4. Thrombosis of iliac veins and vena cava (date not clear, possibly at the onset of the mental symptoms, possibly fifteen days later) and its sequelae.

5. Acute delirium, difficult logically either to connect with or to disconnect from the thrombosis and bacteremia discovered at autopsy.

6. Death from septicemia and pulmonary thrombosis.

The case detailed above raises the question whether the incidence of bacteria of low toxicity can determine insanity of the type of acute delirium. Many textbooks seem to admit something of the sort in their groups of *infectious deliria*.⁷ It must be conceded, however, that the precise relationship of infection to delirium in its psychiatric sense is still far from clear.

As to the toxic value of staphylococcus albus, writers are not wholly clear. Genuine cases of albus septicemia are not unknown. The remarkable work of Winslow on the Coccaceae⁸ has served to unify rather than separate the staphylococci of various sorts. Kraus and Pribram⁹ (1906) have shown that many varieties of staphylococci produce a true toxin which will pass into the culture filtrate and produce an antitoxin; the toxin in question appears to poison the heart especially. Panichi¹⁰ (1906) was able to cultivate the albus repeatedly over weeks and months from the blood of two subjects who otherwise gave no noteworthy signs of infection. Similar results with other organisms, especially in convalescence, are serving to overthrow our older notions of the essential injuriousness of bacteremia. Such bacteremia of unknown aetrium may readily permit infection and thrombosis of tissues under such conditions as those of the iliac veins in the case above described. Moreover, it does not overstep the bounds of probability to state that a variety of symptoms, among them mental, may accrue from such low-grade infections.

The hypothesis that drug-like products of bacteria, or bacteria themselves drug-like in action, may produce mental symptoms, is certainly far from unlikely, though it is also true that idiosyncrasy or special sensitization may be essential to permit the development of such symptoms.

It is obvious, however, that psychiatric clinics are not working this field intensively, and for such work we wish to put in a plea. Routine blood cultures and carefully chosen immunity tests (especially those just recently developed for other purposes as a result of the work of Bordet and others¹¹) in such cases would go far to clear up these obscure relations. Perhaps only by such intensive work can the mechanism of certain types of insanity be learned.

REFERENCES.

- ¹ Southard, E. E., and Ayer, J. B., Jr.: Dementia Precox, Paranoid, Associated with Bronchiectatic Lung Disease and Terminated by Brain Abscesses (Micrococcus Catarrhalis). *Boston Med. and Surg. Jour.*, vol. clix, no. 27, pp. 890-895.
- ² Summed up in the chapter on Encephalitis by E. E. Southard in *Osler's Modern Medicine*, vol. vii.
- ³ Southard, E. E., and Keene, C. W.: Study of Acute Hemorrhagic Encephalitis (Staphylococcus Pyogenes Aureus). *Ann. Jour. Med. Sc.*, March, 1905.
- ⁴ Compare Bullard, W. N., and Sims, F. Robertson. A Case of

Diffuse Encephalitis showing the Pneumococcus. *Boston Med. and Surg. Jour.*, vol. cli, no. 24, pp. 647-651.

⁵ Compare Gay, F. P., and Southard, E. E.: On Serum Anaphylaxis in the Guinea Pig. *Jour. Med. Research*, vol. xvi, no. 2, pp. 143-180.

⁶ Southard, E. E., and Richards, E. T. F.: Typhoid Meningitis: Cultivation of Bacillus Typhosus from Meninges and Mesenteric Lymph Node in a Case of General Paresis with Note on Experimental Typhoid Meningitis in the Guinea Pig. *Ibid.*, vol. xix, no. 4, pp. 513-531.

⁷ e. g., Kraepelin: *Psychiatrie*, 1900, Bd. i.

⁸ Winslow, C. E. A.: *The Systematic Relationships of the Coccaceae*, 1908.

⁹ Kraus u. Pribram: Ueber Staphylococcotoxin und dessen Antitoxin. *Wien. klin. Wochenschr.*, 1906, no. 17, s. 493.

