the interpretation of all statistics is a matter of very considerable difficulty, especially when we have to deal with native patients, whose tribal and social conditions, whose prejudices and whose superstitions are so widely different from those that obtain among us. Nevertheless, the quite legitimate deductions that Dr. Ligneris makes are of sufficient interest to attract attention.

A most interesting point in his paper is that relating to the melanomata. It is high time that the histology of these interesting neoplasms was studied from the point of view indicated by Dr. des Ligneris in his paper—namely, from their biochemical as well as from their embryological relationships. The case of apparent recovery cited by him is equally interesting from another aspect, that of immunization. If, as has been suggested before, pigmentation, even by pathological processes such as malaria, is a prophylactic against cytological aberrations, it should not be difficult to find proof of this contention, against which, by the way, the frequency of keloid formation in the Bantu race, to which Dr. des Ligneris draws attention, distinctly pleads. Altogether, Dr. des Ligneris' article is one that will bear discussion, and that is provocative of debate. That is the kind of paper that will possibly do more to advance medical science than many others that may seem, at first glance, to be of far greater clinical importance.

Tumours in Northern Transvaal.

AN ANALYSIS OF TWENTY YEARS' STATISTICS IN A COUNTRY HOSPITAL.

BY M. J. A. DES LIGNERIS, M.D., JOHANNESBURG, LATE MEDICAL SUPERINTENDENT, ELIM HOSPITAL.

The reason which has led me to bring to the knowledge of the medical profession some statistical data concerning the tumor material of the Elim Hospital during the past 20 years is not that I have made any startling discovery about neoplastic diseases; but in our actual state of knowledge any data concerning the occurrence of tumors under special conditions may be useful by adding one more page to the bulky volume of evidence given by witnesses in the case.

The interest of the Elim Hospital statistics lies in the following facts:—

(1) The in-patients of that hospital are partly Europeans and partly natives. The latter predominate. The *Europeans* are in the majority farmers from Dutch and French Huguenot descent, in the minority new English or Continental immigrants or their children.

The *native* patients of Elim Hospital come from the Northern districts of the Transvaal or from Bechuanaland, Rhodesia, or Portuguese East Africa. They represent on the whole the most unaltered raw native type that can be found in South Africa; especially most of the women patients have not yet been seriously in contact with civilization. They are still living their old home life and eating their native food as they did for generations. The only practical contact with civilization in many of them has been the meeting with some of their male relatives who have come back from the towns carrying with them some new species or variety of micro-organisms. It follows that the native tumour material of the Elim Hospital is a poor representative of what we may expect the tumour material in raw African aborigines to be.

(2.) The whole tumor material has been subject to microscopical examination since 1906. The late Dr. James Borle, who was my predecessor, had examined his material (about one-quarter of the lot) and had it seen through by the late Professor Hedinger, of Basle. Sections of my material (three-quarters of the lot) have been shown to several colleagues who came up to Elim, and I am demonstrating here a few typical sections under the microscope.

In the following statistics there is no difference made between operated and non-operated cases. On account of the impossibility of controlling what has happened to the majority of the patients after they left hospital, I have abstained from bringing in statistics of operative results or of results of X-ray treatment. My impression is that our results at Elim were not worse than the usual average results of other surgeons or hospitals, especially if we take into consideration the fact that a great many of these cases (especially the malignant ones) came to hospital in a very advanced stage.

Just as we work with different equations to calculate unknown entities, so we may perhaps use with advantage the differences of tumor occurrence in different races, and by combining the European with the native data we may gain a somewhat more stereoscopic view of neoplastic diseases. It will, in any case, be a view from the outside only!

ANALYSIS OF STATISTICAL DATA.

