means of lumbar puncture, or by means of leeches applied to the temples or back of the ears.

The headache in cerebral syphilis is one of the most intense, often keeping the patient awake at night, while relief is not always brought about at once by even large doses of iodide and mercury; it is not until the oedema of the brain and excess of cerebro-spinal fluid resulting from the meningitis has been got rid of that the headache subsides.

In arterio-sclerosis from contracted granular kidney equally severe headache is common, lasting for weeks, and usually vertical or occipital. Both in this condition and in anaemia, which is also a cause of headache, there is cerebral oedema, raising the intracranial pressure, and the drug that gives the quickest and most relief to the pain is often nitroglycerine. This drug is somewhat uncertain in its effects; sometimes it may cause proportionately greater flushing of the meningeal vessels than of the general periphery, so that the headache may be aggravated instead of improved. Leeching then to the temples or mastoids would probably be more efficacious, or even a free venesection at the arm. The extent to which free bleeding diminishes high intracranial pressure was clearly demonstrated to me a little while ago during the two stages of an operation for cerebral tumour. It was one of the cases of cortical parietal tumour I referred to just now, but the bone at this spot was so excessively thick and vascular, that by the time sufficient bone had been removed the patient had lost such a large amount of blood that she had become blanched and was in considerable danger, requiring intravenous injection of saline. The dura underneath the trephine opening then felt quite soft and normal, not hard and tense, as it usually does in cases of tumor cerebri. The second stage was not done until seventeen days later, by which time she had quite recovered from her shock and anaemia, and after reflecting the flap of scalp the dura was found to be exceedingly tense, and, as soon as this was incised, the tumour, a soft endothelioma, weighing 2 oz., presented in the wound, forcing its way out owing to the greatly increased intracranial pressure behind it.

Intolerable headache, optic neuritis, convulsions, coma, and death may be produced by a loose fibroma in the lateral ventricle, acting as a plug, and blocking up the foramen of Monro, thus preventing the escape of cerebro-spinal fluid. The plug sometimes becomes loosened, with immediate improvement and disappearance of the symptoms. I have had recently a case I believe to be of this nature in a man who, for the last nine years, has been subject at long intervals of many months to attacks of raging headache which, if not relieved, passed on into delirium. In his first attack his doctor, after seeing the symptoms steadily growing worse for twenty-four hours, applied leeches to his forehead and temples, a treatment which was quickly successful in relieving him, and in the nine attacks he has had in the nine years, no treatment influences the pain except leeches, which have never failed quickly to cure the headache. This is unlikely to be a case of recurrent serous meningitis, and I feel convinced that the attacks are due to some mechanical blocking to the exit of cerebro-spinal fluid, which is put right by the lowering of the intracranial pressure as a result of the leeching.

MIGRAINE.

True migraine is the most important and the commonest of the causes of periodic headache, and I have been gradually forced to the conclusion that the actual cause of the severe pain in the head is raising of the intracranial pressure, and that the headache, while it lasts, is precisely similar both in its mode of origin and general characters to that met with in cerebral tumour. The commencement of an attack with sudden hemianopia, or with general dimness of vision of both eyes, often followed by numbness and tingling in the tongue and cheek, or one arm, perhaps accompanied by temporary aphasia, is most suggestive of sudden arterial constriction on the cortex, sometimes unilateral, sometimes on both sides. During this preliminary period, which lasts from ten minutes to half an hour, there is no trace of headache, but only symptoms of interference with the cerebral functions, such as confusion of ideas, visual auras, and sometimes olfactory or even psychical auras. Presently, headache commences, often

on one side at first, but more usually over the whole head eventually. Primary arterial spasm in the brain is further suggested as the initial event in migraine by the visible narrowing of the arteria centralis retinae, as has been seen with the ophthalmoscope, and also the general pallor of the face and neck. Later, with the headache, flushing is common, with forcible throbbing of the carotid on the side of the commencing headache, with now a dilatation of the arteria centralis retinae. The intense headache usually lasts several hours, and is often accompanied by vomiting, which symptom is one of the most characteristic signs of raising of the intracranial pressure. The vomiting may occur within an hour of the commencement of the attack, but more usually it is delayed until near the end. In other cases the sickness may continue for hours, bringing no relief.

It is common knowledge how unsuccessful we are in relieving true migraine by the ordinary anti-neuralgic remedies, such as antipyrin, phenacetin, and similar drugs. What partial success they achieve in a few cases is, I believe, due to their depressant action upon the heart, thus lowering the general blood pressure, and for this comparatively large doses are required. Each and every one of them has had its advocates for the relief of migraine, but I am convinced that the cases which are quickly and certainly relieved by this class of drug are neuralgic headaches, not true migraine. I hold that the pain in migraine is produced by an increase of the intracranial pressure, brought about in the first instance by arterial dilatation of certain cortical and meningeal areas, a vascular dilatation which succeeds the primary vaso-motor constriction which surely occurs in this disease.