¹⁰ Panichi: Contributo alla conoscenza dei germi latenti (stafilococco piogeno albo) nel circolo sanguigno dell'uomo. *Gaz. degli Osp. e delle Clin.*, no. 74, 1906.

¹¹ Bordet: *Studies in Immunity*. Collected and translated by F. P. Gay, 1909.

UTERINE CONSTRICTION BANDS COMPLICATING LABOR.*

BY J. C. HUBBARD, M.D., BOSTON.

MY attention has lately been called to constriction bands in the uterus by their frequent occurrence in my recent cases. In these cases the progress of the labor has been stopped, at least temporarily, by a tonic contraction of a portion of the uterine wall. Of these bands there are two varieties, and comparatively much has been written in the textbooks in the controversy of Bandl's ring versus the constriction or retraction ring.

Bandl's ring is described by Reynolds and Newell as "a thinning of the less powerful lower segment of the uterus by the active contractions and retraction of the more powerful upper part. . . . When seen in a pure state, it is due entirely to the action of the longitudinal and not at all to the circular fibers."

The same authors describe a constriction ring as "due to the action of the circular fibers alone, and is most common around the neck of the child, although it may occur in any horizontal zone of the uterus."

In the discussion of the origin of the band, weight is laid on the character of the cells lining the lower uterus segment. If they are of the type of the cervical cells, then the band becomes Bandl's ring; if decidua in character, the ring is then a constriction ring.

The textbooks devote some space trying to make it possible for the obstetrician in the presence of a band to determine whether it is Bandl's ring or a constriction ring. While Bandl's ring may simply be the junction of the thinned-out lower segment with the retracted portion of the uterus proper, it, with the tonically contracted uterus accompanying it, according to Williams, obstructs labor. On the other hand, some one, I think, states that the constriction ring is nothing more than the lower portion of a tonically contracted uterus, and that the uterus above the thickened portion, called the ring, fits the child tightly. The effects of each, then, on the progress of the presenting part, are identical. Clinically, it makes no difference, to my mind, by what name the band is called when it or the accompanying uterine condition prevents the proper progress of labor. It may be covered with one kind of cell

* Read at the Obstetrical Society of Boston, Feb. 22, 1910.

or another, but if it has a death grip on the child, that hold must be broken, no matter what its name. I return for a moment to the above statement, that the portion of the uterus above the ring is tonically contracted, to deny it as the truth in the early formation of this condition, for I have passed my fingers through the ring into the upper portion of the non-contracted uterus.

The books speak of the diagnosis of the condition as though it were not hard, which is, without doubt, true when a distinct crease in the uterus can be felt by abdominal palpation, together with a tonically contracted uterine wall. Under such conditions the band must be almost like iron and exceedingly hard to dilate. The dilatation of such a band and the subsequent delivery of the baby through it always bring up the possibility of rupture of the uterus. The diagnosis of the condition, when the diagnosis is of the greatest importance, is not easy, for it must be made just as the ring is beginning to form, long before a definite crease appears in the uterus. I have no new methods of diagnosis to offer, but believe that, if the condition is borne in mind, it will be more frequently found in cases where the descent of the presenting part has stopped while it is still high, in spite of apparently good uterine action. Even with the patient under ether ready for delivery, the band might then be overlooked unless the interior of the lower portion of the uterus were explored. In the early stage the diagnosis can only be made by passing the finger into the uterus and feeling a constricting band in the uterine wall. I believe that the condition is often met with and passed undiagnosed in the following type of case not uncommon to many of us, where the advance of the baby stops from no evident cause, while the presenting part is still high, although the pains are of good character. Complete anesthesia is given in order to apply high forceps. When the patient is ready for operation, the presenting part is found to have descended and the advance has been considerable during the comparatively short time necessary to render the anesthesia complete. A probable explanation of such a case is that a band, which has existed for but a comparatively short time and been unsuspected, under the effect of the anesthetic has become relaxed and allowed the baby to descend.

