The ergot was increased to thirty minims. The bowels were relieved by enemata.

December 11th. Voluntarily, he stated that he was continuing to improve, both in power of moving the legs and in feeling. The bowels were acting naturally. The urine was voided without difficulty, and was slightly acid. He was allowed to be placed in an arm-chair at the side of the fire.

January 12th, 1876. During the last two weeks, he had been stationary; had very little complaint of pain, but still the feeling of abdominal tightness. No gain in muscularity. He was ordered to take five grains of the iodide of potassium, ten grains of the bromide of potassium, and one ounce of the decoction of cinchona, three times each day; and in addition to the ordinary full diet, he was allowed four ounces of port-wine daily. Peripheral galvanisation, by means of the interrupted current, was to be employed every alternate day.

January 29th. There was evidence of slight improvement; he was better able to bear the weight of his body when assisted from the bed to the chair. The iodide was increased to seven grains and the bromide to fifteen grains, and the galvanism was to be repeated every day.

February 16th. The iodide was increased to ten grains and the bromide to twenty grains.

February 26th. As very little improvement had been effected, and as his strength and nutrition appeared to be diminished, he was ordered a grain of sulphate of quinine, ten minims of the tincture of the perchloride of iron, and ten minims of the tincture of nux vomica, in water, three times each day.

March 4th. He appeared to be gaining strength.

March 11th. After a sudden change in the weather, from mild to extreme cold, he complained of catarrh, which developed into bronchitis, for which he was given stimulant expectorants.

March 16th. He was coughing up large quantities of tenacious mucus; and upon auscultation of the chest, loud sonorous and sibilant rhonchi were heard, especially over the sternum and sides of the chest, so loud that the sounds of the heart could not be distinguished.

March 19th. He became gradually weaker, and died at 2 P.M.

NECROPSY, thirty-six hours after death.—Considerable difficulty was experienced in opening the spinal canal, in consequence of the curvature of the spine, and of the lower dorsal and lumbar vertebræ having become ankylosed. After dividing the spinal dura mater, the meningeal vessels, more especially at the lower dorsal region, were noted as more visible than usual. At this situation also the spinal cord was bulged, and was so much softened as to give way in the removal. The softened portion was fully one inch in length, corresponded with the tenth dorsal vertebra, was of a creamy-white colour, and at one spot near its centre was changed into a mere pulp, and when submitted to a stream of water was carried away in the current, the surrounding portion being of a pasty putty-like consistence. Upon microscopical examination, the nervous tissue was seen to be broken up and mixed with a number of bodies, known as granule masses, principally composed of fat. Besides these bodies, decaying tubes and the fatty remains of blood-vessels were distinctly recognised. The pericardium was distended with serosity. The heart was covered with lymph, the result of recent pericarditis. The valves of the heart were healthy. The lungs, more especially the right, at their apices were adherent to the chest wall, and were puckered; and, upon section, cretaceous masses were displayed, the remnant of tubercle. The lungs throughout were congested. The bronchial tubes were filled with frothy glairy mucus. The other organs presented nothing abnormal.

REMARKS.—This case has been recorded, not on account of any peculiarity or rarity, but because of the symptoms and sequence of events being characteristic, first, of hyperæmia of the spinal meninges and spinal medulla, and afterwards of organic lesion of the spinal medulla (softening), such being verified by the examination obtained after death; it being believed that in myelitis there is no abundant interstitial exudation, but that the nerve-elements undergo inflammatory disturbances of nutrition, and finally break down.

Respecting the diagnosis of hyperæmia, this was arrived at from the evidence of impairment of the functions of the spinal marrow, and the indications of irritation; namely, of the motor nerve-fibres by the cramps and twitches of the sensitive nerve-fibres by the pricking pains and the abnormal sensations, and of the vaso-motor or nutritive nerve-fibres by the wasting of the muscles. It was further surmised that the paralytic lesion was seated in the portion of the cord corresponding to the lower dorsal vertebra, from the paralysis being limited to the lower extremities, and not implicating the sphincters.