To relieve the pain of migraine we must apply remedies which will lower the intracranial pressure, proceeding upon the same lines as we should for the relief of the headache in cerebral tumour or acute meningitis. We may divide our available remedies into two classes:

1. *Local*, trephining and opening the dura; lumbar puncture; leeches to the scalp; fomentations, hot bottles, or icebag to the scalp and neck.

2. *Indirect*, by lowering of the general blood-pressure, Nitroglycerine and the nitrites; cardiac depressants such as opium, aconite, chloral, phenacetin, antipyrin, and other coal-tar analgesics. Purgation, diaphoresis, hot bath.

The operation of trephining has, I believe, never been done for the relief of migraine, though I have known it done several times for the cure of neurasthenic headache. I believe the operation would be justified in those severe cases of frequently recurrent migraine, in which the unfortunate patient is prostrated for one or more days every week or so by the intense headache and sickness. Before this is seriously thought of leeches to the scalp should be applied at the commencement of the headaches, the patient given 10 grains of Dover's powder, with a hot drink containing one-sixth of a grain of pilocarpin. The patient should be kept lying down, warmly wrapped up, so as to promote perspiration, and under this treatment I have seen great and speedy relief afforded.

THE VALUE OF DIMINISHED CARDIAC DULLNESS IN THE DIAGNOSIS OF CANCER.

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THREE years ago I described¹ a diminution of the cardiac dullness in the recumbent posture, which occurs in some cases of cancer, and I suggested that it might prove of value in diagnosis. Further experience has justified this suggestion, and I now bring forward a series of cases in which the size of the cardiac dullness has been noted and the after-history ascertained.

These cases, 103 in number, have all been such as to raise, in greater or less degree, the suspicion of cancer, and in all of them the reduction of the dullness, or the absence of reduction, could not be fairly accounted for by ordinary causes; thus emphysema of the lungs and any cause of retraction of the heart could be excluded when the dullness was diminished; and the existence of albuminuria, of heart disease, of adherent pericardium, of lung retraction, and of anything tending to force the

heart forwards could be excluded when the dullness was normal; otherwise they were unselected.

Let me define what is meant by "diminished cardiac dullness." With a patient completely recumbent—that is essential—a normal cardiac dullness generally begins above at the third costal cartilage, has its rightward limit about the mid-sternum, and measures about 3 in. across at the level of the fifth costal cartilage; but in the condition discussed here the dullness begins above about the fourth costal cartilage, has its rightward limit a little to the left of the left sternal border, and measures across, at the level of the fifth costal cartilage, less than 2 in., or in many cases less than 1 in.; sometimes there is no cardiac dullness at all.

With this diminution or obliteration of dullness are often associated a small feeble low-tension pulse and weak heart-sounds.

For the present I shall only deal with the diminished width of the dullness and, to save words, shall refer to all cardiac dullnesses under 2 in. wide as "diminished," and to all over 2 in. wide as "ordinary."

I have divided my cases into three classes.

Class I consists of the cases in which a presumable cancer was naturally accessible to direct examination, or was examined at operation or *post mortem*. I do not think there could be reasonable doubt of the diagnosis in any of these; in some of them the growth was microscopied. Table I gives a summary. Of 38 cases, 34, or 89 per cent., showed "diminished" cardiac dullness, and even this percentage may perhaps be too low, as one case (No. 38), with an "ordinary" dullness, was seen two years before death, when it may not have been cancerous.

Class II consists of cases which all ended fatally, and whose downward course accorded with the diagnosis of

TABLE I.
CLASS I.—Cases in which a Presumable Cancer was Accessible Naturally to Direct Examination, or was Examined at Operation or Post Mortem.