Europeans.—The relative proportion between epithelial and connective tissue tumors and the one between benign and malignant tumors represents, as far as I am aware, the usual state of things anywhere in Europeans. The total figures are small, and do not offer any special interest. There are more benign than malignant tumors, but not to a very great extent. Amongst the malignant tumors there is a considerable predominance of carcinoma over sarcoma. Carcinoma occurred both in Europeans of local stock and in immigrants. The figures are too small to allow of drawing any conclusions as regards the occurrence of carcinoma in African-born Europeans and in new immigrants

respectively. Many carcinomata have occurred in Europeans who have always lived their backveld life and eaten mealie-pap and biltong. As can be expected in a hospital which draws its European patients from a scattered poor population, which lives its separate life and sticks to old methods and superstitions, the amount of operable cases amongst the malignant tumors is very small. Only 14 (out of 38) could be operated, and in eight out of these fourteen the operation was only a palliative one. External cancers had usually been submitted to the treatment of some "cancer cure" before they came to hospital. All these facts are so usual that no further insistance is needed. We can only say that simplicity of life and nourishment does not seem to prevent Europeans from getting cancers.

Natives.—The tumors in natives had usually been diagnosed as growth, or tumor or ulcer, according to the case, by the natives themselves or by their relatives. They also had generally been submitted to the usual native treatment, which consists in making multiple superficial incisions into the skin overlying the tumor and into any area where pain is felt. Of course, native medicines had also been tried. When the tumor bearers realized that their people could not help them, they came to us, and this meant a usually very advanced state of things. Some of the pictures remind us of those in pre-Listerian books of surgery.

The internal tumors are not numerous; this may be partly due to the fact that raw natives do not yet easily come to the doctor for indefinite internal troubles. For these troubles they go to their native medicine man or to the witch doctor. It may also be that internal tumors are rather rare in natives. What is the more important of these two possibilities? We have made autopsies on the great majority of the natives who died at Elim Hospital. Over ninety per cent. of all fatal native cases have been submitted to post-mortem examination. This means several hundreds of autopsies. There was not one case where post-mortem examination revealed death to be due to internal tumor not previously suspected. Occasionally some tumor was found to be more widespread than had been assumed before death. But the presence of all the tumors which caused death was easily ascertained ante-mortem.

Then again, of the most vital internal organs, pieces were cut into sections. Especially after the publication of Dr. Pirie's paper on liver carcinoma in natives on the Rand who were infested with schistosomiasis, I looked through every liver. I found a great number of more or less advanced cirrhosis due to schistosomiasis or to other causes (we had very many cases of schistosomiasis). I have found embedded in the cirrhotic fibrous tissue nests of liver cells which showed some adenoma-like arrangement; also some proliferation of bile duct epithelium, but I could not find a single case in which I could diagnose undoubted carcinoma. What the reason is for this difference between Dr. Pirie's liver material and my own I am not able to say. I can only register the fact.

There is in many of our natives a distinct tendency towards *hyperplasia of fibrous tissue,* as manifested in the frequent occurrence of *keloids* and of subcutaneous *fibromata.* Where there had been previously some chronic inflammation in the form of an infected cut, wound, or an ulcer or a gumma, we see often the occurrence of a fibroma. The tendency to keloid formation in natives is a well-known fact. These keloids usually recur after excision. They are beneficially influenced by X-ray treatment, but in my experience they seem to recur in any case. It is only a certain number of natives who are developing keloids, but the proportion is undoubtedly larger than in Europeans. We find in natives every degree of keloid formation from the slightly elevated scar up to big pendulous or mushroom-like pedunculated tumors. Their seat is anywhere, but they are found with preference on head, upper extremities, and upper part of the trunk.

There are many *mixed tumors of the salivary glands* (submaxillary or carotid). They develop comparatively slowly at the beginning, but grow more quickly as the case advances, and may reach very big sizes. When microscopically examined, they appear usually distinctly malignant, in parts at least. The malignant structures must be microscopically diagnosed partly as adenocarcinoma, partly as fibrosarcoma or spindle cell sarcoma. But when one examines very advanced or recurrent cases of these salivary gland tumors, they are always found to be sarcomata. This seems to show that we must be very careful when we diagnose carcinoma in natives. Even where from our experience in Europeans we are bound to make a microscopic diagnosis of carcinoma, this does not necessarily mean that it is a clinically malignant epithelial tumor.