Having in regard the pathology and the diagnosis, the chief indication in the treatment was the diminution of the blood circulating in the spinal canal, and with this design ergot of rye was prescribed;

according to Brown-Séquard, no other agent being so efficacious. When the symptoms of irritation, inferred to be dependent upon the hyperæmia, had subsided, and upon the supposition that, as a consequence of the hyperæmia, some serosity or lymph might have been effused, it was deemed expedient to give absorbent remedies.

Later, with the view of maintaining the strength and the nutrition of the system, and of obviating the effect of rest on the paralysed nerves and muscles, tonics were administered, a nourishing diet was allowed, and galvanism was employed; the chief aim being to improve the quality of the blood, and in such manner the vital properties of the nerve-centre.

ON THE USE OF THE TREPHINE IN DEPRESSED FRACTURES OF THE SKULL.*

By ROBERT S. HUDSON, M.D., M.Ch., Redruth.

THERE is no subject in surgical literature which seems to have created more divergence of opinion than the employment of the trephine in depressed fractures of the cranium. It is now about one hundred years since Percival Pott so modified the shape of the instrument as to render it safe and manageable; there has been no change in its form since his day; and there can be no more instructive commentary on the ever-changing fashions which exist even in surgery, than to read his essay on Injuries of the Head, and compare his conclusions with the practice of our large hospitals at the present time.

In his celebrated essay, Pott betrays neither doubt nor hesitation; firm belief in the efficacy of the trephine is evidenced on almost every page; results are narrated which vie in brilliancy with any of the triumphs of modern surgery; yet the same methods for arriving at the truth exist now as then. The astonishing strides made by physics and chemistry during the interval have little bearing on the point at issue; careful observation, truthful description, and logical deduction can alone help us. How, then, can we explain the revolution involved in the statement that in St. Bartholomew's Hospital, to which Pott's genius added lustre and renown, his views have been discarded, and, for the six years previous to 1867, the trephine had not been once employed in an injury of the head? (Bryant's *Manual of Surgery*, 1st edition, page 77). The *post mortem* records of our large hospitals are more accurate than at any former period, and observations have certainly accumulated; but do these records, when fairly criticised, encourage the dread of the trephine now fashionable, and which almost condemns it to the limbo of forgotten barbarisms? Of late, there have been many indications of a change in surgical opinion on this question; a fatal issue is not now an invariable result; and the addresses at our annual meetings, with the "hospital notes" in our JOURNAL, give abundant evidence that trephines may be employed with benefit, and have some other use than filling up a vacant space in those orthodox boxes of velvet and mahogany in which our instrument-makers delight.

I am well aware that you have come for a holiday, so I do not propose inflicting on you a dry narration of cases in which the trephine has been successfully employed, nor an analysis of cases in which it should be used or avoided; I merely wish to bring before you an account of what is thought of it in the mining districts of Cornwall, and ask you to look on the surgical practice of these districts as an important factor in enabling you to arrive at a conclusion as to its employment.

Around Redruth and Camborne, Pott's principles still prevail; taught by Pott himself to the great grandfathers of the present generation of surgeons—the Pryces, Lanyons, Vincents, and Michells—these principles of surgical interference in head-injuries have been handed down from father to son, from master to pupil, and their utility has been illustrated in numerous cases. I may be pardoned tracing, so far as Redruth is concerned, the chain of connection which links Pott's days with ours. Before 1815, no examinations had to be passed by medical men previously to practice, and few country practitioners voluntarily undertook the labour involved in obtaining the diploma of the College of Surgeons. The apprenticeship system was the ordinary passport to the profession, and those learned in the "art and mystery" of an apothecary had charge of the health of nine-tenths of the people of this kingdom. Those of you who have paid any attention to the antiquities, literature, or history of the county of Cornwall, are aware that we are indebted to Pryce's *Mineralogia Cornubiensis* and Pryce's *Cornish Vocabulary* for a great deal of the knowledge which we now possess. According to the late Mr. W. J. Henwood, F.R.S. (*Transactions, Royal Institution of Cornwall*, vol. 51), the learned author of these

* Read before the South-Western Branch.

books—William Pryce, M.D.Ed.—practised at Redruth between 1760 and 1790. When Pryce was a student, Pott was in the zenith of his fame, and it is not unreasonable to suppose that Pryce adopted the views strongly inculcated by the greatest surgeon of that time. Of this we are certain, that Pryce's son, grandson, and great-grandsons adhered to the practice, and so with the numerous surgeons who were, at one time or another, apprenticed to various members of that family.

