

the lapse of some days, a cylindrical slough or core exudes from the centre of the swelling, leaving a deep pit with nearly vertical walls, the bottom of which generally extends through the cutis vera, and not unfrequently into or through some of the muscles. The sores are long of healing, doubtless from loss of structure, the salt acting like its acid, though with less intensity.

Chromic acid in this form has been said to have a strong propensity for the destruction of cartilage, inasmuch as the nasal alæ and septum, and even the larynx, of workmen employed in the manufacture of bichrome are frequently greatly corroded by it. The ulceration has been considered similar to that of tertiary syphilis, and bichloride of mercury recommended as an antidote, and, withal, this absurdity has been promulgated by a standard work on Chemistry.\* From experiments made with the acid on portions of the trachea of a cow, the reverse is proved to be the case. Indeed, chromic acid might rather be said to have a specific action on gelatine or muscle, because breaches of surface are here the rule, whereas ulceration of cartilage is the exception. The cause of the nasal and laryngeal affection is clearly the same as that of the other sores—a cuticular hiatus; and while there seems an additional reason why the nasal walls should be attacked more than other parts, still that is fully counterbalanced by the material of which they are composed resisting the action of the acid more; hence it is seldomer affected.

During respiration in an atmosphere contaminated with floating particles of the chromic salt, these are constantly brought in contact with the anterior nares, &c.; and, dissolving in the nasal secretion, set up irritation, which, if prolonged, results in abrasion of the mucous membrane. What follows is plain: each inspiration deposits a variable quantity of the salt upon the affected part, resulting in ulceration.

*As a test for strychnia.*—Chromic acid elicits the coloured reaction in a solution containing  $\frac{1}{100000}$  of strychnia. The *modus operandi* is to put two or three minims of the strychnia fluid on a white non-porous surface; then add a few needles of chromic acid, which instantly dissolve, imparting to the liquid their characteristic tint. One or two drops of concentrated sulphuric acid are now added, and the play of colour is at once evolved. With stronger solutions the result is very distinct, and in any case unfailing. In applying this test the above method must be strictly adhered to; because if sulphuric acid be added to the strychnia solution before the chromic acid, the latter will not dissolve, and the result is negative. Chromic acid does not give the coloured reaction with dilute sulphuric acid.

It is well known that bichromate of potassium, so commonly used for this test, does not always succeed. I have seen it fail in the hands of two professors—one a celebrated toxicologist—when attempting to show it to their class; and am not aware that any explanation of the cause of this frequent miscarriage has been given, though it seems to me as follows:—It is obvious from the fact of chromic acid giving the coloured test at all that to it alone the reaction is due when bichrome is used; that neither the potash in the latter, nor the sulphate of potash resulting from the addition of sulphuric acid, are indispensable agents in developing the reaction. Furthermore, as strong sulphuric acid is necessary both when using bichrome and chromic acid *per se*, it is evident that, when added to the first, the result is the formation of sulphate of potassium, water, and free chromic acid; indeed, this is exactly the method by which the latter is prepared, as shown in the following equation:— $K_2O \cdot 2CrO_3 + H_2SO_4 = K_2SO_4 + H_2O \times 2CrO_3$ . The chromic acid, being thus liberated, oxidises the strychnia, and the coloured reaction is afterwards developed by the strong sulphuric acid. But it may happen that the sulphuric acid, which might have proved strong enough for isolated chromic acid, is rendered too weak for bichrome in consequence of being partially neutralised by the base of the latter, and further diluted by the water, which, as seen in the formula, is generated by the hydrogen of the sulphuric acid combining with the oxygen of the potash; and this, I believe, is the most frequent cause of non-success of the test. With isolated chromic acid failure is of course impossible from such a source; and when used as described, the reaction is not only constant, but greatly more delicate.

\* In Meadows's Prescribers' Companion (page 152) potassæ bichromas is said to have been recommended as an antisyphilitic.

Another cause of lapsus with the bichrome, also applying in part to chromic acid, is seen in the following table of results:—

Bichrome added to solution of strychnia, then sulphuric acid added = much colour.  
Sulphuric acid added to solution of strychnia, then bichrome added = considerable colour.  
Sulphuric acid added to bichrome, then solution of strychnia added = almost no colour.  
Chromic acid added to solution of strychnia, then sulphuric acid added = much colour.  
Sulphuric acid added to solution of strychnia, then chromic acid added = a little colour.  
Sulphuric acid added to chromic acid, then solution of strychnia added = almost no colour.

These results are just what might be expected. It will be seen, as with chromic acid, that when sulphuric acid is added to bichrome, or *vice versa*, succeeded by strychnia, the reaction is almost *nil*. Doubtless, from the loose and empirical manner in which this test is usually applied, its failure is frequently due to the above cause; and indeed, from notes in my possession, I find this very method recommended.

