these houses and the wall is covered with a bed of loose open gravel, and a foot beneath the surface of this the soil was moist. The houses were of two floors; the upper floor of the end ones was occupied as officers' quarters, and of the centre one as mess-room, and the ground floors were employed as offices, library, stores, &c. In the southernmost of these houses an officer's wife, who was nursing an infant about two months old, was attacked with fever on October 16th; on the 17th the mess waiter, who slept on the ground-floor of the mess-room, was attacked; on the 19th the husband of the first case, and the same day a child of a soldier who acted as librarian, and who passed much of its time with him in the library on the lower floor of the southernmost house. This man and his family resided in another house in the same line with, but 400 feet distant from, the library, with seven other families, all of whom remained healthy, though the case last mentioned and the following one was treated there. On the 23rd another child of this man's was attacked, who had also been much with him in the library, and on the 24th the man himself. On the 26th a second mess waiter was seized who had slept in the same place as the previous one. On the 31st an officer's wife, who lived at a distance, but had attended to the first case very assiduously, contracted fever. On Nov. 7th, a young officer living in the northernmost house was seized, and on the 10th another in the same house. All these were well-marked cases of yellow fever, and five of them died with black vomit. The white artillery, with a very few exceptions, were removed to the mountain station of Newcastle on Oct. 28th. Of these three were attacked at Newcastle, and one died; one of these had been much in the library at Port Royal, but not near any fever case, the other two had been in attendance on fever cases. Two white artillerymen who remained at Port Royal were seized on Nov. 15th and Dec. 3rd; both died yellow and with black vomit. A black soldier was attacked on Dec. 17th; he had yellow conjunctivæ, hæmorrhage from gums, and albumen and tube-casts in urine, but recovered. This man occupied a bed close to a window on the ground floor of the men's barrack, which is 400 ft. to the west of the southernmost of the three houses mentioned above; the ground outside the window was removed to some depth, to improve the surface drainage, just before his attack. Two European artillerymen, who were sent from Port Royal to the Kingston Penitentiary on Oct. 23rd, had fever there on Oct. 28th and Nov. 11th respectively; the former died, the latter recovered. The medical officer who had attended most of the above cases at Port Royal embarked for England on Dec. 12th, was attacked the same day, and died at St. Thomas on the 16th, yellow and with black vomit. No case of yellow fever had been brought to Port Royal shortly before the outbreak commenced, nor had any of the subjects of the first eight cases, with the exception perhaps of the third, been away from it for some time before; neither had the librarian and his children, or the mess waiter, any communication with the first case, or with each other, after the fever commenced in them. We must conclude, then, that these persons contracted the fever from exposure to emanations originating in the locality, as they have been shown to do above, both at Sierra Leone and Barbadoes. What occurred at this particular spot may of course have taken place at others in the neighbourhood also, or elsewhere, as, for instance, in the penitentiary at Kingston; and until this possibility of the disease originating from such local causes in any given instance be excluded satisfactorily, we can never be justified in concluding that it arose from communication with imported cases.

The following striking case of importation took place a few months after the outbreak just detailed. The U.S. steamship *Susquehanna* was lying at Greytown, in the middle of March, 1858, when the first case of fever appeared in her. On April 5th she arrived at Port Royal, with her crew suffering from yellow fever; and within the next three days eighty-five of these were landed at the naval hospital, where twenty-three died with the characteristic features of the disease. Some of the medical attendants and visitors had never had yellow fever; and, though no seclusion was practised, not a single case occurred, either within the hospital or in its neighbourhood. One man of the *Imaum* receiving-ship, who attended the funeral of some of the *Susquehanna's* people, but in a separate boat, became affected with yellow fever within a day or two; the disease, however, ceased with him, and, as sporadic cases had occurred in Kingston both before the arrival and after the departure of the *Susquehanna*, nothing can be made of this