The salivary gland tumors show occasionally an arrangement which is suggestive of endothelioma, but they are probably not. Cartilage is found in very many of these tumors. Local recurrence is frequent, and the recurrences are always of a sarcomatous nature. The biggest recurrent tumor which I removed was a second recurrence of a primarily submaxillary tumor. It had nearly the size of an adult's head, and had invaded the upper and lower maxilla, and a great part of the neck.

Goitres are not very frequent. They are isolated cases from different parts of the country. Pathologically, they are adenomata, or (usually) colloid cysts. They are more frequently one-sided than double-sided. They are distinctly tumors. They are never of the diffuse puberty goitre or of the exophthalmic goitre type. (We had a few cases of exophthalmic goitre operated and microscopically examined among European females.)

Cystic tumors are not infrequent in natives. We had dermoid cysts, atheromatous cysts, thyroglossal cysts, sublingual cysts, also a large adamantinoma. We had four cases of these large, cavernous lymphangiomata called hygromata colli, which, when well advanced, transform the whole prevertebral part of the neck into a peritoneum-like structure filled with viscous fluid; the neck organs (larynx, trachea, œso-

pharynx, large blood vessels) are then connected to the structures overlying the cervical spine by double sheets of mesenterium like the gut in the abdominal cavity. It becomes a rather difficult task to remove or to destroy the whole endothelial lining of these hygromas.

On the whole, we may say that the benign tumors in our natives, with the exception of the fibromata and keloids, are, to a great extent, connected up with disturbances of embryonal origin. Dermoid cysts, angiomata and lymphangiomata, and mixed salivary gland tumors are all cases pro-Cohnheim. The mixed salivary gland tumors form, at the same time, a bridge between the benign and the malignant tumors.

The analysis of the latter is certainly the most interesting item in our investigations.

There are 17 cases of melanoma or melanoblastoma, against 32 cases of sarcoma and 6 (or 7) cases of carcinoma. The two outstanding data are the frequent occurrence of melanoma and sarcoma, and the rare occurrence of carcinoma.

Let us first consider the melanomata. With the exception of one advanced case in a young child, when the origin was in the pigmented eye structures, all our melanomata started from the skin or cutis of the leg or foot. This latter fact is most probably connected up with the frequency of lesions to the bare feet (thorns, etc.). The primary tumor was always in an ulcerated condition; in over half of the cases the inguinal, and sometimes the iliac, glands were involved.

Whilst the primary tumors are usually intensely melanotic throughout, the glands contain often very little pigment; the usual picture is that of accumulations of pigment in connective tissue, or endothelial elements between the tumor cell groups, whilst the tumor cells themselves show little or no pigment at all.

In Europeans, melanomata are usually considered to be the most malignant of all tumors; in natives their growth and virulence appears to be of a less intense degree. The primary tumors had usually existed for many months before we saw them. I remember a case of a native, middle-aged man, who came to hospital with a great number of melanotic tumors on one leg and several on the other leg. Glands were involved. He was in an emaciated condition, and I amputated the worst leg, according to the wish of the patient. Then I sent him home with the idea that he would soon be dead, but to my astonishment I saw the same man after a few years. He looked in good health, and had no tumors on the left leg. I do not think there could have been any doubt as to the diagnosis; it seems that this native had developed, during the presence of the badly melanotic leg, an insufficient amount of immunity, which amount was, however, sufficient to deal with the comparatively small quantity of tumor cells which were left after the amputation of the worst leg. Or we may perhaps be nearer the truth if we take up an "altruistic" point of view, *i.e.*, that of the tumor cells, and say that the stage of active tumor growth (before the amputation) had been rendered possible because the tumor cells had acquired an immunity against whatever protective or growth-diminishing substances the patient's body could put up. But this immunity disappeared, or gave way to an anaphylactic state, when suddenly the greatest part of the tumor material had been taken away. What remained of tumor cells could not produce immediately sufficient substance to protect themselves against the enemy, and they had to disappear in the struggle. Similar cases do also occur in Europeans, but they are rare. One may be tempted to draw up a parallelism between the comparatively lesser degree of malignancy of melanomata in natives, as compared with Europeans, and the great functional activity of the connective tissue in many natives, which activity manifests itself, as we have seen, in the formation of keloids, or other fibromata, and also in the tendency to intense local protective reaction in cases of heavy wound infections caused by the accustomed micro-organisms; this strong reaction causes general septicæmia to be rare in natives.