No.	Sex.	Age.	Seat of Growth.	Width of Cardiac Dullness at Level of Fifth Costal Cartilage.	Verification.	Stage of Disease.
1	M.	72	Jaw	1 in.	—	Recurrence.
2	M.	45	Jaw and tongue	Almost none	Microscopied	Late.
3	M.	53	Tongue	"Diminished"	—	"
4	M.	63	"	"	Microscopied	Removable.
5	M.	36	"	Almost none	"	Late.
6	M.	44	Pharynx	"	—	Three months' growth.
7	M.	43 (about)	Oesophagus	Very small	Post mortem	Late.
8	M.	45	"	None	"	"
9	M.	35	"	1 in.	"	"
10	F.	73	Stomach	1½ in.	"	Three and a half months before death.
11	M.	42 (about)	"	Almost none	Operation	Inoperable.
12	M.	50 (about)	"	None	Post mortem	Late.
13	M.	60 (about)	"	Decreasing	Operation	"
14	M.	46	"	"Ordinary"	Post mortem	Probably removable.
15	F.	45	"	½ in.	Operation	Inoperable.
16	F.	64	"	"Diminished"	Post mortem	Late.
17	M.	50	Pancreas	¾ in.	"	"
18	F.	81 (about)	Palate	Very small	—	Inoperable.
19	M.	55	Liver	"Diminished"	Post mortem (microscopied)	A few weeks before death.
20	F.	48 (about)	"	1 in.	Operation	Two months before death.
21	F.	60 (about)	Caecum	Very small	"	Five weeks before removal.
22	F.	50 (about)	Descending colon	"	"	Late.
23	M.	65	"	¾ in.	"	Removable.
24	M.	67	Rectum	1 in.	—	Late.
25	M.	73	"	"Diminished"	—	"
26	M.	52	"	"	—	Five weeks before death.
27	M.	54	"	Almost none	—	A few weeks before death.
28	M.	72	"	¾ in.	—	Late.
29	M.	79	"	Very small	—	"
30	F.	66	Rectum and breast	"	—	"
31	F.	61 (about)	Uterus	1½ in.	—	"
32	F.	50 (about)	"	"Ordinary"	—	"
33	F.	40 (about)	"	"Diminished"	—	"
34	F.	—	"	1½ in.	—	"
35	F.	60.	"	¾ in.	—	"
36	F.	43	Both breasts	Very small	—	Recurrence.
37	F.	55	Spine and breast	"Ordinary"	—	Late.
38	F.	45	"Abdominal"	"Ordinary"	Operation 3 months before death	Two years before death.

Here, of 38 cases, 34 (or 89 per cent.) presented a "diminished" cardiac dullness. Possibly the last case (No. 38) was not cancerous at the time of observation.

cancer. Of these there were 19, and 17, or almost 90 per cent., had "diminished" cardiac dullness. (Table II.)

Class III, on the other hand, consists of cases which cannot be supposed to have been cancerous. All but three of the patients are alive, either so long after the time of observation, or in such good general condition after a considerable interval, that cancer can be excluded. The three who are dead died of known causes, two of them two years after being seen, and no evidence of cancer existed at the time of their death. Of 46 cases in this class, only 11, or 24 per cent., showed "diminished" cardiac dullness. (Table III.)

An important question is as to the stage in the development of cancer at which the diminished dullness appears. Unfortunately almost all my cases presented themselves when operation was no longer possible. In only four was the growth removable, but, in three of these, "diminished" dullness was already present. In one case it aided diagnosis within two weeks of the first symptom, and in another five weeks before I could induce a distinguished surgeon to operate. It commonly precedes emaciation and cachexia.

With regard to explanation I have not much to say; the time is hardly ripe for it.

(a) It is possible that the heart, in a case of cancer, may, like other muscles, become more flaccid than normal, and (judging from the anaemia and small pulse so often present) may be less well filled than in health. If so, it may perhaps fall away from the front chest wall, on recumbency, more than a normal heart would. I have found at least, in some cancer cases, that the ordinary change in the cardiac dullness, when the erect position is changed to the recumbent, has been much exaggerated, so that a dullness as wide as, or wider than, normal in the erect position has become a typical "diminished" dullness in the recumbent position.

(b) It is possible that the lungs, like the abdominal skin, lose some of their elasticity in cases of cancer, so that a spurious emphysema may perhaps result from ordinary breathing. In two cancer cases, where a normal-sized heart was found on *post-mortem* examination completely covered by lung, microscopical examination of the pulmonary edges discovered no sign of ordinary emphysema.²

(c) Lastly, in many cases of cancer, the heart is known to become much reduced in size.

CASES IN FURTHER DETAIL.

CLASS I.—Cases in which a Presumable Cancer was Accessible Naturally to Direct Examination, or was Examined at Operation or Post-Mortem.

CASE 1.—Male, 72; cancer of the gum, early recurrence; the primary growth had been removed seven months previously; the patient was in fair general condition. The cardiac dullness was only 1 in. wide.

CASE 2.—Male, 45; epithelioma of the tongue, floor of mouth, jaw, and skin (microscopied), very advanced and extensive; the patient was markedly cachectic. There was practically no cardiac dullness.

CASE 3.—Male, 53; cancer of the tongue, of six months' growth, typical in its characters, except that no enlarged glands could be felt in the neck; syphilis was denied, and the family gave no indications of it. The cardiac dullness was "diminished." This case ended fatally, with much enlargement of the cervical glands.

CASE 4.—Male, 63; epithelioma of the tongue (microscopied) possibly still operable at the time of observation. The cardiac dullness was "diminished."

CASE 5.—Male, 36; epithelioma of the tongue and floor of the mouth (microscopied), late and inoperable; the patient was still fairly nourished. The cardiac dullness had almost disappeared.

CASE 6.—Male, 44; cancer of the pharynx, infiltrating the soft palate, of three months' duration; large glands in the neck; the patient was fairly well nourished. The cardiac dullness was practically absent.

CASE 7.—Male, 43; cancer of the lower end of the oesophagus; the patient was much wasted and within a few months of death. The cardiac dullness was very small. At the autopsy a large cancerous mass was found at the lower end of the oesophagus.

