

## A Preliminary Report on 1,402 Consecutive Autopsies on Native Mine Workers.

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This paper is in the nature of a preliminary review of the material of autopsies performed in the period 1922-1928 at the City Deep Central Native Hospital. It is hoped that a more detailed discussion of the various interesting findings of these autopsies will be published from time to time in the near future.

73 of these autopsies were performed by Dr. A. J. Orenstein, 112 by Dr. A. Lee-McGregor, 182 by Dr. A. B. Dodds, 268 by Dr. H. Q. F. Thompson, and 663 by the writer. The remainder were performed at various times by Drs. C. A. Ovendale, D. I. Macaulay, J. A. Douglas, and H. N. Krige. The

Table I shows by years the assigned causes of death in cases on which autopsies were performed, and in Table II are given the percentages to the total deaths of the four principal causes of mortality in the autopsies reviewed hereunder.

A point of special interest will be observed in Table II, and that is that the ratio of deaths from tuberculosis has greatly decreased, while the ratio of deaths from pneumonias shows an increase. With regard to the ratios of deaths from enteric fever and cerebro-spinal meningitis, it will be noted that they are very irregular, as would be expected in two diseases which on the mines are epidemic in character.

### LOBAR PNEUMONIA.

Pneumonia was responsible for more deaths in this series of autopsies (468—33.38 per cent.) than any other disease.

TABLE I.  
PRINCIPAL CAUSES OF DEATH.

Year	Total Deaths from Diseases.	Autopsies performed per Year.	TUBERCULOSIS—													Lobar pneumonia.	Broncho-Pneumonia.	Enteric Fever.	Amoebic Dysentery.	Bacillary Dysentery.	Amoebic Abscess of Liver.	Bilharziosis.	Ankylostomiasis.	Hydatid Disease.	Epidemic Cerebro-spinal Meningitis.	Pneumococcal Meningitis.	Abscess of Brain.	Gumma of Brain.	Cerebral Haemorrhage.	Malignant Tumours.			Cirrhosis of Liver.	Chronic Nephritis.	Acute Pericarditis.	Miscellaneous.
			General Tuberculosis.	Pulmonary Tuberculosis.	Pulmonary Tuberculosis and Sarcosis.	Abdominal Tuberculosis.	Tuberculosis of Kidneys.	Tuberculous Pericarditis.	Tuberculosis of Glands.	Tuberculous Meningitis.	Tuberculoma of Brain.	Tuberculous Abscess of Liver.	Tuberculosis of Vertebrae.	Miliary Tuberculosis.	TOTAL.															Carcinoma.	Sarcoma.	Lymphosarcoma.				
1922	148	84	8	6	6	1	—	—	—	—	—	—	4	25	23	9	4	—	—	—	1	—	—	11	—	—	—	—	—	2	—	—	—	—	2	7
1923	226	159	6	3	5	1	—	1	1	—	—	—	10	27	47	12	19	—	—	1	2	—	—	13	—	1	1	—	—	—	—	—	—	2	4	30
1924	257	167	4	10	3	1	—	2	1	1	—	—	23	45	58	16	9	1	1	—	1	—	—	1	1	2	1	—	1	—	—	1	2	3	24	
1925	190	155	7	7	2	2	—	—	1	—	—	—	27	46	49	7	12	2	—	—	—	—	—	12	4	2	2	1	1	—	—	—	1	3	13	
1926	242	215	5	9	8	5	1	—	2	—	—	—	21	51	99	18	10	1	—	—	2	—	—	15	2	2	—	1	—	1	—	2	2	3	15	
1927	329	316	10	10	4	7	—	2	1	3	—	1	2	64	101	32	25	4	1	1	4	—	—	35	3	1	—	—	1	—	1	1	2	3	37	
1928	326	306	2	3	2	5	1	1	1	—	1	—	27	44	100	31	41	7	1	2	5	4	1	15	4	—	—	—	6	—	—	1	1	2	41	
Total:	1,718	1,402	42	48	30	22	2	3	7	6	2	2	2	136	302	468	125	120	15	3	4	15	4	1	102	14	8	4	2	11	1	1	5	10	20	167

histological examinations were carried out at the South African Institute for Medical Research, for the courtesy and help of the staff of which the writer takes this opportunity of expressing his thanks.