It is better to separate melanomata from sarcomata.

Ribbert derives the melanoma from the highly specialized mesoblastic chromataphores in the cutis. Ewing on the whole follows Ribbert somewhat hesitatingly, but is not very positive as regards classification of these melanomata. My sections, of which I have put up a few here, certainly favour Ribbert's view. In Europeans melanomata of the skin are supposed to start practically always from pigmented nevi. In my natives I am really unable to say whether benign nevi were in existence before the occurrence of the melanomata. The overwhelmingly frequent localisation of these tumors on the feet would rather point against the pre-existence of nevi. The sole of the foot is not the usual place for nevi, neither in whites nor in natives. I am rather inclined to think that these tumors originated as a sequel of chronic irritation.

The melanomata are a very interesting kind of neoplasmata. The functional character of cells which have undergone malignant degeneration is usually difficult to determine; the general idea is that milignant cells functionate considerably less than the non-malignant cells. Here we have the opportunity to study the visible functions of tumor cells. Here is not the place to go into microscopical details. I shall only say that we may, on examination of a melanotic skin nodule, distinguish following zones which seem to correspond to the degree of development of malignancy: (1) a peripheral zone with slightly increased pigment in the cutis and epithelial irritation in the form of prolonged papillæ, as we are used to see them near the edges of ulcerations; (2) considerable increase of chromatophores with black pigment in the cutis and increase of pigment between and in the interior of the overlying epithelial cells. There seems no doubt that this pigment is carried through lymphatic currents from the depth towards the surface. Whether it is only melanogen which is carried into the epithelial cells, which substance unites with some complementary substance provided by the epithelial cells to build up melanin, or whether it is the definite substance which

is carried to the epithelium, is rather difficult to determine. But it is not the epithelium by itself which produces pigment. The chromatophores are in this zone apparently in a state of increased activity both as regards cell functions and cell division, they are in the pre-malignant stage, (3) in the third zone where apparently malignancy has occurred, the melanoma cells crawl into the epithelium and seem to feed on it; the pigment production is still present, but less than in zone (2); (4) the epithelium is thin, stretched out by the overlying growing tumor; (5) ulcer zone: no epithelium, but melanotic tumor masses with a leucocytic infiltration from secondary external microbial infection. The tumor cells, arranged in alveoli, contain on the whole less pigment than in the periphery. The bulk of the pigment is in the interalveolar connective tissue septa.

If, then, with the increased malignancy the actual functions of the tumor cells diminish, we can easily understand that in lymph gland metastases, which contain virulently proliferating cells, there are often big patches without pigment. These cells are apparently the most anaplastic ones, to use Hansemann's expression. As regards the therapy of melanomata, apart from the surgical operation, I saw good results from the X-ray treatment of the secondary gland involvement; however, my practice of late has been to remove surgically, or to scrape out, all attainable foci, to leave the wounds open, and to treat them with a few weekly doses of hard X-rays. The majority of the cases have gone home with wounds healed, or nearly healed, and without signs of the presence of malignant cells.