CASE 8.—Male, about 45; cancer of the oesophagus. The patient was well nourished; the dysphagia was just becoming troublesome. The cardiac dullness was absent. At the autopsy two considerable areas of cancer were found in the oesophagus.

CASE 9.—Male, 35; cancer of the oesophagus. Seen a few weeks before death from perforation of the trachea. The patient was fairly well nourished. The cardiac dullness was only an inch wide. At the autopsy a cancer was found near the level of the cricoid cartilage.

CASE 10.—Female, 73; cancer of the stomach (verified at *post-mortem* examination). The patient was seen three months and a half before her death. The cardiac dullness measured 1½ in. across.

CASE 11.—Male, 42; cancer of the anterior wall of the stomach. Seen six months from the onset of symptoms; the patient was in good condition; free HCl was absent, and lactic acid present. The cardiac dullness was almost absent. Exploration revealed an inoperable cancer.

CASE 12.—Male, about 50; cancer of the stomach (*post mortem*). Seen late in the case. There was no cardiac dullness.

CASE 13.—Male, about 60; cancer of the cardiac end of the

TABLE II.

CLASS II.—Cases ending Fatally, whose Downward Course accorded with the Diagnosis of Cancer.

No.	Sex.	Age.	Probable Seat of Growth.	Width of Cardiac Dullness at the Level of the Fifth Costal Cartilage.	Stage of Disease.
39	M.	58	Oesophagus	1½ in.	One month before death.
40	M.	55	"	1 in.	A few months before death.
41	M.	61	"	None	Two months before death.
42	M.	(about) 70	Stomach	Very small	Late.
43	F.	(about) 60	"	"	"
44	M.	(about) 70	"	"	"
45	M.	(about) 60	"	"	"
46	F.	65	"	1½ in.	Five months before death.
47	M.	56	"	¾ in.	Two and a half months before death.
48	M.	55	"	1½ in.	Eight months before death.
49	M.	48	"	1½ in.	Two months before death.
50	F.	67	"	"Diminished"	Two months before death.
51	M.	78	"	"	Several months before death.
52	F.	70	Caecum	1 in.	A few months before death.
53	M.	(about) 55	"	Very small	A few days before death.
54	M.	(about) 70	Colon	"Diminished"	Late.
55	M.	67	Liver	3½ in.	"
56	M.	48	"	"Diminished"	"
57	M.	40	?	"Ordinary"	A few months before death.

Here, of 19 cases, 17 (or nearly 90 per cent.) presented a "diminished" cardiac dullness.

TABLE III.
CLASS III.—Cases which cannot be supposed to have been Cancerous.

No.	Sex.	Age.	Probable Disease.	Width of Cardiac Dullness at the Level of the Fifth Costal Cartilage.	After-History.
58	F.	41	"Dyspepsia"	"Ordinary"	Alive three years later.
59	F.	60	"Flatulent dyspepsia"	"	Alive five years later.
60	M.	40	Gastritis	"	Alive four years later.
61	F.	30	"	"	Alive five years later.
62	F.	44	"	"	Alive six years later.
63	M.	48	"	"	Alive three years later.
64	M.	70	"	"	Alive eight years later.
65	M.	53	"	"	Alive three and half years later.
66	F.	61	"	"	Better two and a half years later.
67	F.	40	"	"	Better two and a half years later.
68	M.	45	"	"	No worse two years later.
69	F.	55	"	"	Well two years later.
70	F.	45	"	"	Well one year later.
71	M.	43	"	"	Better one year later.
72	F.	49 (about)	"	"	Died of bronchitis two years later, no sign of cancer having developed.
73	M.	45	"	"Diminished"	Well one and a half years later.
74	F.	53	"	"Diminished"	Same one and a half years later.
75	M.	65	"	"Very small"	Alive four years later.
76	F.	66	"	Almost none	Alive six and a half years later.
77	F.	41	"	None	Alive four years later.
78	F.	38	Gastric ulcer	"Ordinary"	Well two and a half years later.
79	F.	39	"	"	Much better three months later.
80	M.	47	Duodenal ulcer	"	Alive three years later.
81	M.	69	Dilated stomach	"	Alive three years later.
82	M.	64	"Enteralgia"	"	Well one year later.
83	F.	58	Constipation	"	Alive four years later.
84	F.	53	Abdominal pain	"	Well two years later.
85	F.	70	"	"	Well one year later.
86	F.	45	Abdominal tumour	None	Well six and a half years later.
87	F.	49	Jaundice; gall stones	"Ordinary"	Well five years later (operation).
88	F.	50 (about)	"	"Ordinary"	Recovered.
89	F.	65	"	1½ in.	Same one and a half years later.
90	M.	66	Cirrhosis of liver	"Ordinary"	No growth nine months later.
91	M.	60	"	"	Died two years later of cerebral hæmorrhage, no cancer having developed.
92	M.	40 (about)	Syphilitic liver	Very small	Recovered.
93	F.	38	Endometritis	"Ordinary"	Better four months later.
94	F.	44	"	"	Alive five years later.
95	F.	41	Menorrhagia	"	Well two years later.
96	F.	45 (about)	Uterine fibroma	"Diminished"	Well two years later.
97	F.	70 (about)	Pernicious anæmia	"Ordinary"	No sign of cancer at death.
98	F.	40	Tuberculous kidney	Very small	Same two and a half years later.
99	M.	40 (about)	"	"Ordinary"	Operation; no cancer.
100	F.	45 (about)	Neuritis	"Diminished"	Alive four and a half years later.
101	M.	47	Intercostal neuritis	"Ordinary"	Better one year later.
102	F.	46	Hysteria	"	Well one year later.
103	M.	55 (about)	Menière's disease	"	Alive four and a half years later.

