we are in doubt whether the recovery is not rather the result of an error in diagnosis than of anything which we have done.

Therefore, these two facts—the possibility of the resorption of the inflammatory and tuberculous products, or the possibility that you have mistaken for a malignant tuberculous one that is benign and curable—should encourage your efforts in the treatment of this formidable disease.

Moreover, even in tuberculous hydrocephalus you will often observe marked remissions which are misleading, and ought always to keep you on the watch. After passing through the most severe phases of the disease, after the delirium, convulsions, and coma, one sees the child suddenly revive, intelligence comes back, the convulsions cease, and the family are ready to exclaim that a miracle has been wrought. Unhappily, this treacherous remission is short; the cerebral symptoms return, and the fatal event soon comes.

Among the various affections which may be confounded with tuberculous meningitis[1] there is none more deserving of mention, because more common—

[1] Tuberculous meningitis, described for the first time in a complete manner by Whytt under the name of dropsy of the ventricles of the brain, and designated also at the present day under the name of acute hydrocephalus, has its maximum of frequency in children from 2 to 7 years of age, and in adults from 20 to 30. It is often hereditary, being derived from parents who have had tuberculous affections or cerebral disorders. It is, indeed, not an uncommon event to see the children of perfectly healthy parents succumb at an early age to tuberculous meningitis. The disease may begin suddenly; it is generally, however, preceded by a prodromic period of greater or less duration. The child complains of frequent headaches, and of being weary; there is a notable change in the character as before remarked. The child ceases to take any interest in its sports or studies. There is loss of appetite, occasional vomiting and emaciation. There are frequent remissions followed by exacerbation. The headache becomes more violent, vomiting comes on during fasting or after meals, and at the same time there are fever fits. At this period of the inception of the disease, one often observes some inequality of the pupils, intermittent strabismus, slight convulsion of the facial muscles, grinding of the teeth during the night in the midst of a troubled sleep; some children manifest a sort of periodical lameness in their walk. Little by little the malady progresses, the symptoms are more pronounced (period of cerebral excitation); the headache is more exasperating, with occasional remissions, the vomiting of greenish and glairy mucosites occurs more frequently when the stomach is empty; the constipation is obstinate. The little patient becomes more and more fretful, refuses to play, and insists on keeping its bed, where it lies stretched out on its back, with closed eyes, wrinkled brows and anxious expression, avoiding the light and the sight of brilliant objects, which seem to increase the headache. It remains in a stupor, and replies to questions in monosyllables, and angrily resists any attempts on the part of the physician to examine into the condition.

Hydrocephalic children dream frightful dreams, mutter to themselves, are often heard to moan, and frequently carry their hand to their heads with the exclamation, "My head, oh, my head!" At other times they utter mournful cries (hydrencephalic cries), which are characteristic. The night is more disturbed than the day, the pulse more accelerated, above 100, the skin is hot and dry. The delirium is often less calm, and you will observe grinding of the teeth, winking of the eyelids, alternation of redness, and pallor of the face, inequality of the pupils and diplopia. The opthalmoscopic examination, when it can be made, shows peripapillary congestion, dilatation of the vessels of the retina, and papillary deformity, (Bouchut). Then at the end of several days the infant complains less than before, no longer turns away his eyes from the light, vomits rarely, or does not vomit at all. The pulse, which was accelerated, is slower, falls to 90, 80, 60, 50, and even 40, and becomes irregular. At the same time the temperature falls from 1 to 1½ degrees. As with the pulse, the respiration presents inequalities and irregularities; to a deep sighing respiration succeeds at times an interval of rest, a long suspension of breathing. It seems as though the patient forgot to breathe for a few moments, then he makes several rapid inspirations, and the same respiratory phenomenon is reproduced. The belly becomes flattened, is retracted, is hollowed out (boat belly). If you pass the finger over the abdomen marking out traces on the skin, you cause red lines to appear (meningitic spots or rays), to which Trousseau attached an exaggerated importance. One also observes convulsive movements in the limbs, grimaces, a working of the lower jaw, gnashing of the teeth during sleep, fugacious and partial contractures of the different muscles, (muscles of the neck, hand, forearm, leg, foot); there is at times tetanic stiffness of the muscles of the nucha. After an attack of convulsions it is not rare to find one side paralyzed completely or incompletely. Like the contractures, the paralyses are either temporary or permanent. The temporary paralyses almost always succeed convulsions; they may disappear more or less quickly or change to the other side. The permanent paralyses are due to spots of softening in the striate bodies or cerebral peduncles, or to compression of the base of the brain and cranial nerves by the meningeal exudation. One of the most frequent paralyses is that of the third pair; next in frequency comes paralysis of the muscles of the face, of the eye (strabismus), of the arms, and of the inferior extremities. After an attack of convulsions, or gradually, as a result of the disease, the infant falls into a state of drowsiness and coma, from which it cannot be aroused. It lies on its back, one leg extended, the other bent on the abdomen, much of the time motionless, face of waxy paleness. The eyes are closed or else opened wide, the eyeball has a constant movement of rotation, pupils are dilated, unequal, sluggish, and often half hid under the upper lid.