Talleyrand, it is said, observed that the philosophy of a previous generation might be gathered from the common people of the existing one, and it is so in this case. On the occurrence of a head-injury, the first question asked by the "comrades" of a wounded miner almost invariably is: "Is his skull broken?" and, if a reply be given in the affirmative, the next: "When are you going to bore 'un?" It should be remembered that tin and copper mining, with its narrow shafts, is prolific of that species of local depressed compound fracture in which most authorities would use the trephine. Although the miners' heads are protected by a hard hat, made from felt saturated with shellac—similar in material to the poroplastic splints—stones occasionally fall from the sides of a shaft or the roof of a level, and the head is most likely to receive the blow. Thirty or forty years ago, the trephine was much more frequently employed than at present, or, more correctly, injuries of the head were of more frequent occurrence. One surgeon (Mr. G. A. Michell, F.R.C.S. and J.P.) now living, tells me that, during his pupilage, a week rarely passed without one or two trephine operations; he has known three to occur on the same day, all done in the surgery, and the patients afterwards walking home. Many of the accidents at that time were due to blasting. It was before the invention of Bickford's safety-fuse, and charges were fired by trains of gunpowder laid in goosequills, or straws, or empty rushes.

When first told about the frequency of these operations, I was quite incredulous; but I understand that the late Mr. Skey was shown, by a Redruth surgeon, sixty-four specimens of trephined bones, each in its little box, with name and date of operation. Another surgeon remembers between forty and fifty such boxes in his father's surgery, collected mainly during his pupilage. Without much trouble, more than a score of men could be seen at any time, in the immediate neighbourhood of Redruth and Camborne, whose skulls, to use the popular phrase, "had been bored". I may add, that a very large percentage of these cases recover; that, if death ensue, there are generally obvious causes to account for it, such as diffused injury, with laceration of brain-substance or fractured base; that, in our opinion, success mainly depends on an early operation, as soon after the accident as convenient; and that we place the operation in the same category as herniotomy, viz., harmless in itself if skilfully performed, but in most cases useless if delayed until the appearance of symptoms.

Too much stress cannot be laid on one circumstance, which tells greatly in our favour when we contrast our results with those given in the reports of our large hospitals. I refer to the purity of our atmosphere, or rather its freedom from the common septic ferment. The whole district is daily swept by the Atlantic breezes; and if our sanitary authorities were wise and energetic, zymotic disease would be unknown. Practically, when proposing an operation of any kind, we never take into account the absorption of putrid matter, pyæmia or its allies, and we have no reason to fear them. But Lister and his school have shown that, even in old hospitals, these enemies of the operating surgeon need not be dreaded as formerly, if the antiseptic system be carried out in the spirit of its apostle. Surely, if a knee-joint can be opened without risk, elevation of depressed bone in a compound fracture of the cranium need not be looked upon as a "serious and in itself dangerous operation" (Le Gros Clark, *Lectures on Surgical Diagnosis*, page 89); and should we not, even in pyæmic atmospheres, resort to the principles maintained with such energy by Pott, and avert the fatal mischief which supervenes from inflammation and suppuration between the dura mater and the bone?

On the Continent, the pointed trepan worked by a brace is still in use, although condemned by Pott as dangerous. This may explain the caution of Stromeyer, who, in his address to the St. Thomas's Hospital students three years ago, advised the fragments of a compound comminuted fracture of the cranium to be loosened by suppuration before attempting to remove them.

I have consulted hospital reports to ascertain the most recent practice of the schools on this point, and I find that in Guy's Hospital, from 1861 to 1868 (seven years), they had fifty-one operations in which the trephine and elevator were used, and thirty-nine deaths, or a mortality of 76.5 per cent.—higher than after any other operation, including tracheotomy and ovariectomy. In Guy's, from 1871 to 1876 (five years), they had sixteen operations and twelve deaths. In St. Thomas's Hospital, from 1866 to 1870 (four years), they had three

operations, all died. In St. George's Hospital, from 1870 to 1877, they had sixteen operations with thirteen deaths.