Here, of 45 cases, 11 (or nearly 24 per cent.) presented a "diminished" cardiac dullness.

stomach, round the oesophageal orifice; patient was considerably wasted; exploration showed a large inoperable growth. The cardiac dullness was observed to become progressively smaller whilst the patient was in hospital.

CASE 14.—Male, 46; a very slow-growing cancer of the pylorus, with great gastric dilatation, but with few glands affected and without secondary deposits, as shown by the autopsy. Seen late in the case, yet even then extirpation might

have been possible. The cardiac dullness was practically normal, although the patient was very emaciated.

CASE 15.—Female, 45; cancer of the pylorus. The tumour was small and fairly movable; symptoms had existed for six months; a good deal of flesh had been lost. The cardiac dullness was only 1½ in. wide. Exploration showed the tumour to be attached to the pancreas and immovable.

CASE 16.—Female, 64; cancer of the pylorus; the patient had

wasted considerably, and symptoms had existed for a good many months. The cardiac dullness was "diminished." Autopsy confirmed the diagnosis.

CASE 17.—Male, 50; cancer of the pancreas (verified at autopsy). The cardiac dullness was only $\frac{1}{2}$ in. wide.

CASE 18.—Female, 81; cancer of the right side of the palate, inoperable. The cardiac dullness was very small.

CASE 19.—Male, about 55; cancer of the liver, seen a few weeks before death (microscopied). The cardiac dullness was "diminished" and decreased under observation.

CASE 20.—Female, 48; cancer of the liver. Patient had been jaundiced for five months and had lost much flesh. The cardiac dullness was only 1 in. wide. There was doubt as to whether the case might not be one of gall stones only. Operation revealed carcinoma but no gall stones.

CASE 21.—Female, about 60; cancer of the caecum. Patient was very stout; she was seen for symptoms of obstruction. The cardiac dullness was very small; cancer was therefore suspected and exploration suggested. This, however, was not carried out until five weeks later, when a cancerous ring was found and excised, together with some enlarged glands; the growth, however, recurred.

CASE 22.—Female, about 50; cancer of the descending colon. The patient was stout, and, when seen, was suffering from obstruction, with greatly distended abdomen. Nothing could be felt through the abdominal walls or per rectum. The cardiac dullness was very small, and a diagnosis of cancer was hazarded; this diagnosis was proved correct at the operation.

CASE 23.—Male, 65; cancer of the sigmoid flexure; the patient was in fair condition and symptoms had only existed four weeks. The cardiac dullness measured $\frac{1}{2}$ in. across. The diagnosis of cancer was questioned, but proved correct; the cancer was found readily removable.

CASE 24.—Male, 67; cancer of the rectum; the case was an ordinary one, advanced and inoperable. The cardiac dullness was only 1 in. wide.

CASE 25.—Male, 73; late and inoperable rectal cancer. The cardiac dullness was "diminished."

CASE 26.—Male, 52; cancer of the rectum, seen within five weeks of death. The cardiac dullness was "diminished."

CASE 27.—Male, 54; advanced cancer of the rectum for which colotomy had been performed. In spite of the presence of albuminuria, there was almost no cardiac dullness.

CASE 28.—Male, 72; advanced inoperable rectal cancer. The cardiac dullness was only $\frac{1}{2}$ in. wide.

CASE 29.—Male, 79; cancer of the rectum; a similar case to the preceding. The cardiac dullness was very small.

CASE 30.—Female, 66; cancer of the rectum and of the right breast. The patient was in good condition, and the cancer of the breast was a small, very slow-growing scirrhus. I was, therefore, rather surprised to find a very small cardiac dullness. This, however, was apparently explained by the finding of an advanced rectal cancer.

CASE 31.—Female, 61; cancer of the uterus; late and inoperable. The cardiac dullness was $\frac{1}{2}$ in. wide.

CASE 32.—Female, about 50; a very stout woman, with an alcoholic history, with an advanced cancer involving the vaginal wall. The cardiac dullness was of normal size when she was last seen about a month before death.