The pulse increases in frequency, 140 to 180; it is never so frequent as the day of death; the temperature rises to 104 or 105 F. Retention of urine is observed towards the close of life. An abundant and viscous sweat covers the emaciated body of the infant, respiration is embarrassed, and the patient succumbs to the progress of asphyxia, unless carried off by a convulsion.

attacking as it does both adults and children—than simple acute meningitis. This disease, within certain limits, is curable; ætiologically, of course, it is distinguished from the strumous meningeal inflammation by the absence of tubercle granulations.[2] For this simple meningitis the treatment is the same as for the tuberculous; you should especially insist on cold applications, revulsives, and calmatives. But in this form of meningitis our success will depend on the degree of the inflammation and the extent of the lesions. In respect to this latter point, the brain is sometimes strangely tolerant. We now and then see tumors of considerable size develop in the interior of the cerebrum, or even at its periphery, with a latency such that scarcely any symptoms reveal their pres-

[2] The diagnosis of tuberculous meningitis, easy in many cases, is often beset with difficulties. The practitioner will be guided in his investigation by the mode of invasion, ordinarily slow and insidious, the vomiting of pultaceous biliary matters, the obstinate constipation, and the irregularities of the pulse and respiration.

Simple acute meningitis, cerebro-spinal meningitis, the eruptive fevers, may lead him astray for a moment, but these diseases generally present very marked points of difference from the disease under consideration. In acute meningitis the disease manifests itself suddenly in the midst of health, the fever is high, the cephalalgia is severe, the attacks of vomiting near together, the phenomena of excitation more accentuated, the delirium at times is very early, being noisy and even furious.

In cerebro spinal meningitis the *debut* is also sudden. The delirium, the contractures, and all the disturbances of sensibility are early. Moreover, the patients complain of pain

ence. On the other hand, we frequently observe, from the moment that the cerebral cortex is effected, even if the lesion be quite circumscribed and of little depth, the most pronounced disorders in the sphere of intellect or motility owing to irritation of the nerve-cells of the peripheral strata. It is for this reason that these meningeal inflammations are accompanied by grave symptoms, even when the phlegmasia is not extensive.

The greater part of mental disorders which are grouped under the general name insanity are only chronic meningites, and the mental disturbances, so numerous and so similar, which alcohol produces, result from the pachymeningitis which the presence of alcohol determines in the cerebral envelopes. I can not enter into the treatment of these chronic meningites—treatment little understood, and which belongs to the domain of the expert in mental diseases rather than that of the ordinary practitioner.

I must, before concluding, speak of the treatment of infantile convulsions. It is an interesting subject not yet well elucidated, for the convulsions of infancy are only symptoms, which may be produced by a variety of causes. They may depend on inflammation of the brain or its membranes, or on certain conditions of dyscrasia (uræmia, for instance), and belong to the group of eclampsias, or else they are simply reflex manifestations, generally of little gravity, which appear in the course of various affections, as dentition and diarrhœa.

In eclamptic convulsions, or in those which have for their point of departure reflex action, the best mode of treatment consists in the internal administration of bromide of potassium, or chloral, or in inhalations of chloroform or

along the spine, increased by pressure and by movements. The invasion of the eruptive fevers is also sudden, and there is a high febrile temperature. At the onset of scarlet fever, measles and small-pox, you observe vomiting and sometimes delirium, but soon after symptoms appear which point to the true disease. In these fevers, moreover, as in simple acute meningitis, and cerebro spinal meningitis, you have not the obstinate constipation, the retraction of the belly, the irregularities of the pulse and respiration.

Like tuberculous meningitis, typhoid fever and gastro-intestinal irritation (*embarras gastrique*), often have an insidious commencement. But if typhoid fever, particularly the ataxic form, may lead into error, you soon note characteristic symptoms, which remove all doubt: epistaxis, rose-colored lenticular spots, meteorism, the increasing march of temperature, the frequency of the pulse, etc ; there is, besides, absence of vomiting. Moreover, you will remember that if you have the care of a young child, that typhoid fever is very rare under five years, while meningitis is frequent.

In *embarras gastrique* there is vomiting, constipation, headache ; but the disease appears in a time of full health, the tongue is coated and not moist, as in meningitis, the pulse is regular, and under the influence of treatment—a purgative, for instance—the constipation ceases along with the cephalalgia.

Intestinal worms, by their presence, sometimes provoke divers nervous troubles ; there may be inequality of the pupils, vomitings, even convulsions, with slowing and irregularity of the pulse. You apprehend meningitis, but if there be headache, it is slight, the constipation does not continue, and the symptoms all disappear with the administration of a vermifuge.

Ophthalmoscopic examination ought to be made when possible. According to Bouchut, in 75 per cent. one observes important alterations on the part of the optic nerve and retina, such as neuro-retinitis, peripapillary œdema, phlebo retinal thrombosis, tubercles of the choroid, etc.

ether. All medicaments which anæmiate the brain seem to do good in these cases ; it is from this consideration that Trousseau proposed compression of the carotids. I warn you to be chary in the use of revulsives—such as sinapisms and blisters—in these cases, for severe cutaneous gangrenes, more difficult to cure than the convulsions themselves, have more than once been produced by the prolonged action of even a mustard cataplasm, and this in consequence of the insensibility which results from the fit.