sure over the tender prominence caused nausea. The bowels were constipated, the motions dark, the tongue clean, the pulse small, the skin moist, and he required a fire even on a hot August day.

I made a vertical incision about an inch and a half below the margin of the ribs, a little above the most prominent part of the swelling, that is, about the middle (from side to side) of the rectus, and, after dividing the abdominal wall, found no adhesions at the part of the liver exposed. I therefore separated the rectus from the posterior layer of its sheath, so as to expose a portion such as is shown in the sketch (Fig. 1). Then with Hage-

Fig. 1.

a. Subcutaneous fat.
b. Rectus.
c. Sheath of rectus.

d. Liver.
e. Interrupted suture.
f. Continuous suture.

dorn's needles, two rows of stitches were applied, the outer being interrupted and of silk (e), the inner continuous and of catgut (f). The needles went right into the liver substance, and the closure was, as far as could be ascertained, complete. But so near was the pus to the surface that, in introducing the needles, a drop or two of matter escaped at one or two points, which was carefully sponged away. I therefore thought it wisest to open the abscess at once, introducing a large drainage tube. An ounce or two of thick yellow pus, with a faint smell, escaped. I did not squeeze it nor introduce the finger. It was dressed first with unprepared gauze soaked in a 1 to 4,000 sublimate lotion, outside which was placed a mass of alembroth gauze. The operation took one hour and a half, but was well borne.

The patient never improved, however, after, but remained in a curious dazed lethargic state, taking all the food given to him, but without appetite. His temperature was usually subnormal, but for two or three days reached 99°, falling again afterwards. A few days after the first operation a fresh pointing took place rather lower down, and it was then ascertained that both this and the original opening communicated with a large cavity more deeply situated. Diarrhoea now set in, the motions being dark and containing sago-grain masses of mucus. He became gradually weaker, and died on August 15th, eight days after the original operation.

At the *post-mortem* examination we found the lower part of the liver, that is, the part at which the second opening was made, adherent to the abdominal wall by old adhesions, and that the adhesions formed by my stitches were complete and sufficient, but that there was no recent general peritonitis. The main abscess had three principal diverticula; two I have already described, the third reached the under surface of the liver and communicated with the first part of the duodenum and the transverse colon. Throughout the large intestine there was extensive, but apparently not very old, ulceration.

I think this is a very important case from two points of view: first, as showing that we cannot be certain, even when an abscess is actually almost pointing, that the liver will be found adherent; and, secondly, that, by careful stitching, perfectly sound adhesions

may be formed, and that there is no danger in proceeding at once to evacuate the matter. This is just what the experience of gastrotomies, colotomies, enterotomies, etc., would lead one to expect, and it is a useful piece of knowledge in connection with the question of opening putrid or other abscesses of the lung. Thirdly, it seems to show that the fouling of an abscess by a communication with the bowel is a dangerous condition, though I confess that the case is complicated by the presence of the ulceration of the intestine. The occurrence of diarrhoea, and especially if mucus be present, I regard as a point that should make us give the most grave prognosis.

ON THE CENTRAL MOTOR INNERVATION OF THE LARYNX.

BY PROFESSOR DR. H. KRAUSE,
Berlin.

IN an article under the above title,¹ Dr. Felix Semon and Mr Victor Horsley refer to a large series of experiments carried out on different species of animals in 1886 and 1887, as they say, "with a view of investigating the central motor innervation of the larynx." They continue to state that they have been prevented from completing their researches, but having been requested to publish their results, if only in a preliminary form, they wish to comply and to add the deductions which they think may be legitimately concluded from their experiments. They distinctly state that "their above mentioned article is only a preliminary communication, and that they will publish a full account shortly before the Royal Society and the International Medical Congress at Berlin."

Now as they say that their experiments were made "with a view of investigating the central motor innervation of the larynx," I deem it necessary to state that already, in 1883, I published my researches: "On the relations of the cerebral cortex to the larynx and pharynx."² The latter were concluded under request and direction of Professor H. Munk, who at the same time determined with absolute accuracy the area whence stimulation of the laryngeal muscles could be effected in accordance with the results of his researches on the localisation of the cerebral cortex. These results of mine the authors have on a former occasion, 1886, recognised as the first investigations on this subject. In my paper I have gathered—as far as I know with sufficient clearness—amongst others, the points which the authors in their "preliminary communication," assert to be the chief results of their own investigations. To prove the above assertion, I shall place in the following lines, *seriatim* and in juxtaposition, the deductions of the authors and the corresponding paragraphs of my own paper.