Sarcomata. — Their seat varies considerably, the greater part, however, involves the extremities. Superficial ones rapidly ulcerate. One chief came to us with a big tumor of the thigh which had probably started from some deep intermuscular fascia and surrounded the femur on three sides, leaving only the posterior part free. As the patient refused amputation, we had to undertake the somewhat hopeless task of freeing the tumor from the large vessels and nerve trunks. The tumor, after removal, weighed 12 lbs., and was a myxo sarcoma. Patient went home healed after having undergone X-ray treatment, but he came back one year afterwards in a hopeless condition. There was an enormous recurrence in the iliac glands, and nothing could be done. He died shortly afterwards.

Another man had a sarcoma of the upper part of the humerus, which necessitated a resection of one-third of the humerus with joint. The remaining part was fixed to the scapula in an elevated position; healing took place with a good function of the arm, and his old wife, very much satisfied with the fact that we had not amputated, performed a long dance, which gave us proof of her remarkable muscular capacities. I saw one intra-abdominal, enormous fibro-sarcoma which could not be removed. The site of origin was no more to be determined. Epulis is pretty frequent in natives.

Carcinoma.—The most outstanding fact of my statistics is, I believe, the rare occurrence of carcinoma. There are 6 or 7 cases only. I say 6 or 7 because one of the cases was, as we shall see, though microscopically certainly malignant, clinically non-malignant.

Six of the 7 cases are skin epitheliomata, with the usual cancer pearls. One only was an internal cancer. This latter concerned a man of about 50 years, originating from Rhodesia, who came in with clinical signs of an occluding tumor at the cardia. The liver was enlarged, and the whole epigastrium hard and dull. As he could not even swallow water any more, we made a gastrostomy. Patient died about two weeks later, and the post mortem revealed an enormous tumor which filled the whole epigastric region, involving liver, pancreas, and a great part of the stomach. Where it originated from I do not know. The picture is that of an adeno-carcinoma. I did not find remains of schistosomiasis in the liver.

Of the 6 remaining cases, one concerned a woman of about 40—45 years, with an epithelioma of the right mammary region; it was not the picture of an ordinary breast cancer, nor of a Paget, but the same picture as the other epitheliomata of the skin of which we are going to speak now. This breast carcinoma is very interesting because, as the microscopical examination of the enlarged axillary glands revealed, there was a combination of carcinoma with tuberculosis. The anamnesis showed that there had been for many years some subcutaneous fistules of apparently tuberculous nature in the mammary region (tuberculous subcutaneous fistulæ are rather frequent in natives), with secondary involvement of the axillary glands. Then, as a result of chronic irritation, carcinoma started in the breast region, and when we operated, removing the whole breast with axillary glands, there was nothing more to be found of tuberculosis in the breast, but the axillary glands still contained tubercules in addition to the fresh invasion of cancer cells.

Of the five remaining epitheliomata, three had developed in chronic ulcers of the leg and one apparently in an old tertiary ulcer of the groin. The leg ulcers had existed for 10—20 years. The patients were two women and two men. One woman was only 30—35 years old; the other woman and the two men were beyond middle age. The ulcers were distinctly carcinomatous when seen by me. The histories said that the ulcers had been existing for a long time, being stationary in size, but that some six months to one year they had increased in size. The man with the epithelioma of the groin had a positive Wassermann and many old syphilis tertiary scars. Most probably the ulcer was a syphilis tertiary ulcer before epithelioma set in. In a case of an ulceration of 20 years' standing, the ulceration had involved four-fifths of the circumference of the leg and eaten into the marrow of the tibia. The inguinal glands were only slightly enlarged in these cases. In two cases they were excised, but did not show carcinoma cells. The microscopical picture of these epitheliomata is the usual one, with a good deal of leucocytic infiltration and

connective tissue reaction. The last case, in my opinion, is of great interest. It concerned a man of about 65 to 70 years. He came in with an ulceration of the size of a half-crown on the anterior part of the thigh. How long this had existed could not be elucidated with certainty. The ulcer was foul-smelling, irregular in contours, and had generally the appearance of epithelioma. I excised a small piece, cut frozen sections of which you see one here. Everybody who has seen this section is bound to make the microscopical diagnosis of epithelioma. That is not a precancerous stage any more, but a distinct carcinoma. However, as the ulcer was so dirty, I started treating it with hot fomentations, using, for a time, boracic and then ordinary 9 per cent. saline. And what happened? The ulcer healed without further intervention within five weeks. What happened to this man afterwards I do not know, but when he left hospital there was nothing left of an epithelioma.