single case. After leaving Jamaica the *Susquehanna* proceeded to New York. During the passage there were several fresh attacks and some deaths; and when in quarantine at New York all the crew who were sent on shore continued in good health, while of the small number left on board six sickened and two died. At last everyone was removed from the ship, and she remained unoccupied for nearly three months, at the termination of which period her stores were discharged, when several persons employed in landing them were attacked with yellow fever. White troops had returned to Port Royal in March, 1858, and remained quite healthy, though the officers occupied some of the quarters which had proved so sickly in the previous October; and the town itself was healthy. The cause of the disease was evidently in the *Susquehanna* herself; and, having arrived at Port Royal when there was no cause of fever active there, her people, like those of the *Hecla*, *Dauntless*, and others at Barbadoes, could not communicate the disease, though it was of a virulent form. Had her arrival taken place shortly before the outbreak among the troops six months previously, many would have overlooked all the circumstances detailed above, and have concluded that she had imported the disease and communicated it to them.

A CASE OF BULLET-WOUND OF THE ANTERIOR LOBES OF THE BRAIN.

WITH REMARKS.

BY THOMAS SMITH,

SURGEON TO ST. BARTHOLOMEW'S HOSPITAL.

THE following case should, I think, be put on record, as the patient made a good recovery, without loss of mental or physical power, after shooting himself clean through the head from side to side, the bullet passing in at one temple and out at the other.

A person of education and some acquirements, aged thirty-five, was brought into St. Bartholomew's Hospital under my care within half an hour of having made an attempt on his own life with a revolver.

There was a wound in the fore part of the right temple, from which blood was flowing freely; blood was also running from the nostrils, and there was great and rapidly-increasing swelling beneath the scalp, which extended all over the frontal and orbital regions to the opposite side of the head, where there was a large effusion of blood beneath the scalp; and here, in the left temple, a hard body was to be felt, which was taken to be the bullet; the soft parts about the fore part of the head were emphysematous. The cellular tissue of the eyelids, orbits, and brows was distended with blood, the right eyeball being protruded and the ocular conjunctiva being pushed forward. The bleeding from the wound, which was very free, was at first controlled by pressure on the temporal artery, but after a while blood began to flow from a deeper source. The pupils were natural, pulse feeble, respiration natural.

The patient was quite conscious, and answered questions correctly concerning his name, age, address &c. of his own accord. He spoke in German, but when addressed in either French or English he would reply in the corresponding language. He showed no sign of mental incapacity, nor was there any loss of motor power. Being blinded by the swelling of his eyelids, and annoyed by the quantity of blood about his face, he searched methodically for his handkerchief in various pockets, and having found it, used it in the ordinary way. Whilst lying on the stretcher in the surgery he vomited several times, the vomit consisting of blood mixed with food, the straining in each attack of sickness forcing blood and cerebral substance from the wound in the right temple. A probe could be passed its whole length into the wound and across the head without meeting with the slightest resistance. On being asked if he felt it, the patient replied, "in the ear." A piece of lint soaked in carbolised oil, with a pad and a light bandage, being applied, the patient was removed to bed, when it was found that he had passed both fæces and urine under him. The quantity of

blood lost was very considerable. He passed a very restless night, and could with difficulty be kept in bed.

On the second day he was quite conscious, but being unable to see he imagined himself in a hotel, and ordered various delicacies of the "waiter." He consented, however, without remark to take the more modest fare supplied to him. He slept at intervals, but was at other times restless and troublesome. Pulse 68; temperature 99°. The swelling on the left temple was diminishing, and the crepitation had nearly disappeared. The swelling of the eyelids remained stationary. Blood and brain-substance still escaped in small quantities from the wound, and blood evidently flowed into his pharynx, for he frequently hawked it up and expelled it from the nostrils.

Third day.—Slept well; less restless; blood still oozed from the wound, but no more cerebral substance. Pulled off the wound dressings frequently. Pulse 68; temperature 99.7°.