CASE 33.—Female, about 40; cancer of the uterus, advanced. Cardiac dullness diminished.

CASE 34.—Female; late cancer of the uterus. The cardiac dullness measured $\frac{1}{2}$ in. across.

CASE 35.—Female, 60; late cancer of the uterus. The cardiac dullness was $\frac{1}{2}$ in. wide.

CASE 36.—Female, 43; recurrent cancer of both breasts. The cardiac dullness was very small.

CASE 37.—Female, 55; cancer of the spine, and with late secondary growths on breast and skin. A very obscure case, lasting for many months undiagnosed. The cardiac dullness was of normal width.

CASE 38.—Female, 45; for three months had a severe pain up the left side, till five weeks before being seen, when it ceased; no loss of weight; a large median abdominal tumour, evidently the uterus, with a smaller tumour apparently loosely attached to it, like a subperitoneal fibroid; the uterine tumour was freely movable; the periods were excessive; there was no vaginal discharge. The cardiac dullness was normal. Two years and one month afterwards abdominal incision revealed peritoneal cancer; the patient survived the operation three months.

CLASS II.—Cases ending Fatally, whose Downward Course accorded with the Diagnosis of Cancer.

CASE 39.—Male, 58; diagnosis, cancer of the oesophagus. Pain just under the left ribs to the left of the epigastrium, with regurgitation of food, for eight months; only liquids could be swallowed for six months. No sign of aneurysm, no history or sign of syphilis, no cause for traumatic stricture. Great wasting. No tumour. No haematemesis. A No. 10 bougie was arrested 18 in. from the teeth; a No. 5 passed after slight resistance. Died ten weeks later of sudden haematemesis. The cardiac dullness was $\frac{1}{2}$ in. wide when I saw him.

CASE 40.—Male, 55; diagnosis, cancer of oesophagus. Dysphagia for about three weeks, but loss of weight for three months; had lost in that time 23 lb. Solids caused pain and retching, apparently in reaching the lower end of the oesophagus; then strings of glairy mucus were brought up, but no blood. Anorexia lately; very thin; very anaemic. At one time had severe attacks of haematemesis associated with pain about the region of the pylorus, attributed to gastric ulcer.

Abdomen very wasted and skin inelastic; an indefinite tumour to the left of the epigastrium; a few small glands palpable in the left side of the neck. Slight leucocytosis. In spite of abundant nourishment in liquid form continued to lose flesh and died about two months later. Cardiac dullness at date of visit 1 in. across.

CASE 41.—Male, 61; diagnosis, cancer of oesophagus. Six months' loss of voice and wasting. A hard, nodular tumour in the left side of the neck, displacing the larynx to the right; enlarged and fixed glands the same side of the neck. Some slight difficulty in swallowing. Complete anorexia. Wasting marked. No haematemesis. No dyspnoea. Died two months later. The cardiac dullness was absent, in spite of a trace of albumen in the urine.

CASE 42.—Male, about 70; diagnosis, cancer of the stomach. Pain after food, anorexia, vomiting, marked wasting, and cachexia; tender epigastric tumour. Cardiac dullness very small. Died shortly after.

CASE 43.—Female, about 60, married; diagnosis, cancer of the stomach. Profuse haematemesis after several weeks of indefinite gastric symptoms; very stout; no cachexia. Although the bleeding was arrested and abundant nourishment by the mouth quickly returned to, the patient rapidly wasted, and not long after died, an abdominal, apparently gastric, tumour having meanwhile made its appearance. At the time of the haemorrhage the cardiac dullness was found absent.

CASE 44.—Male, about 70; diagnosis, cancer of the stomach. Pain after food, anorexia, sickness, anaemia and marked wasting, epigastric tumour and considerable enlargement of liver, which was irregular and tender. Cardiac dullness very small. Died not long afterwards.

CASE 45.—Male, about 60; diagnosis, cancer of the stomach. Pain after food, anorexia, vomiting, wasting, cachexia, epigastric tumour. Cardiac dullness very small. Death not long after.

CASE 46.—Female, 65; diagnosis, cancer of the stomach. Had been unable to keep down food for a month; had great pain in midsternum and epigastrium, great weakness and wasting, no haematemesis; died five months later, greatly emaciated. Cardiac dullness $\frac{1}{2}$ in. broad at time of visit.

CASE 47.—Male, 56; diagnosis, cancer of the stomach; eight months' pain after food, occasional vomiting, no haematemesis; had lost 20 lb. during the earlier months but was not losing when seen; appetite poor; had "never been ill before"; a firm, fixed, tender, nodular tumour, with some induration also near the umbilicus. Cardiac dullness $\frac{1}{2}$ in. across. Ten weeks later he died.