As illustrative of the septic atmosphere with which hospital surgeons have to deal, I may mention that in St. George's Hospital, during 1868 (*St. George's Hospital Reports*, vol. iv, page 316), they had twenty-two cases of pyæmia, commencing in the house and with a fatal termination. In 1869 (*St. George's Hospital Reports*, vol. v, page 273), they had fourteen such cases, commencing in the house, all of which proved fatal.

To sum up: 1. Surgeons practising in the mining districts around Redruth and Camborne have had, especially in former times, unusual opportunities for the study of head-injuries.

2. In compound fractures of the cranium, it has been the invariable practice of the most experienced to elevate depressed bone by means of the trephine or Hey's saw, without waiting for symptoms of compression or irritation.

3. It is believed by those surgeons that no danger whatever attaches to the operation *per se*; pyæmic risks are unknown; and recovery is the rule after trephining operations.

4. So firm is popular belief in the efficacy of the trephine, that a surgeon who hesitated to employ it, under the plea of waiting for symptoms, would assuredly suffer in reputation, if, in the event of death, he were not put on his trial for manslaughter.

5. Hospital statistics place herniotomy among the most dangerous operations; but the statistics of hospital surgeons, in their private practice, show to a demonstration that an operation for the reduction of strangulated hernia is practically harmless, even when it is necessary to open the peritoneal sac, and that the risk is directly proportionate to the length of the ignorant delay which has been allowed to exist previous to the operation. (Holmes's *System of Surgery*, vol. iv, page 692). Although the parallel is not in every respect a complete one, we employ the trephine at the earliest possible period, and aim at preventing mischief by removing all sources of irritation.

6. No matter how deeply prejudiced against the trephine our young surgeons may be when fresh from the schools, a few years' experience generally dispels the illusion; they become converts to the practice of the district, and cease to look on its employment as antiquated surgery.

P.S.—Since writing the above, the current volume of *Guy's Hospital Reports* (1877) has been delivered. Mr. Davies-Colley contributes two interesting cases in which the trephine was successfully employed; his concluding remarks are quite refreshing, and I take the liberty of quoting them:

"These two cases support the rule, which most of our text-books either omit or fail to impress, that, in punctured fractures of the skull, it is the surgeon's duty to trephine at once, without waiting for symptoms of compression or irritation."

CLINICAL MEMORANDA.

AFFECTIONS OF THE EPIGLOTTIS.

DR. MARCET's paper on Affections of the Epiglottis is well worthy of the most careful consideration, as he throws out many valuable hints on the examination of a part of the human frame which is overlooked very frequently, owing to the difficulty in correctly exploring it. Reported obstruction and pain in swallowing are often put down to hysteria or fancy, if nothing is to be seen in the fauces, or if an examination with a probang indicate no stricture or tender spot; yet a laryngoscopic examination may very easily be made to disclose some possibly remediable disease of the epiglottis. In cases of great pain in swallowing, with no visible clue or emaciation, I have frequently discovered a small syphilitic ulcer or ulcers on the free edge or on the lingual aspect of the base of the epiglottis, which were readily healed by a few applications of nitrate of silver. Chronic congestion of the epiglottis, however, attended by a varicose condition of the vessels, is a much more difficult matter to relieve. The epiglottis may be extensively destroyed by syphilis, without the evidence remaining of disease in the interior of the larynx or in the palate. I can fully bear out Dr. Marcet in his views that tubercular disease may commence in the epiglottis without its being manifest in the lungs or vocal cords.

A young man was admitted under my care in the Central Throat and Ear Hospital with a raised granular ulceration of the epiglottis, which could be distinctly seen, without the aid of the laryngoscope, by depressing the tongue and causing a slight attack of vomiting. The cords were not affected, though there were hoarseness and great pain in swallowing. I hoped at first that the ulceration might be due to syphilis, as no disease could be discovered in the lungs beyond a slight