The patients of the City Deep Central Native Hospital are all male natives in the second, third and fourth decades of life, from various tribes residing in the Union of South Africa and the southern portion of Portuguese East Africa. In this paper they are for convenience designated respectively as "Union" and "East Coast" natives.

With very few exceptions, the autopsies were all on subjects from medical wards, because, under the laws of South Africa, all deaths due to accidental injuries—and these comprise by far the greatest number admitted to surgical wards—are to be subjected to post-mortem by a District Surgeon.

In 187 cases (39.96 per cent. of the total pneumonias) only the right lung was attacked, whilst in 108 cases (23.1 per cent.) the left lung alone was affected. Double lobar pneumonia occurred in 173 cases (36.96 per cent.).

The gross pathological changes were invariably those of a pneumococcal infection. Bacteriological examination was, however, carried out only in a small number of cases, and no useful statement can therefore be made regarding the frequency of the various types of pneumococci or the rôle other organisms, such as *B. influenza* and streptococci, may have played.

In the unilateral lobar pneumonias the affected lobes usually were in the stage of grey hepatization. In bilateral lobar pneumonia the affected lobes often showed varying stages of consolidation.

In the great majority of unilateral pneumonias the

whole of one lung was involved. The organ was enormously enlarged, its weight usually being more than 1,000 grammes. In one case a weight of 2,500 grammes of the right lung was recorded; the heaviest weight of the left lung was 3,150 grammes.

In double lobar pneumonia the most common type was involvement of the whole of the right lung, together with the left lower lobe.

Table III shows the number of percentages of the involvement of the various lobes.

In all cases some degree of pleural inflammation was present, the pleura mostly being covered with thick layers of fibrin. Pleurisy with marked effusion was recorded only twice, and empyema in three cases. Seven cases occurred in which parts of the affected lungs had become gangrenous.

A frequent complication was acute fibrinous pericarditis, occurring in 54 cases (11.5 per cent.). It was present in 24 cases of left, 19 cases of right, and 11 cases of double lobar pneumonia.

TABLE II.

Year.	Lobar Pneumonia vs. Broncho-Pneumonia.	Tuberculosis.	Enteric Fever.	Epidemic Cerebro-spinal Meningitis.
	%	%	%	%
1922 ...	38.1	29.8	4.76	13.1
1923 ...	37.1	17.0	11.9	8.2
1924 ...	44.3	26.9	5.4	0.59
1925 ...	36.1	29.7	7.7	7.7
1926 ...	50.2	23.7	4.7	6.97
1927 ...	42.1	20.3	7.9	11.1
1928 ...	42.8	14.4	13.4	4.9
TOTAL	42.2	21.5	8.6	7.3

79.6 per cent. of all autopsies.

In one of these cases there was also acute peritonitis.

In ten cases primary pneumonia was followed by pneumococcal meningitis.

In seven cases the resistance of the patients was probably lowered by the presence of many hundreds of hookworms; in thirty-three cases by multilobular cirrhosis of the liver.

Other accessory findings were chronic nephritis in seventeen cases, bilharziosis of the liver in three, and bilharziosis of the bladder in four cases.

## TUBERCULOSIS.

The term "general tuberculosis" is applied here to cases in which caseating tuberculosis, with or without cavitation, was found in the lungs, associated with the presence of miliary tuberculosis in other organs.

TABLE III.  
LEFT LOBAR PNEUMONIA.

Lobes Affected.	Cases	%
Both lobes ... ..	77	71.3
Lower lobe alone ... ..	28	25.9
Upper lobe alone ... ..	3	2.8

RIGHT LOBAR PNEUMONIA.

Lobes Affected.	Cases.	%
All lobes ... ..	107	57.2
Lower lobe alone ... ..	20	10.7
Upper lobe alone ... ..	16	8.6
Middle lobe alone ... ..	3	1.6
Lower and upper lobes ... ..	27	14.4
Lower and middle lobes ... ..	10	5.3
Middle and Upper lobes ... ..	4	2.1

DOUBLE LOBAR PNEUMONIA.