CASE 48.—Male, 55; diagnosis, cancer of the stomach. Emaciated, with pain after food; constant vomiting, which relieved the pain. Had been living on slops for ten months and lost 60 lb. Great flatulence. Cardiac dullness when first seen $\frac{1}{2}$ in. Some improvement followed treatment, but eight months later he was worse, extremely emaciated, with almost no cardiac dullness. He had refused exploration. Soon afterwards he died.

CASE 49.—Male, 48; diagnosis, cancer of the stomach. Thin, sallow; sickness for a month; no haematemesis; a hard, nodular tumour in the situation of the pylorus extending nearly up to the mid-line of the abdomen; not painful or tender, moving with respiration; stomach dilated. Cardiac dullness $\frac{1}{2}$ in. across. Died two months after.

CASE 50.—Female, 67; diagnosis, cancer of the stomach. Great loss of flesh and vomiting for six months; cachectic; thin, dry, inelastic abdominal skin; resistance and tenderness in epigastrium. Cardiac dullness "diminished." Died three months after.

CASE 51.—Male, 78; diagnosis, cancer of stomach. Pain after food, sickness, marked loss of flesh, anorexia. Cardiac dullness "diminished." Died several months later.

CASE 52.—Female, 70; diagnosis, cancer of the caecum. Pain, chronic obstruction, tumour, great wasting. Cardiac dullness 1 in. across. Died a few months later.

CASE 53.—Male, about 55; diagnosis, cancer of the caecum. Seen a few days before death. Cardiac dullness very small. Great loss of flesh and weakness; extremely feeble pulse.

CASE 54.—Male, about 70; diagnosis, cancer of colon. Pain, slight obstruction of bowels, tumour, wasting. Seen a short time before death. Cardiac dullness diminished.

CASE 55.—Male, 67. Died of cancer of the liver, his doctor tells me. Seen after thirteen weeks of illness and nine weeks of pronounced jaundice; anorexia and vomiting; some resistance over the stomach, but no definite tumour. The cardiac dullness when I saw him measured $\frac{3}{4}$ in. across. Subsequent duration of life uncertain.

CASE 56.—Male, 48. Died of cancer of liver, as certified by his medical man. The cardiac dullness was diminished when I saw him a few months before death.

CASE 57.—Male, 40. Died apparently of cancer (?) of stomach. Seen by me some months before death, when his cardiac dullness was normal in area. He then seemed to me to have gastric cancer, but exploration was not carried out.

CLASS III.—Cases which cannot be supposed to have been Cancerous.

Only the following seem to call for further description than that given in Table III.

CASE 79.—Female, 39; severe pain in epigastrium two hours after food, with vomiting and slight loss of weight, but no tumour. The pain had existed off and on for about six years. No history of haematemesis. Cardiac dullness $\frac{3}{4}$ in. wide. Three months later the patient was much better.

CASE 93.—Female, 38; vaginal discharge for five years, occasionally offensive, and latterly slightly blood-stained. Uterus freely movable; no friable tissue in the cervix, and no bleeding on examination. Cardiac dullness 3 in. across. Four months later the patient was much better.

CASE 97.—Female, about 70; a typical case of pernicious anaemia, with usual blood changes, gastro-intestinal disturbances, and ataxia of legs and hands; no loss of flesh. Death from cardiac asthenia. Cardiac dullness normal.

REFERENCES.

¹ Roy. Med. and Chir. Trans., lxxxvii, p. 327. ² The lungs were examined in one case by Dr. R. V. Solly of Exeter, in the other by Dr. J. Miller of Exeter.

A CASE OF STREPTOCOCCIC PUERPERAL INFECTION TREATED WITH A VACCINE.

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The following case seems to us worthy of record, as it illustrates the successful application of vaccine-therapy to a condition which causes considerable anxiety in practice.