Fourth day.—A good night; much quieter; took food better. Could open his left eye, and could see with it.

Fifth day.—Improving; spat up from his throat a quantity of blood; blood also oozed occasionally from the nostrils. Some bleeding from the wound. Swelling about the forehead and orbits was subsiding rapidly. The wound on this day was first observed to pulsate. Pulse 60; temperature 98.6°.

Sixth day.—The swelling over the opposite temple was first observed to pulsate; some emphysema was noticed at the same place. Pulse 78; temperature 100°; this was the highest point his temperature reached.

Seventh day.—Wandered in the night; was violent with his nurse, striking her with his fist; when awake he was quite rational, and made inquiries about the progress of the Afghan war, and delivered himself of some very uncomplimentary strictures on English foreign policy. He was much the better for a purgative on this day, his temperature falling to 99°. Pulse 64.

Ninth day.—Told a friend that his wound had been received in the Franco-Prussian war (in which he served); on other subjects he was quite rational, though he was irritable and morose.

Tenth day.—Wrote a letter, which gave evidence of some delusions with regard to his pecuniary resources.

Eleventh day.—Very unruly and irritable; could not be kept in bed, and was therefore allowed to dress himself and get up. Wrote another letter, but could not write the address. Sputa still tinged with blood; ecchymosis rapidly disappearing, except from right eyelid. Pulse and temperature normal.

Twelfth day.—Very much better in all respects.

Fourteenth day.—Struck his nurse, pinched her; was very irritable. Sputa still bloody.

Fifteenth day.—Not so well; drowsy; rather deaf. Swelling in left temple was larger; pulse and temperature normal. Pulsation was still very distinct over both temples, in the site of the wound, and in the swelling over the left side of forehead.

Sixteenth day.—Much better. An abscess has burst in the right eyelid. Still very irritable.

Seventeenth day.—His temper has decidedly improved. Has ceased to spit blood.

For the next three days he made rapid progress, his intelligence being perfect, though his temper was very morose at times. The pulsation and movements of respiration in the swelling on the left temple were very distinct. By this time one could readily feel the bullet in the lower part of the swelling on the left side, while in the upper part was a piece of detached bone about the size of a sixpence; both these bodies were lying movable in the blood-swelling.

On the twenty-third day he casually mentioned that he was in possession of a million of money, but showed no other sign of mental disturbance.

By the thirty-first day the wound in the right temple had closed, and the pulsation and swelling on the left side had much diminished.

On the forty-third day the pulsation had ceased and the piece of detached bone had become fixed. He had been up and about the ward for some days, complaining much of coldness and weakness. His natural temper had been regained, and his manners were courteous and his bearing that of an educated gentleman. Soon after this time he left for the Highgate Convalescent Hospital.

With regard to the condition of the special senses in this patient's case, it was noticed that the hearing was defective,

the watch being heard at two inches on one side and twelve inches on the other. Two months after his admission Mr. Vernon examined the eyes, and reported of the right eye—optic disc atrophied and cupped, eye amaurotic; half the optic disc of the left eye in the same condition. The patient described his own sensation at this time as that of a cloud drawn partly over his right eye. Shortly before leaving the hospital Mr. Vernon reported that the optic disc of the right eye was much in the same condition, though the vision had considerably improved. In the left eye the disc had recovered its natural appearance, and the vision was normal. The sense of smell was impaired in acuteness, and more deficient on the right side than on the left. Early in his convalescence the loss of smell was very considerable, but before he left the hospital he had regained it in the left nostril to some extent.

The position of the entrance wound in the right temple is shown in the accompanying woodcut; also the point in the left temple where the bullet escaped from the skull. The former is marked by a slight depression in the bone situated one inch and a half behind the outer angle of the orbit, three and a quarter inches in front of the tragus, and on a level with the highest part of the eyebrow. The aperture of exit in the left temple is indicated by a depression four inches from the tragus, and two inches from the external angle of the orbit. Just above this spot is a fragment of bone, once movable, now fixed, and at a lower level the bullet can be felt, still movable. The woodcut represents the exact size and shape of a bullet extracted from one of the undischarged barrels of the pistol which inflicted the injury.