	Cases.	% of Total.
All lobes of both lungs ... ..	15	8.7
All lobes of right lung and left lower lobe ... ..	30	17.3
All lobes of right lung and left upper lobe ... ..	10	5.8
Right lower and upper and left lower lobe ... ..	27	15.6
Right lower and upper and left upper lobe ... ..	—	—
Right lower and middle and left lower lobe ... ..	3	1.7
Right lower and middle and left upper lobe ... ..	2	1.2
Right middle and upper and left lower lobe ... ..	1	0.6
Right middle and upper and left upper lobe ... ..	—	—
Right lower and left lower lobe ... ..	20	11.6
Right lower and left upper lobe ... ..	2	1.2
Right upper and left lower lobe ... ..	1	0.6
Right upper and left upper lobe ... ..	2	1.2
Both lobes of left lung and right lower lobe ... ..	19	10.98
Both lobes of left lung and right middle lobe ... ..	1	0.6
Both lobes of left lung and right upper lobe ... ..	6	3.5
Both lobes of left lung and right and middle lobe ... ..	7	4.04
Both lobes of left lung and right lower and upper lobe ... ..	22	12.7
Both lobes of left lung and right middle and upper lobe ... ..	5	2.9
	173	

"Abdominal tuberculosis" means tuberculous peritonitis with tuberculous foci in some of the abdominal organs.

By far the majority of cases of miliary tuberculosis showed tubercles in the lungs, liver, spleen and kidneys (46 = 33.8 per cent.). In 26 cases (19.1 per cent.) the kidneys escaped, whilst in 14 cases (10.3 per cent.), in addition to the above-mentioned organs, the peritoneum, and in 15 (11 per cent.) the pericardium, revealed the presence of tubercles. In the remaining cases tubercles were found only in one or two organs. A remarkable feature in the majority of all of these cases was the great enlargement of the spleen, the organ attaining in 56 cases (41.1 per cent.) a weight of 500 grammes and more; in 8 cases (5.9 per cent.) even more than 1,000 grammes. In many cases the splenomegaly may have been partly due to malaria or some other tropical disease, as the great majority of these patients had come from Portuguese East Africa. The size of the tubercles in the spleens

TABLE IV.

	Type.	Cases.	%
1	Acute miliary tuberculosis	136	45.0
2	Pulmonary tuberculosis ...	48	15.9
3	General tuberculosis ...	42	13.9
4	Pulmonary tuberculosis with silicosis ...	30	9.9
5	Abdominal tuberculosis ...	22	7.3
6	Tuberculosis of glands ...	7	2.3
7	Tuberculous meningitis ...	6	1.98
8	Tuberculous pericarditis ...	3	.99
9	Tuberculosis of kidneys ...	2	.7
10	Tuberculosis of vertebræ ...	2	.7
11	Tuberculous abscess of liver ...	2	.7
12	Tuberculoma of brain ...	2	.7

ranged from scarcely visible fine white spots to the size of a bean, or even a walnut. Sometimes coalescent nodules formed tumour-like masses. Nearly all the cases occurred in young people.

*Pulmonary Tuberculosis.*—The diseased lungs (256 cases under No. 2, 3 and 4 of Table IV) revealed in 104 cases (40.8 per cent.) the lesions of chronic phthisis, and in 152 cases (59.2 per cent.) those of the acute form. The chronic form was in 30 cases associated with more or less pronounced silicosis. Out of the acute cases, 91.5 per cent. were of the caseating broncho-pneumonic type, whilst 8.5 per cent. belonged to the lobar type of tuberculous pneumonia.

*Abdominal Tuberculosis.*—There were cases of the plastic type of tuberculous peritonitis, as well as cases with effusion. The omentum was sometimes greatly thickened, studded with tubercles and rolled up, forming a tumour-like mass, the intestines being matted

together by numerous adhesions with caseous masses lying between the coils. In the cases with effusion the exudate was usually hæmorrhagic.