Such an effect of ether on a band was shown very prettily to me in the following case: Mrs. B. started in labor with her fifth child with rather continuous pains. After several hours of labor the progress was not satisfactory. She was, therefore, etherized preparatory for delivery. The os was found half dilated. Dilatation was completed and a definite band felt. With the fingers through the band, it could be felt to relax and contract according as the anesthesia was complete or light.

Among the causes which produce bands the books mention mechanical obstructions to labor. The uterine muscle tries ineffectually to force the baby by this obstruction and finally becomes completely or in part tonically contracted. The band is thus a secondary result of the delayed labor. Personally, I feel that in many cases, at

least, the reverse is more often true, for the band, to my mind, develops first through irregularity of the action of the uterine muscle and thus directly prevents progress. The band, therefore, in many cases, is the cause of the effect rather than the result of the difficult labor.

I have had but two cases where the band can, it seems to me, be considered the result of a mechanical obstruction. Mrs. H. First pregnancy. Some years previous to her confinement her uterus had been stitched up in place. Her labor was started by the breaking of the membranes. The pains began some hours later and continued for several hours, only to finally stop. After twelve hours they began again. The presenting part was low, O. L. A., but the os would not dilate and the head appeared to be crowded into the hollow of the sacrum. The mechanical obstruction seemed to be caused by the direction of the uterus. It appeared to lie in such a plane that the baby was driven against the sacrum and could not turn to come out. When the patient was etherized for delivery, a constricting band was found. How much the operation of stitching up the uterus had to do with this faulty inclination, I do not know. The patient has had several children since with no special difficulty. I might mention that this is the only case which I have had where any obstetrical trouble has arisen from the previous repair of a uterine displacement.

The second case is of a different type. Here the obstruction was furnished by a small pelvis. Mrs. P., thirty-four years. First pregnancy. Spines 21 cm., crests 24, external conjugate 17. A justo-minor pelvis. Pains said to be almost continuous from the start. After about ten hours of labor, found with severe, frequent pains, suggesting a constriction ring. Etherized. Firm constriction ring found about the neck and chin. Occiput anterior. Forceps delivery, moderately difficult. Baby weighed about 7 lb.

In this case it might justly be said that a normal sized baby was being forced through a small pelvis which offered a mechanical obstruction to labor.

These two cases do seem to bear out the truth of the statement that the band forms as a result of mechanical obstruction to labor. In the reports of other cases which I append, the band appears to be the primary cause of the direct labor and not a secondary result.

I cannot understand why the constriction rings seem to be more common in my private practice than with my hospital practice when I was connected with the Lying-In. I have wondered whether the condition, as I have met it in the so-called "over-civilized" young woman, was only a tendency to a ring formation which might correct itself if the patient were allowed to have the long labor formerly so common in hospital practice. Personally, I do not believe that this is true, and feel that my cases would have gone from bad to worse if left alone. The most probable explanation seems to me to be the general highly strung makeup of my private cases. In them the uterus does not pass through its various stages in a more or less mechanical manner as in an animal, but takes part in the over-development of the nervous system of the woman, and, after a short time, begins to act irregularly, with the result of an early ring formation.

While the number of cases of ring formation

coming under my observation is small, it is of interest to notice that of the seven cases the position was occiput anterior in four, with occiput posterior in only one, and the head lying in the transverse diameter of the pelvis in two. Before looking over the cases I had expected to find the position in the large majority occiput posterior. In 30% of the cases delivered with high forceps, for whatever cause, a constriction ring was found. This, probably, is too large a percentage.

The presence of a ring is an absolute indication for delivery. The earlier one operates, the less the mortality; therefore, if the cases are delivered while there is only a suspicion in the operator's mind of a ring, rather than an absolute certainty of it, the mortality should be nothing, as in the series of cases which I report.

In the reports which follow, it seems to me that the constriction rings were the primary cause of the slight amount of progress made rather than the result of some mechanical obstruction.