Mrs. X., aged about 35, a primipara, under the care of one of us (G. W. C.), was delivered of a child at full term on January 25th, 1908. Labour was perfectly normal, and its duration was about twelve hours. No instruments were used, and there was no rupture of the perineum. The placenta came away entire in twenty minutes, and there was no retention of membrane. The uterus was rather flabby, and there was a little free haemorrhage, but this soon ceased with kneading. For eight days the temperature remained normal, but on the evening of February 2nd it rose to 98.8°, and the following day to 99.6°. A clot with an offensive odour was passed, and the uterus was washed out with 1 in 1,000 biniodide solution. This brought away a quantity of slimy blood-stained material. More clots were passed on February 4th, and the lochia continued to be offensive. The uterus was washed out with biniodide solution each day until February 11th. This treatment seemed to have a good effect for a time, as the temperature came down to 99° on February 6th and 7th, but on the three following days it rose again to 100.4°, and on the 11th to 101°. On February 10th a specimen of the uterine discharge was examined by Mr. Duncan at the Shire Hall, Worcester, and was found to contain streptococci and *B. coli*. The patient's symptoms became more marked, and she suffered from headache, some thirst, and loss of appetite with furred tongue. There was no marked prostration, delirium, vomiting, or diarrhoea. The lochia and flow of milk ceased after February 11th. Her condition was at no time alarming, but the presence of a rising temperature uncontrolled by antiseptic douches, and the knowledge that the infection was of streptococcal nature made the prognosis a grave one. It was therefore decided to use antistreptococcal serum, and 10 c.cm. of a reliable brand were injected on February 11th, 13th, 14th, 15th, and 17th. A serum rash was produced, but soon yielded to a few 10-grain doses of calcium lactate. As the serum did not appear to control the infection, resort was made to vaccine treatment. This was carried out by one of us (W. H. W.). On February 14th the opsonic index to *Streptococcus pyogenes* was found to be 0.65. On February 16th the uterus was washed out with sterile normal salt solution. A small clot was brought away, and from this an abundant growth of streptococci and *B. coli* was obtained on agar plates. Subcultures on agar of each organism were made, and from these a combined vaccine was prepared. On February 19th the patient was inoculated with 70 million colon bacilli and 10 million streptococci. As was expected, the temperature rose the same evening, reaching 102°, but on the third morning after the inoculation it fell to normal. The opsonic index to streptococci twenty-four hours after the inoculation was 0.90, and to *B. coli* 1.05. On February 22nd the index to streptococci was 1.72 and to *B. coli* 1.58. The temperature remained normal for four days, but on February 26th there was a rise to 100°. This was obviously associated with toothache, and as the opsonic indices to both organisms remained high it was not thought necessary to give another inoculation of the vaccine. Two carious teeth with abscesses at their roots were removed on March 1st, and the temperature promptly became normal and remained so, the patient thereafter making an uninterrupted recovery.

REMARKS BY DR. WYNN.

Streptococci are the most frequent organisms found in cases of puerperal fever. Thus, Foulerton found streptococci in the uterus in 46.2 per cent. of a series of 54 cases of puerperal infection, while, excluding the cases in which the uterus was sterile, the percentage would be 64.1. Czerniewski found streptococci in 53.8 per cent. of 91 cases, and Krönig in 41.9 per cent. of 179 cases. *B. coli communis* rarely causes a primary infection of the uterus, but is the most frequent of all the secondarily infecting bacteria. It is doubtful whether the presence of *B. coli* materially aggravates an infection primarily due to streptococci, or whether it should be regarded as an indication of the effects of an existing streptococcal infection of high virulence—that is, the more virulent the primary infection the more likely that a secondary infection would occur. At all events authorities are agreed that a combined infection with streptococci and *B. coli* is more dangerous than one with streptococci alone or combined with staphylococci. It is usually assumed that the streptococcus present in these cases is the *Streptococcus pyogenes*, and the brands of antistreptococcal serums on the market are made by the use of various strains of *S. pyogenes*, but since attempts have been made to differentiate the streptococci into several types, it has been found that the types *S. salivarius*, *S. anginosus*, and *S. faecalis* are frequently found in such conditions as ulcerative endocarditis, cystitis, etc., formerly thought to be caused by *Streptococcus pyogenes*. The only attempt at exact study of the streptococci infecting the puerperal uterus with which we are acquainted is that by Andrewes and Horder.

In each of 6 such cases the organism conformed to the type *S. pyogenes*. As in our case symptoms of the infection occurred only after eight days from delivery, the infection was not of an acute fulminating type, and the organism was associated with *B. coli*, it seemed possible that the streptococcus might be of the type *S.*

faecalis rather than *S. pyogenes*. To determine this point the organism was tested by the reactions suggested by Gordon. Of Gordon's nine tests, a positive reaction was given only with saccharose, lactose, and salicin. Long chains were formed in broth, and there was a good growth on gelatin at 20° C. The organism therefore conformed to the type *Streptococcus pyogenes*.

We do not intend to make any comparison between the use of antistreptococcal serum and streptococcal vaccine. It is possible that if the serum had been given in much larger doses its action might have been successful, and it is obvious that in a case of great urgency time would not allow for the preparation of a vaccine. But there are various theoretical reasons which lead one to prefer a vaccine to an antibacterial serum, and if it can be shown that the streptococcus occurring in puerperal fever in the great majority of cases conforms to the type *Streptococcus pyogenes* a stock vaccine of this organism could be used with no more loss of time than is involved in the case of a serum. There is, therefore, great need of more precision in our knowledge of the organisms producing puerperal and other acute septic infections, so that a truly specific remedy can be quickly employed, and we may avoid a specious reliance upon a serum or vaccine which, however successful in other cases, is not appropriate for the particular case in question.

REGULATIONS for admission to Queen Alexandra's Imperial Military Nursing Service Reserve have been issued with the Army Orders for August. The reserve is formed for the purpose of maintaining a reserve of nurses to supplement Queen Alexandra's Military Nursing Service in the event of war.

Temperature Chart.—s, Injection of antistreptococcal serum. i, Injection of vaccine. T, Toothache. E, Teeth extracted.