*Antidote.*—In poisoning with chromic acid the best antidote is beef-tea, raw egg, milk, or any albuminous or gelatinous substance. A very handy and efficient antidote is a solution of ordinary painters' size.

*Therapeutical properties.*—I am not aware what effect on the system prolonged minute doses of chromic acid (which may be absorbed) would produce, though, from its strong coagulating properties, a general viscosity of the blood might be anticipated, whatever further consequences should arise. In the absence of such knowledge, it seems to me that it might be used with a fair prospect of success in the following cases, for some of which it is already recommended in works on Materia Medica:—As a hæmostatic; as a caustic to cancerous tissues, chancres, condylomata, hospital gangrene, phagedenic ulcers, bites of rabid animals, poisoned wounds, warts, hæmorrhoids, &c.; as a wash to allay fetid discharges; as a gargle in diphtheria; as an injection in ozæna, uterine catarrh, leucorrhœa, and gonorrhœa; to disinfect cholera and fever stools, for which it is admirably adapted; as a preventive of suppuration, putrefaction, &c. In every case it must be used dissolved in water; and, except where a strong caustic effect is desired, in medical or surgical cases, the solution should not be stronger than half a grain to the ounce, and be succeeded immediately after gargling or injection by the application of pure water. I have used chromic acid to a limited extent in the five latter affections above specified with a fair measure of success; in gonorrhœa and ozæna the results are especially gratifying. Finally, I have no doubt that its remarkable antiseptic, disinfectant, and coagulating powers will suggest many applications in medicine, surgery, and hygiene not above enumerated.

Glasgow, Dec. 1871.

## DIVISION OF MEDIAN NERVE FOLLOWED BY GANGRENE OF FOREFINGER, AND THREATENED GANGRENE OF MIDDLE AND RING FINGER.

By W. A. T'ANSON, JUN., M.R.C.S., L.R.C.P.,

SURGEON TO THE PRUDHOE MEMORIAL CONVALESCENT HOME, NORTH SHIELDS.

WILLIAM T—, aged twenty-four years, married, book-binder, during work on the 8th of June, 1871, pierced the palm of the left hand, immediately over the annular ligament, with a sharp-pointed knife, inflicting an incised wound about a quarter of an inch in length. The hæmorrhage, which was very profuse at the time of the accident, was controlled by immersing the hand in cold water. Four hours afterwards the wound was dressed with simple dressing. Shortly after the accident a sense of stiffness and inability to flex the fingers, followed by gradually increasing numb-

ness, was experienced in the thumb, fore, middle, and radial surface of the ring finger. On the 10th of June the wound was uncovered, and found to be united by first intention. The thumb and fingers were now quite numb and powerless, with a feeling as if thousands of pins and needles were continually running into them. Galvanism was applied to the affected fingers without producing any movement or sensation. From the 10th of June to the middle of July numerous vesicles formed on the fingers, followed by hard, circumscribed black patches. The fingers from that time improved under galvanism, so much so that the patient commenced and continued work until the 9th of August, when the old "sleepy" feeling returned, combined with a sensation as if the fingers were quite dead. On examination, pain was felt at the seat of the old cicatrix, the temperature of the thumb and fingers was much below that of the corresponding fellows, and movement was evidently becoming impaired. On the 11th of August a lancinating and bursting pain set in, chiefly in the forefinger. Bullæ began to form principally on the fore and middle fingers, the interspaces being white and bloodless. On pressing the thumb and finger nails, the return of blood was very slow, showing diminution of supply. On the 16th gangrene commenced in the forefinger. By the 19th, the line of demarcation having formed obliquely over the second phalanx, amputation was performed between the proximal and second phalanges without chloroform, the patient showing no sign of pain. The wound united by first intention.

The same feeling being complained of in the middle finger, likened to a rough stick being forcibly thrust up it, galvanism was again used, the fingers being also well shielded with cotton wool, and covered with oil-silk.

After the continued use of galvanism and warmth, the remaining thumb and fingers, which were shrivelled and wasted, have now assumed a healthy appearance; the blood quickly returning under the nails after pressure, the movement quite restored, and the power of discernment fully regained. Throughout the whole case no constitutional disturbance was observed.

Newcastle, Oct. 1871.

## Medical Societies.

### MEDICAL SOCIETY OF LONDON.

MONDAY, DEC. 11TH, 1871.

DR. FREDERICK SIMMS IN THE CHAIR.