Mrs. P., thirty-three years. First pregnancy miscarried, two months and a half. Present pregnancy the second. Very nervous person. Spines 25 cm., crests 27, external conjugate 20. After about twelve hours of ineffectual pains, which were of short duration and of not much strength, etherized for delivery because of slight progress. Os size of fifty-cent piece. Hard to dilate. About two inches inside, a very definite, firm constriction ring about the baby's head, which was somewhat hard to dilate. Head found lying transverse. High forceps. Baby weighed 4 lb. 15 oz.

Mrs. T. First pregnancy. Spines 25 cm., crests 28, external conjugate 20. After about sixteen hours of labor, the progress was slow, although for the last few hours the pains were satisfactory. Etherized for delivery. Head found lying transverse. Occiput on the right. Slight constriction ring. High forceps. Nine-pound boy.

In both of these cases the head was found lying in the transverse diameter of the pelvis. It might be said that this faulty position furnished the mechanical obstruction to progress which in time became an etiological factor in the production of the ring. As I watched the cases, however, it seemed to me that probably had the uterus contracted properly, this position would have corrected itself, and that I happened to find the head transverse simply because rotation was not complete. In the first case the contractions had never been good, and in the second satisfactory but for only a short time.

Mrs. J. First pregnancy. Spines 25 cm., crests 28, external conjugate 20. Exceedingly nervous, hysterical patient. After twelve hours of labor mother began to show signs of fatigue. No progress for some time. Membranes found unruptured. Occiput posterior. About the neck a firm constriction ring. Hand could be forced through the ring only with difficulty. Forceps delivery. Baby weighed 7 lb.

Mrs. B., twenty-eight years, more or less. First pregnancy. Spines 22 cm., crests 27, external conjugate 20. For several days, at intervals, had labor pains lasting for some little time. Apparently real labor had each time begun but stopped usually at night. Finally, membranes ruptured spontaneously after two and a half hours of labor. Pains fairly good. Presenting

part low but os dilated only to a finger tip. At no time were the pains continuous and at no time very severe. After about ten hours of labor, during the latter part of which there was practically no progress, etherized and delivered with forceps, occiput being anterior. Very definite constriction ring found about the lower part of the face. Baby weighed about 7½ lb.

PAIN RELIEVED BY MANUAL THERAPY.

BY E. C. THOMPSON, M.D., BOSTON.

ONE of the most important points in the treatment of disease is the relief of pain, and it is most frequently this symptom that causes a patient to seek the aid of a physician. Very little is known of the actual causation of pain or of individual susceptibility. It varies in intensity, occasionally causing death, but we generally judge of its severity by the countenance, the attending functional disturbances and the word of the sufferer. We find many cases that show no lesion that will produce pain in spite of the most careful examination to discover any condition that will corroborate the patient's statement.

Pain may arise in any structure of the body, and may be roughly classified into inflammatory and non-inflammatory, and these may again be subdivided into functional, articular, vascular, nervous and mechanical. Many cases will show a combination of these causes, but as a rule it is not difficult to place any pain in one or other of the divisions just mentioned.

Now as to the different means of relieving pain (apart from surgical work), the following are the most common:

First, drugs internally, as morphine, etc.

Second, drugs externally, in lotions and liniments, etc.

Third, mechanical means, as water and electricity.

Fourth, manipulation.

It is this last form of treatment I wish to explain fully and show what results can be obtained from it, as most authors do not freely advocate or fully describe it in their works.

The subject is an old one, dating back from the earliest times of the ancient Greeks and Romans, who used the hands as a means of relieving the pain of a bruise, a strained tendon or a tired-out muscle. The old philosophers and founders of the art of medicine, including Hippocrates, Plato and Celsus, all advocated friction as a means to combat pain. But it is to the workers of more recent times that we owe our knowledge of to-day, viz., Sydenham, Grosvenor, Ling and Roth. These men were the founders of our present system of medical gymnastics, manual and physical therapy. During the latter part of the nineteenth century manual therapy was extensively practiced in Holland by Metzger; in Germany by Zabludowski, Mozengeil and Schieber; in England by Murrell, Eccles and Brunton; in the United States by Graham and Mitchell, and in Sweden by Nordstrom and Ostrom. In addition to these, numerous writers of to-day uphold the manual treatment