The microscopically existing carcinoma was not one clinically.

Conclusion.—The striking difference in frequency of occurrence of carcinoma between Europeans and natives, as well as cases like the one just mentioned (apparent carcinoma healing after ordinary hot applications) or the preponderance of sarcomatous tissue in malignant tumors of salivary glands, lead us to say that, whatever the mysterious something may be which differentiates a malignant from a non-malignant epithelial cell, it seems much more difficult; it needs, so to speak, a much stronger index flexor, in the case of the raw native, to pull the trigger, and when the trigger has been pulled, the cells have been brought into malignancy land from which there is no return to normal cell life.

What does this comparative difficulty to induce epithelial cells of natives into malignant degeneration mean? Does it only need an increased number of cell generations in the margin of ulcers, or wherever subsequent cell generations partly die or partly divide before the normal functional capacities of the cells are exhausted and the new cell generations only consist of a crowd of differentiated cancer cells; or does the native organism furnish the epithelial cells with a lesser amount of chemical or enzymatic agents which would cause the cells to degenerate? Or are both factors at work? The matter is, of course, left open in our actual meagre state of knowledge. You will, however, probably agree with me if I state that the figures in these tumour statistics of Elim Hospital rather speak in favour of a constitutional, hereditary character residing in the cell, which causes the epithelium of natives to become less easily malignant. It appears probable that the differences of metabolism, internal secretion, and so on, are to a great extent co-symptoms, and not mainly causes. They may, then, secondarily become causes to the extent to which acquired characters or influences of environment act on the constitution of the organism as a whole, and on each of the rapidly passing generations of epithelial cells separately. If the main cause for the difference in occurrence of malignancy between Europeans and natives was to be sought in conditions external to the cell, there is no reason which would explain why connective tissue elements in our raw natives easily turn malignant whilst epithelial elements do not. If it is, however, a constitutional inherited character which determines the comparative facility or difficulty of malignant degeneration, we can understand how, in raw natives, epithelial elements, both of skin and of internal organs, which have been by hereditary and by early acquired influences accustomed to function naturally and intensely, degenerate less easily than the epithelial elements of Europeans.

I do not know the reason for the comparatively frequent occurrence of sarcoma in natives. As far as I remember, I did not see a case of combination of keloid with sarcoma. It may be that for some unknown reason the connective tissue of natives is more liable to show mutations than the epithelium. One kind of mutation would then be the tendency to keloid formation, another the tendency to sarcomatous degeneration.

I do not want to continue this theme which has brought us into the midst of cancer theory discussions. But I must confess that an analysis of my tumor statistics tempts me very seriously to declare myself, until something better is brought forward, an adherent of the degeneration theory of cancer, as expounded recently in a masterly, though perhaps somewhat exaggerated and one-sided, manner by Hastings Gilford. The acceptance of the constitutional factor in cancer does not at all exclude the search for other additional causes. Should the rather improbable specific germ theory have to be adopted because of experimental proofs, or should the less improbable modified immunity theory be found to be correct, neither of these would be in real contradiction with the constitutional theory. Whatever the immediate cause of a human disease is, it needs always a respondent to bring the disease into actual existence, that is the human being with his constitution. To study this constitutional factor in disease, however difficult the task may be, is the privilege and the duty of our profession.

TUMOUR STATISTICS—ELIM HOSPITAL.

1ST JANUARY, 1905—30TH JUNE, 1926.