*Tuberculosis of Glands.*—Six cases of tuberculous lymphadenitis of the neck, and one case in which only the mediastinal glands had been affected, were seen. In four of the former cases abscesses with sinus formation occurred. In two the glands were just about to break down into cheesy masses. In all these cases there was a small number of miliary tubercles scattered in one or other viscus.

In the mediastinal case the glands were greatly enlarged and matted together, forming a tumour closely resembling lymphosarcoma. The tuberculous character of this tumour was revealed only by histological examination.

*Tuberculous Meningitis.*—All these cases were of the usual type, the diagnosis being confirmed by histological examination at the Institute.

*Tuberculous Pericarditis.*—In one case the pericardial sac was filled with 800 c.c. of hæmorrhagic fluid. Tubercles ranging in size from a pinhead to a pea were thickly studded on both layers of the pericardium. In another case of similar appearance of the pericardium the sac contained 200 c.c. of straw-coloured fluid. In the third case both layers of the pericardium were matted together by tuberculous granulation tissue.

*Tuberculosis of Kidneys.*—In both cases the affection was bilateral. In one case the parenchyma of both kidneys was nearly completely destroyed, showing on section numerous cavities filled with tuberculous pus and necrotic matter. A few miliary tubercles were scattered on the surface of the organs.

In the other case there was a number of coalescent tubercles the size of a pea on the surface.

On section the kidneys showed large areas of caseation. Both cases occurred in men aged 20 to 25.

*Tuberculosis of Vertebræ.*—Two fatal cases occurred amongst young East Coast natives. In one case an encapsulated abscess the size of a goose egg was found on the left side of the ninth and tenth dorsal vertebræ. The body of the ninth vertebra was necrotic. Its spinous and right transverse processes were merely necrotic stumps and enclosed in the abscess cavity. The cord at this level was nearly completely destroyed. No tuberculous lesions could be detected with the naked eye in any other organ.

In the other case there was an accumulation of pus on both sides of the lumbar vertebræ. The bodies of all lumbar vertebræ showed necrosis on the right side. A few miliary tubercles were scattered on the surface of both kidneys.

In both cases histological examination at the Institute confirmed the tuberculous character of the lesions of the vertebræ.

*Tuberculous Abscess of the Liver.*—Two cases are recorded. One occurred in an elderly Nyambaan (East Coast Native). An abscess the size of a duck's egg was found in the right lobe near the surface,

and a number of smaller abscesses were scattered throughout this lobe. The liver was greatly enlarged, weighing 2,850 grammes.

In the other case the body was that of a young Shangaan (East Coast Native). An abscess the size of a hen's egg was situated in the enlarged left lobe, this lobe being firmly attached to the spleen.

Both cases presented some degree of dry pleurisy. According to the Institute, the condition was one of tuberculous septicaemia in both cases.

*Tuberculoma of Brain.*—Both cases occurred in elderly men. The tumours were about the size of a walnut. One was situated in the left hemisphere of the cerebellum, the other one in the pons, and in the latter case was accompanied by tuberculous meningitis.

#### ENTERIC FEVER.

In this series enteric fevers take third place in the causes of death.

With one exception, the autopsies always revealed the presence of ulcers in the stage corresponding to the end of second or the beginning of the third week of the disease. Ulcers were always present in the lower part of the ileum.

In 29 cases (24.4 per cent.) there was extensive sloughing on the ileo-cæcal valve. In 7 cases (5.9 per cent.) characteristic typhoid lesions were also found in the cæcum, and in 4 cases (3.4 per cent.) throughout the colon.

One patient died very early in the disease of typhoid septicaemia, his bowels showing only early lesions, *i.e.*, swelling of the fawn-coloured Payer's patches.

In two cases, in addition to numerous ulcers in the ileum, extensive sloughing on the ileo-cæcal valve and ulcers in the cæcum, ulcerative typhoid appendicitis was also present.