1. They find a motor centre in each cerebral hemisphere, situated in the monkey just posterior to the lower end of the precentral sulcus at the base of the third convolution, and in the carnivora in the precrucial and neighbouring gyrus.....that stimulation of this point produces complete bilateral adduction of the vocal cords.....and finally, that stimulation of the more peripheral parts of the area evokes "less and less perfect adductions as they proceed from the focus outwards, and when the extreme margin of the area is excited, only what is known as the 'cadaveric position' is assumed by the vocal cords."

With reference to these points, I extract the following passages:⁴ "The area to be stimulated is the gyrus præfrontalis (Owen)" (the animals used in each case being dogs). Again, all my experiments show that unilateral stimulation produces bilateral movements of the vocal cords. Not to leave any doubt, however, I shall quote the following experiment *verbatim* (page 206): "Experiments performed July 12th, 1882: Skull opened on the right side, and complete section of the left recurrent laryngeal nerve (during stimulation); movements of the right vocal cord are observed, which passes beyond the middle line approaching the

¹ JOURNAL, December 21st, 1889.

² Sitzungsberichte der Königlichen Academie der Wissenschaften und Archiv für Anatomie und Physiologie, 1883.

³ In regard to this point I think it justifiable to cite a passage from Jules Soury's work, *Des Fonctions du Cerveau*, etc. Paris, 1886, page 80, where he says: "La vérité est que ce travail de H. Krause, inspiré par les doctrines et expériences de Munk, est un modèle de solidité scientifique et d'élégante précision."

⁴ Loc. cit., p. 204.

left cord, the latter being in the cadaveric position." Finally, on page 205, I quite distinctly state that stimulation of the gyroprefrontalis (at a spot marked in the figures accompanying my essay) brings about the following results: "partial or total closure of the glottis and aditus laryngis."

As to the "cadaveric position," I write, on page 206: "Experiment performed July 15th, 1882. On changing the position of the electrodes upwards to the extreme lateral margin of the sulcus cruciatus, there results (again) the position of the cords midway between phonation and deep inspiration;" and again, page 205: "Experiment performed June 26th, 1882. In one case, all the muscles apparently being in a state of tension, that position of the cords midway between phonation and deep inspiration was noticed which Ziemssen calls 'cadaveric position,' but which, there being tension of all the muscles, we must consider as a condition of total equilibration of all the muscles acting on the arytenoid cartilages." We thus see that abduction may also be brought about by stimulation of this area, in contradiction to the assertion of the authors who say: "(2) We have not been able to find an area of representation in the cortex of the abductor movements of the vocal cords."

As to point (3) touching their experiments on extirpation of one of these cortical areas, after which "no paralysis of the cords is observed," I beg to compare their results with my own. I performed⁵ unilateral extirpation of this area on ten dogs, and subsequently removed the corresponding area of the opposite side. These animals were kept alive four to five months. Now, I have shown that, "after the first extirpation (on the left side), no essential or permanent disturbance of the voice occurred; I have even shown that, after double extirpation, the dogs have only lost the psychical representations of the movements of the vocal cords necessary to phonation, and that some of them had preserved the rude reflex approximation of the cords as we find it in the newborn animal with its squeaking, whining voice."

4. The authors continue: "We have observed that on powerful long-continued excitation of the laryngeal area true epilepsy of the vocal cords supervenes, gradually spreading to the neighbouring muscles of the face, neck, head, and upper limbs." Against this I point to page 205: "Experiment performed July 4th, 1882. During continued excitation respiration ceases completely. After the third excitation convulsions occur, in which, besides the muscles of the neck and fore limbs, those of the larynx participate in such a manner that complete closure of the glottis immediately alternates with slight opening of the same (as we observe it laryngoscopically during the act of laughing)."

I think that the above comparison and juxtaposition of the respective results show an almost complete coincidence, so that I could only be flattered to find them in so perfect an agreement with myself; if the authors in this, their "preliminary communication," had not altogether omitted my name, and simply replaced it by the sentence: "We carried out...experiments... with a view of investigating the central motor innervation of the larynx."

This vindication of their right of discovery seems to me to be all the more out of place as this right belongs neither to me nor to the authors; for whilst I simply investigated an area previously mapped out with almost mathematical accuracy by Professor H. Munk on the surface of the cerebral cortex, there remained for the authors only to show that not only the dog, on which I experimented, but also the monkey, cat, and rabbit enjoy the privilege of having their vocal mechanism presided over by a motor centre in the cortex.