A. *Europeans* (3,030 patients).	*Male.*	*Female*
1. *Benign tumours*—		
Adenomata and Papillomata ..	3	5
Struma	—	3
Ovarian cysts	—	6
Lipoma	—	3
Myomata	—	5
Fibromata (and Keloids)	5	3
Other benign tumours	4	3
	12	28

	Male.	Female.
2. *Malignant tumours*—		
Sarcoma (and lymphosarcoma)	5	2
Carcinoma	13	17
Struma maligna	—	1
	—	—
	18	20
	—	—

Total Tumours, Europeans:

40 benign = 1.32 per cent. of total patients.
38 malignant = 1.25 per cent. of total patients.

78 tumours = 2.57 per cent. of total patients.

	Male.	Female.
B. *Natives* (13,170 patients).		
1. *Benign tumours*—		
Adenoma	4	1
Papilloma	4	2
Struma	2	8
Atheromatous cysts	5	3
Dermoid cysts	3	4
Thyroglossal cysts	—	1
Ovarian cysts	—	3
Encephalocele and Meningocele	3	2
Adamantinoma	1	—
Dentigerous cysts	—	2
Galactocele	1	1
Cysts of salivary glands	1	2
(32 cysts)		
Lipoma	21	7
Fibroma and Keloids	43	49
Myoma	—	4
Myxoma	1	2
Cavernous Hæmangioma	3	—
Lymphangioma (including Hydrocele colli)	4	1
Osteoma	—	3
Other benign tumours	3	—
	—	—
	99	95
	—	—
2. *Intermediate tumours*—		
15 Mixed tumours of salivary glands:		
Parotid	3	4
Submaxillary	3	5
Neuroglioma of optic nerve	—	1
	—	—
	6	10
	—	—
3. *Malignant tumours*—		
Sarcoma	24	34
Melanoma	11	6
Carcinoma	3	3
	—	—
	38	43
	—	—

Total Tumours, Natives:

194 benign = 1.47 per cent. of total patients.
16 intermediate = .12 per cent. of total patients.
81 malignant = .62 per cent. of total patients.

291 tumours = 2.21 per cent. of total patients.

Relative Occurrence of Sarcoma and Melanoma.

Europeans: 1 to 433 patients.
Natives: 1 to 176 patients.

Relative Occurrence of Carcinoma.

Europeans: 1 to 101 patients.
Natives: 1 to 2,195 patients.

Aneurysm: Its Medical Aspects.

By O. K. Williamson, M.A., M.D., B.Ch. (Cantab.), F.R.C.P. (London).

(Paper read before the Witwatersrand Branch M.A. of S.A.)

I propose to deal mainly with saccular aneurysms of the aorta. The so-called dilatation aneurysms should, according to my view, be sharply separated from these. They are distinct alike in etiology and in clinical characteristics. There does not appear to be, in the literature, any indication that this is a generally recognized distinction.

Etiology of Saccular Aneurysms of the Aorta.—The two chief factors are weakening of the coats by disease and strain. There is a marked preponderance in males; the average age is between 40 and 50 years.

Occupations Predisposing to It.—Soldiers, sailors, draymen, iron and steel workers, and dock workers are specially liable. By far the most important pathological conditions predisposing to it is syphilitic aortitis. The acute infections are not very important, and the so-called intoxications (exogenous and endogenous) are doubtful factors. Embolism and external injury are occasional causes. Multiple sacs are not infrequent. The majority of cases of saccular aneurysm of the aorta affect the arch. These may be divided into aneurysms of the sinuses of Valsalva, of the ascending part of the arch, and of the transverse part of the arch.

Aneurysm of the Sinuses of Valsalva.—This is an important variety. One, two, or three sinuses may be involved. These are rarely large enough to yield physical signs. The aortic ring is apt to be invoved, and perforation is common. This may occur either into the pericardium, superior vena cava, pulmonary artery, or one auricle. It is most frequently met with in acute syphilitic aortitis; in a few cases ordinary atheromatous changes are met with. These aneurysms are, as regards symptoms, often latent. Angina pectoris is not infrequent, and aortic incompetence common.