Extensive intestinal hæmorrhage leading to death occurred in 8 cases (6.7 per cent.). 24 cases (20.2 per cent.) had perforations of the ileum with ensuing peritonitis. In 22 of these cases there was only a single perforation, in one case two, and in another case three perforations. In one case the perforated coil of the bowel was fixed to the bladder-wall, an encapsulated abscess having been formed without general peritonitis.

The occurrence of perforations was remarkably frequent in 1928—11 cases out of 41 (26.8 per cent.)—whilst in all the other years of this series the percentage was 16.5 per cent.

Pigmented spots in the lower part of the ileum, showing the sites of healed enteric ulcers, were rather a common accessory finding in the autopsies, indicating that enteric fevers are common among natives.

Table V. shows the complications recorded.

A noteworthy fact in two cases was the co-existence of miliary tuberculosis, making an exact clinical diagnosis very difficult. Indeed, in both cases enteric fever only was diagnosed.

#### EPIDEMIC CEREBRO-SPINAL MENINGITIS.

The autopsy findings showed nothing noteworthy.

#### DYSENTERY.

Dysentery was eighteen times recorded at autopsy as the cause of death. In fifteen of these cases histological examination revealed the presence of *Entamoeba histolytica*. In three cases no amœbæ could be found. They are recorded as "bacillary," but there is no record of the result of the bacteriological examinations. Four of the deaths from amœbic dysentery occurred among Union natives; eleven were East Coast natives.

In five cases of amœbic dysentery generalized ulceration of the entire large bowel was found, with multiple perforation in one case. In the other ten cases there were characteristic ulcers or circumscribed areas of ulceration in various parts of the large intestines, mostly in the flexures of the colon. In two of these cases one ulcer was perforated.

TABLE V.

	Cases.	%
Peritonitis following perforation	24	20.2
Peritonitis without perforation	2	1.7
Intestinal hæmorrhage ...	8	6.7
Ulcerative typhoid appendicitis	2	1.7
Abscess of spleen ...	2	1.7
Typhoid septicaemia ...	1	0.83
Broncho-pneumonia ...	56	46.6
Acute nephritis ...	12	10
Acute typhoid meningitis ...	2	1.7

In addition to these cases, four cases of amœbic abscess of the liver occurred among East Coast natives. In three of these there were characteristic dysenteric lesions in the large intestines, whilst in one case the bowels were of normal appearance. The abscesses were always situated in the right lobe of the liver, the organ weighing from 2,400 to 3,550 grammes. In two cases nearly the whole of the lobe formed the abscess cavity. In another the abscess was only the size of a hen's egg, but perforated into the right lung.

#### HELMINTHIASES.

Infestation with parasitic worms led to death in twenty cases.

(a) *Cestodes.*—One patient, a Tonga (East Coast), of about 35 years, died of hydatid disease of the liver. He had in the right lobe of the liver a unilocular cyst of the size of an infant's head.

*Cysticercus cellulosæ* was accidentally found in the brains of three patients who died of other diseases. In two cases a number of cysts the size of a pea were found on the surface of the frontal convolution; they could easily be squeezed out without leaving any

visible damage to the brain substance. In the third case a single cyst was situated in the left lateral ventricle.

Compared with the frequency of other worms, tape-worms were not common in these autopsies. *Tania soleum* and *saginata* were encountered, as well as in one case *Hymenolepsis nana*, and in another one *Hymenolepsis deminuta*.

(b) *Nematodes*.—Since the hookworm campaign started (September, 1926) ankylostomiasis was found to be the cause of death in four cases. In all these cases thousands of worms were detected in the small intestines, either firmly attached by the head to the mucous membrane or free in its folds. The bodies were greatly emaciated, all organs were anæmic. There was pleural effusion, sometimes with exudation in the other serous cavities. The kidneys were very pale and of waxy appearance, without any pathological changes being detected by histological examination.

Hookworms—in the great majority *Ankylostoma duodenale*—are very commonly found in the autopsies of East Coast natives, in many cases apparently without having produced any pathological effects. But at least in seventeen cases the presence of many hundreds of these worms no doubt had unfavourably influenced the course of the disease of which the patients died. It may be mentioned that in all these seventeen cases the direct cause of death was a lung disease, either pneumonia or tuberculosis.