As regards the course of the bullet in this case, it is certain, from the position of the apertures of entrance and exit, that it entered the outer surface of the anterior lobe of the brain, a little above the level of the highest part of the roof of the orbit, and that it emerged from the left anterior hemisphere at a spot rather further back and at a slightly higher level. From the large effusion of blood in both orbits, which so rapidly followed the injury, there is reason to believe that in its passage across the skull the bullet fractured the roof of both these cavities. From the free and persistent epistaxis, it is probable that the cribriform plate of the ethmoid or some part of the roof of the nasal cavity was broken into, while there was evidence, from the symptoms, that the olfactory bulbs did not escape disturbance or injury. In opposition to the view here expressed as to the course of the bullet, it may be said that there is no direct proof that the left hemisphere of the brain was wounded at all, that the bullet may have run over the roof of the left orbit and up the inside of the skull to its point of exit from the bone. I am, however, sure that the probe

which I passed shortly after the accident into the wound, traversed, without any sensation of resistance, both hemispheres, and one would think it is impossible that a bullet of the size and weight indicated, after passing through one side of the skull, could have knocked a piece of bone clean out of the opposite side unless it impinged upon the inner surface of the bone in a direct line. I would also point to the pulsation and respiratory movements observed in the blood-tumour over the aperture of exit; for these were so forcible as to indicate that the interior of the brain was in direct contact with the ecchymosis. It seems almost certain that the part of the hemispheres that was damaged was the anterior frontal portion just above the orbits. In this locality an injury such as the patient suffered from could be inflicted without loss of motor or sensory power, and without arresting any of the functions essential to life, nor would it necessarily interfere with the exercise of ordinary mental powers.

There can be no doubt that there was a temporary but very marked alteration in the patient's temper and disposition, as the result of the injury. For a time extending over three or four weeks he was most overbearing and occasionally violent in his conduct and his behaviour to his nurses. At times he was lethargic, at times restless and irritable; but as he recovered strength he regained the disposition which his friends said was natural to him, and before he left the hospital his manners were courteous and his bearing that of a well-conducted gentleman. For one or two days in the course of his convalescence he was the subject of delusions in respect of his pecuniary resources, and on the eleventh day he was unable to address a letter which he had written.

I am not aware that any case has yet been recorded of recovery after perforation of both frontal lobes of the brain, though several instances have occurred of wounds or perforations of one lobe, where the patient has recovered more or less completely; but even in these cases it is rare to meet with so complete a restoration of the mental faculties as occurred in the case here related. In Dr. Ferrier's work on the Localisation of Cerebral Disease will be found an excellent *résumé* of the recorded results of wounds and injuries of the frontal lobes, and from these it is evident that in most cases there was a decided impairment of mental power, though varying much both in kind and degree.

THE SULPHUR-WATERS OF THE PYRENEES.

BY G. V. POORE, M.D., F.R.C.P.,
ASSISTANT-PHYSICIAN TO UNIVERSITY COLLEGE HOSPITAL, ETC.

NOTHING is more gratifying in the treatment of disease than the occasional success which attends the employment of so-called alterative medicines, among which we may place mercury, iodine, arsenic, phosphorus, and the sulphides. It is common to see effects produced by these preparations which are at once tangible and decided, but unfortunately it is common also to see them utterly fail to produce the effect desired.