ACUTE INTESTINAL STRANGULATION DUE TO A BAND WITH ACTIVE TUBERCULAR PERITONITIS: LAPAROTOMY: CURE.

By ARTHUR E. J. BARKER, F.R.C.S.,
Surgeon to University College Hospital, etc., etc.

I DESIRE in this short paper to record somewhat in detail a case belonging to a group of diseases at the present time attracting the closest attention both of physicians and surgeons. The pathology of tubercular affections generally appears to be gaining daily in interest, and doubtless this is due in some measure to the opportunities which surgery affords of studying the processes in

actually living tissues, and in parts hitherto considered inaccessible to inspection during life. Surgery offers opportunities, moreover, of examination of the tissues involved at a stage of the disease far earlier than that usually met with in the *post-mortem* room, and consequently in a condition much more likely to yield accurate information to the pathologist.

Among all the tubercular affections none are of more absorbing interest than those of the serous membranes, and first among the latter stands the peritoneum.

Tubercular peritonitis has been so recently and fully discussed by Dr. Douglas Powell and other leaders of the profession,¹ that all general questions regarding the disease need not be alluded to here. I wish simply to describe a case which presented many points of interest, and leave it for the study of others, after a few suggestions of my own.

The case is briefly as follows:—A. A., aged 23, a domestic servant, was admitted into University College Hospital on April 27th, 1889, at 9.45, with severe symptoms of intestinal obstruction. She was a delicate girl, and wore an anxious expression. Her family history was good, and she herself had hitherto enjoyed excellent health, except that about three months ago she had an attack of pain low down in the abdomen lasting one day, but unaccompanied by vomiting or constipation. For some weeks before the present attack she had diarrhoea on and off. On Tuesday, April 23rd, patient was, however, in her usual health. On Wednesday, 24th, while travelling by rail, she was suddenly seized with severe pain across the abdomen below the umbilicus. She had had a simple meal a short time previously. At 10 p.m. she vomited some frothy fluid. After this the pain remained almost constant, though not so severe as at first. There had been no action of the bowels or passage of flatus since the onset, and vomiting had been frequent, and always after food. The matters rejected became green soon after the commencement, and on the 27th are said to have first become stercoraceous. She was treated outside the hospital, first with half an ounce of castor oil on the 24th, and later with opium pills and enemata.

When I first saw her at 9.45 p.m., on April 27th, soon after admission, the pulse was 80, and irregular in rhythm and strength. She had also a loud mitral systolic murmur. The abdomen was uniformly distended, not tense, and was perhaps a little fuller over Poupart's ligament on the right. Pain was general, but chiefly noticed below the umbilicus. Tenderness was also general, but was most felt in the iliac fossæ. There was no mapping out of the intestines. The abdominal respiratory movements were fairly and equally marked on both sides. The percussion note was tympanitic, but there was slight deficiency of resonance in both flanks. There was no increased resistance to pressure anywhere. The tongue was moist and slightly furred. Examination by vagina and rectum, negative; no signs of hernia.

REMARKS.—The very sudden onset of the attack, with early vomiting and complete obstruction of bowels from the first, suggested mechanical strangulation as by a band or twist. The evidence of peritonitis, however, was rather against this diagnosis, and appeared more to point to perforation of the vermiform appendix, as did also the slight extra fullness in right iliac fossa. Rupture of any other part of the intestine seemed to be excluded by the absence of collapse and the duration of the symptoms. I therefore decided to explore the neighbourhood of the cæcum by a short incision, and if nothing was found there, to make a formal exploration of the abdomen by median incision.

Operation.—The usual antiseptic precautions having been taken a two-inch cut was made obliquely downwards and inwards, about an inch to the inside of the right anterior superior spine of the ilium. On opening the peritoneum some clear amber-coloured fluid escaped, but nothing abnormal could be felt with the finger. Some small intestine, however, which presented in the opening, was drawn out and was found to be studded thickly with tubercles of varying size. This coil was empty and relaxed, suggesting obstruction higher up. I then made a median incision below the umbilicus for four inches. The first thing noticed here was adhesion of the omentum to the abdominal wall at the seat of incision, and a quantity of clear fluid with flocculi. The small intestine which presented was much distended and congested, and thickly studded with countless tubercles, as was also the omentum, but the transverse colon above was clear of them. On passing the fingers down to the right side of the pelvis, a round pocket was entered behind. This was found to be produced by a twist of the mesentery on itself. The gut at this spot was fixed

⁵ Loc. cit., p. 206.

¹ British Medical Association Meeting, 1889; the JOURNAL, December 14th, 1889