*Ascaris lumbricoides* and *Trichocephalus dispar* are also very frequently encountered at autopsies. In one case one *Ascaris* had perforated the wall of the jejunum, producing a fatal peritonitis.

(c) *Trematodes*.—The number of deaths due to bilharzial infection was 15 (1.1 per cent.). Eight people died of bilharzial infiltration of the bladder, followed by pyonephrosis.

The pathological changes of the kidneys were often very pronounced. In one case the right kidney formed a sac nearly as big as an infant's head, filled with pus; the left kidney formed a similar sac the size of a man's fist; the walls of the ureters were enormously thickened; the bladder contained one yellowish stone the size of a hazelnut, the mucosa showing numerous ulcerations and sandy spots.

In three cases there were very pronounced bilharzial lesions in the rectum and in the lower part of the large intestines.

In three other cases death was caused by very advanced multilobular cirrhosis of the liver, which was heavily infested with bilharzial ova.

The species of bilharzia was not always determined.

In one case of bilharziosis of the bladder a carcinoma developed; it is described under "Malignant Tumours."

Bilharzial ova or worms were incidentally found in 258 cases (35.1 per cent.) of our autopsies, but in the light of more recent investigations, I believe that a

methodical examination of all our cases would have revealed a much higher percentage.

MALIGNANT TUMOURS.

In 13 cases the death was caused by malignant tumours. Table VI. gives a classification of these.

I. *Carcinoma*.—Carcinoma was recorded as the cause of death in 11 cases. All these cases occurred among natives of Portuguese East Africa; apparently three of them had not yet reached the 25th year, two were between 25 and 30 years, the remainder 40 years or over.

There were 9 cases of carcinoma of the liver. In one case the urinary bladder, and in another case probably the pancreas was the seat of the tumour. Two of the liver carcinomas were not examined histologically. Of the remaining seven, six showed the structure of primary liver-cell carcinoma, and one was

TABLE VI.

Year.	Carcinoma of Liver.	Carcinoma of Bladder.	Carcinoma of Pancreas.	Total of Carcinoma.	Sarcoma (round-celled).	Lympho-sarcoma.	Total Malignant Sarcoma.
1922	1	—	1	2	—	—	2
1923	—	—	—	—	—	—	—
1924	1	—	—	1	—	—	1
1925	1	—	—	1	—	—	1
1926	—	—	—	—	1	—	1
1927	1	—	—	1	—	1	2
1928	5	1	—	6	—	—	6
TOTAL	9	1	1	11	1	1	13

of uncertain origin. The report of Dr. J. H. Harvey Pirie on the latter case was as follows:—

"The liver is almost entirely replaced by a carcinomatous growth, with a few metastases in other parts of the liver. The characters of the growth are so indeterminate that it is impossible to say with certainty whether it has arisen from liver cells or bile-duct cells; it has not the typical characters of either."

The liver usually was enormously enlarged, attaining a weight of from 3,350 to 6,600 grammes, and the abdomen distended with hæmorrhagic fluid. Commonly, nearly the whole of the right or the left lobe would form a tumour mass with very little liver tissue left. On the surface of this tumour there would be several well-defined protruding masses, varying from the size of a walnut to that of an infant's head, with a great number of smaller nodes scattered throughout the other lobes and protruding from their surface. The smaller tumours would be of firm consistency, the larger ones often showing

softening and hæmorrhagic degeneration. All the tumours were more or less bile-stained.

In two cases the carcinomas were associated with multilobular cirrhosis; in one case with tuberculo-silicosis. In this case were also found numerous bilharzial ova in the lungs, but there is no record of bilharzia ova ever having been found in the liver of any of our cases.

Of much interest was the case in which the tumour probably had its origin in the pancreas. It occurred in a 20-year-old Shangaan (East Coast). Gross pathological examination revealed the presence of a mass of large glands surrounding the common bile-duct, and a mass of enlarged mesenteric glands. The pancreas was very hard, its weight 225 grammes. It could not be decided with absolute certainty by histological examination (Dr. Harvey Pirie) whether the tumour had its origin in the pancreas or the bile-duct. There was also a recent invasion of numerous isolated tumour cells into the lung tissue.