Anyone who has employed the sulphides in the treatment of disease must have been alternately pleased and disappointed; for, although the effect produced is often exactly

that which Dr. Ringer describes in his Handbook of Therapeutics, equally often, if not more often, the result appears to be absolutely negative. One reason for this is undoubtedly to be found in a faulty selection of cases; and it may reasonably be hoped that an increasing knowledge may cause a diminution in the number of patients who, having been treated with sulphides, have failed to derive the expected benefit. Another reason also is to be found in the great instability of the sulphides themselves, which immediately oxidise on exposure to air; and it may safely be said that a very large proportion of the patients for whom the sulphides are prescribed get scarcely a single dose of the medicine which it is desired to give them, but receive in lieu of it a quantity of harmless or inactive sulphate.

When prescribing sulphides, it has been my invariable custom to advise the patient to get very small quantities made up at a time, and to warn him that unless the medicine has the familiar odour of rotten eggs it can do him no good. Better than giving a solution of the sulphides, is to allow the patient to have a small and well-stoppered bottle filled with potassium or calcium sulphide, whence he may take his dose, roughly estimated on the point of a penknife, as required. Good service has undoubtedly been done by the introduction of the sulphides in perles, and I have reason to believe that the sulphide remains unoxidised in the perles for indefinite periods. I have lately, however, seen a sample of so-called "perles of sulphide calcium," which on examination were found to contain no sulphide at all. The best way of all, no doubt, to prescribe sulphides, is to send the patient, if possible, to a so-called sulphur spring, where he may drink the water impregnated with hydrogen sulphide, and holding other sulphides in solution before oxidation has had time to occur. Then one may be sure that the medicine prescribed is actually being taken.

Having during the autumn of last year paid a visit to the sulphur springs of the Pyrenees, I have thought that possibly the information thus acquired might prove serviceable to others besides myself.

There are many sulphur springs in the Pyrenees, but the best known are those situated in the western half, in the departments of the Basses Pyrénées, Hautes Pyrénées, and Haute Garonne. Going from west to east, we have Eaux Chaudes, Eaux Bonnes, Cauterets, St. Sauveur, Barèges, Bagnères de Luchon, and Bagnères de Bigorre. Excepting at the last-named place, the prevailing waters are those containing sulphuretted hydrogen and other sulphides, and there is a strong family likeness between them all. These waters are excessively weak, and contain not more than from 0.5 to 0.2 grm. of dissolved matter in each litre of water, or from about 4½ to 2 grains in the pint—thus offering a striking contrast to the waters of Harrogate and Aix la Chapelle, which contain respectively 137 and 37 grains in each pint. The amount of free hydrogen sulphide in the Pyrenean waters is exceedingly small, the salt which gives to them this sulphurous quality being sodium sulphide, of which there is from 2 to 5 centigrammes in each litre, or from ⅕ to ½ grain in each pint. The bulk of their small quantity of solid ingredients is composed of silicates, chlorides, and organic matters. The following schedule will serve to show at a glance what are the chief ingredients of these springs.

GRAMMES IN A LITRE. (Parts in 1000.)

—	Eaux Chaudes (Le Clot).	Eaux Bonnes.	Cauterets (César).	St. Sauveur.	Barèges (L'Entrée).	Luchon (La Reine).	Bigorre (Labassère).
Sodium sulphide ...	0.0080 (?)	0.0214	0.0226	0.0218	0.0344	0.0508	0.0464
Sodium chloride ...	0.0900 (?)	0.2640	0.0178	0.0695	0.0544	0.0624	0.2058
Silicates ...	0.0041 (?)	0.0500	0.1114	0.0867	0.1087	0.0614	0.0555
Sodium sulphate ...	0.0234	0.0277	0.0080	0.0400	0.0169	0.0312	—
Calcium sulphate ...	0.0791	0.1644	—	—	—	0.0312	—
Organic matter ...	(?)	0.0480	0.0450	0.0320	0.0510	(?)	0.1450
Total solids ...	(?)	0.5760	0.2019	0.2500	0.2654	0.2511	0.4813
Temperature (C.) ...	36.25°	32.00°	48.00°	34.60°	40.00°	51.00°	15.00°