, for a considerable period at least, the inroads of certain civilized habits and influences, the adoption of which has proved detrimental to their very existence.

Now let me take the case of the Gold Coast, and see how far European civilization has affected a large majority of the people there who are one in language, habits and customs. These people have been in contact with European nations for five centuries. Their country was visited by the Phoenicians; they have had at various periods and for more or less long duration constant intercourse with the Danes, Dutch, Portuguese, Germans and English, who have at intervals and in succession held and fortified their coast towns. Yet after so many centuries of close contact with Europeans, they have by virtue of their race instinct and race unity resisted as one people the inroads of European civilization into their social life, and as a result we find the absence or rather rarity of cancer and other new growths amongst them. How long this condition will last remains to be seen. Native customs die hard, but with the establishment of permanent peace in their country, the opening of their country by railways, the constant influx in increasing numbers of Europeans exploiting the country and working the mines, the equally rapid increasing number of the offspring of such Europeans as a result of intercourse with the native coloured women, descendants of older decades from Danish, Dutch, German and English forefathers, and with the other non-hybrid native women, the liberal and progressive system of education now being established all over the country, I am very much afraid

that the social habits and native customs of the Gold Coast people will before long disappear before the mighty onslaughts of European civilization, and with such disappearance arise those conditions which I believe, as the outcome of this civilization, are the origin of cancer. I entertain this apprehension also in regard to the Nigerias and other native territories which are being exploited by or made as a home for the white man.

I have in the above sketch attempted simply to give facts, and state my impressions based on those facts. I have refrained from making definite conclusions or positive statements, and necessarily so where the field of investigation is so wide and my opportunities for making researches are so limited. If, however, this sketch should serve to induce others to collect data and prosecute researches as opportunity offers so that definite conclusions may be arrived at, and should lead the creoles to reflect and alter their present mode of living so as to avert becoming the victims of this dire disease which up to the present baffles medical science, I shall not have made the attempt in vain.

ONE CAUSE OF CANCER AS ILLUSTRATED BY EPITHELIOMA IN KASHMIR.*

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DURING twenty-five years, of 4,902 tumours removed by operation in the Kashmir Mission Hospital, no less than 1,720 were malignant, and of these 1,189 were epitheliomata, and 848 were on the thighs or abdomen and were due to the irritation of the kangri, a portable fire basket, carried by the people under their clothes (Fig. 1). When sitting down this rests against the inner sides of the thighs or the front of the abdomen. The front of the chest, the breasts and the calves of the legs are all exposed to the irritation of heat, and they also are liable to become the seats of epitheliomatous disease, although much less frequently than the thighs and abdomen. The disease is twice as common in men as in women. The average age of the patients was as high as 55. Epithelioma is extremely rare under 40.

PRE-EPITHELIOMATOUS CONDITIONS.

Scars from previous burns are often the starting-point for epitheliomata. Many of the patients show a strong tendency to proliferating epithelium, and on the abdomen and thighs it is extremely common to find dry scaly pigmented spots or patches slightly raised from the surface. The skin is often mottled and shows the lines of distribution of superficial veins. This is due to overlying pigmentation deposited as the result of the irritation and dilatation of the veins caused by heat. Horny tumours are not rare and sometimes at their base transition into epithelioma can be demonstrated. There is also a condition allied to chronic eczema in which there is redness and a tendency to desquamation. This gradually shades off into the actual formation of scar tissue. When epitheliomatous changes are supervening, thickening is followed by raised patches like wheals. This may be followed by ulceration and gland infection.

CLINICAL PATHOLOGY.

There are three types of kangri burn epithelioma—the raised, the excavated, and the mixed. In the raised type there is usually ulceration, and often fungation and cauliflower excrescence (Fig. 2). Two inches in diameter is a common measurement. In the excavated type the floor is irregular and the edges undermined. In the mixed form the growth as a whole is raised, and circular or oval, and in the centre is a deep crater-like depression. Sometimes one portion of the growth is fungating and another portion excavated. All these growths are very septic, and the skin around is sodden with fetid discharge, which dries and forms crusts on and around the tumour. Ulceration and infiltration proceed, and muscles, peritoneum, and even the surface of ribs may be attacked. Glands are slow to show signs of infection. In the thigh they are usually involved in the following order: along the upper part of the internal saphenous vein, deep in Scarpa's triangle,

* Read before the Bombay Medical Congress.