The carcinoma of the bladder occurred in a 45-year-old Shangaan. It had developed in ulcerations of the mucosa due to bilharzial infestation. A portion of the small intestine was fixed to the surface of the bladder, forming with the bladder-wall an irregularly shaped tumour. The mucosa of the bladder revealed characteristic bilharzial lesions. Both kidneys showed pyonephrosis.

The result of the histological examination (Dr. A. Sutherland Strachan) was as follows:—

“Sections of the bladder show gross bilharzial lesion associated with carcinoma; the carcinoma has infiltrated through the wall of the bladder, and is found on the serous surface of the bowel.”

*II. Sarcoma.*—There is one case recorded which occurred in a young Shangaan. The case was clinically diagnosed “abdominal tumour.”

The necropsy revealed in the abdomen an enormous tumour the size of a calf's head. The growth was fixed to the lumbar vertebrae and the ileo-psoas muscles. The tumour involved the mesentery, the ileum, and nearly the whole of the large intestine. The separation of the coils of the bowels was quite impossible. The right kidney was firmly attached to the tumour. The neoplasm was on section of medullary appearance, showing a few hæmorrhagic spots. The origin of the tumour could not be ascertained. Metastases were found in both kidneys. Histological examination (Dr. F. W. Simson) proved the tumour to be a round-cell sarcoma.

*III. Lymphosarcoma.*—A tumour of this kind caused the death of a 30-year-old Xosa (Union native).

The autopsy findings were as follows:—

On opening the chest, a large white tumour appeared, which was firmly adherent to the sternum and filled the upper part of the left pleural cavity to the level of the fourth rib. The tumour was firmly adherent to the trachea and œsophagus, press-

ing on these organs. The heart was pushed downwards and to the left. The left lung was compressed by the tumour; the right one by hæmorrhagic pleural effusion. The tumour was of irregular shape, firm and white in colour, and its weight was 800 grammes. Numerous white nodules the size of a bean were thinly scattered over the costal pleura. In the left kidney a metastatic nodule the size of a walnut was found.

The result of the histological examination (Dr. F. W. Simson) was reported:—

“Sections from mediastinal growth and kidney show lymphosarcoma.”

Incidental findings of special interest are multilobular cirrhosis of the liver in 10 per cent. of all East Coast natives, and 2.5 per cent. of all Union natives. Furthermore, chronic nephritis of the intestinal type in 15.8 per cent. of the East Coast natives and in 11.3 per cent. of the Union natives.

### The Surgical Aspect of Gastric and Duodenal Ulceration.

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So much has been written about gastric and duodenal ulcers in recent years that one would imagine the subject to be almost threadbare. The mass of literature on the subject is overpowering, the spate of statistics never ceases, opinions are thundered forth dogmatically as matters of fact by the giants of gastric surgery and pathology, by physicians and radiologists, and yet we seem as far as ever from definite knowledge as to the causation and diagnosis, and from the standardization of treatment of these very common and serious lesions.

I have no ambition to review this literature. In the first place, much of it is based on faulty evidence and faulty reasoning and is self-destructive; the statistics produced by one group are flatly contradicted by those of another group which has used different methods of investigation, and consequently their inferences as to correct treatment differ widely; every physician and surgeon has his own ideas, and does not hesitate to act upon them. Even the surgeons among themselves are aiming at the same objects by diametrically opposite routes, one seeking to deal with an ulcer with the least possible disturbance of the natural physiology of gastric digestion, while another is all out to abolish it entirely.

My second reason for avoiding an extensive literary review is that you can all do that yourselves from books just as easily as I can, and have probably already done so. Our Congress papers are, I think, a little apt to become mass summaries of literature; and while I cannot in such a subject as this altogether avoid that defect, I propose to limit it.

#### CAUSATION.

No theory of causation can be complete which omits the nervous and mental element; especially I