MR. CHURTON, of Erith, showed the head of a Fœtus born in the seventh or eighth month. There was an absence of the cranial cavity; the brain, which was dark-coloured, was contained in a pouch at the back of the head; the face resembled a newt's somewhat in appearance. The woman had been frightened when in the third month of her pregnancy by a newt crawling up her hand, which was placed on her hip. She looked into the newt's face and was much frightened. He had known a mark like a black-beetle on a child, attributed by the mother to a fright from a black-beetle.

DR. KELBURNE KING, of Hull, sent up a communication to the Society, principally with a view of calling attention to what seemed to him to be the best method of performing the operation of excision of the scapula so as to reduce to a minimum the danger of hæmorrhage, and because the operation has not been performed so often as to render individual cases devoid of interest.—Case 1. In the summer of 1869 H. R., aged 26, applied at the Hull Infirmary, suffering from a tumour of the scapula. He had noticed it for some months. It was painful only when pressed upon by his clothing. There was felt above the spine of the scapula a round, perfectly hard and solid tumour, about the size of an orange, not painful to the touch, not movable, but firmly attached to the supra-spinous fossa, from which it sprang. Gradually it extended over the middle of the spine into the infra-spinous fossa. The use of the arm was now much limited; the pain, though not severe, was constant, and prevented sleep, and his general health began to suffer. The tumour appeared to be of a bony, non-

malignant character; so, on October 20th, 1869, the following operation was performed:—An incision was made along the whole length of the spine of the scapula, and the attachment of the trapezius divided. Owing to the size of the tumour the bone was easily pulled forward, and the supra-scapular artery was divided and ligatured. Then, placing the forefinger of the left hand on the axillary border of the scapula, just behind the triceps muscle, where the pulsation of the dorsal artery is felt, he entered the knife at the acromial end of the first incision, and cut downward to his left forefinger, and about two inches past, along the axillary border of the scapula. Still pressing his finger on the dorsal branch, he cut through the deltoid, and so exposed the scapular muscles, the long head of the triceps, and the scapular vessels and nerves. These last were quite out of the way, and, still feeling the dorsal branch with his finger, he passed a needle, set in a handle and armed with a ligature, round the vessels and sufficient cellular tissues, and tied a firm knot. The subsequent steps of the operation were bloodless. The base of the acromion was divided by bone forceps, and the neck of the glenoid cavity by a saw. The tumour was lifted up and separated from its attachments by cutting from without inwards. Three branches of the posterior scapular artery were ligatured. The wound was dressed with carbolic oil. The ligatures came away without hæmorrhage; but there was a tendency for the lower flap to fall. The man went into the country, but died soon after of disease of the lungs.—Case 2. C. A. M., aged eight. The origin of the disease in this case was referred to a blow, having been knocked violently against a lamp-post eight months before. Admitted May 24, 1871. The tumour, which until then had attracted little attention, caused a perceptible swelling over the whole of the scapular region, most distinct above the spine, where it formed a considerable projection, which, on strong pressure, yielded with a sort of crackling sensation. An incision having been made, the finger passed into a bag of fragments of bone and soft curdy matter. The last, under the microscope, was found to consist of large cells containing many and large nuclei. The child's health becoming much worse, excision of the scapula was done on the 17th June. The operation was similar to the one already described. Very little blood was lost. Health improved, but the wound was prevented from healing up entirely by the projection of the clavicle, and in another such case he would recommend the removal of the outer portion of that bone. After referring to descriptions of the operation by Mr. Skey, Sir W. Fergusson, Mr. Syme, and Mr. Holmes, and the stress laid upon the recurrence of hæmorrhage, Dr. Kelburne King contended that it was better to put all risk of danger out of the question by securing the vessel behind or rather internal to the border of the scapular head of the triceps muscle at an early stage of the operation.

DR. ROUTH then read a communication on the Contagiousness of Typhoid Fever. The year before last a lady and her maid were travelling on the continent; the maid suffered from a mild attack of typhoid fever. On her return to England the lady (aged forty-two) took the infection, and had a characteristic attack of the same disease, her case being a severe one. The house was good, and the drains were all sound. Disinfectants were freely used. Four members of the family were attacked: the governess and the eldest girl, who slept in the room with her; the housemaid and cook, who slept together. He contended that the typhoid was imported from the continent and disseminated in this country, as there was no evidence of fresh infection.

A vigorous discussion took place, in which Dr. Thorowgood, Dr. Broadbent, Dr. B. W. Richardson, Mr. de Méric, Mr. Brudenell Carter, Mr. Hainworth, and Mr. Rogers Harrison took part.

DR. RICHARDSON said that he had seen a great deal of typhoid fever in Glasgow many years ago, and had never seen a case communicated. Dr. Barker, of Bedford, had a great many cases—as many as eighty. He treated them out of doors in temporary sheds. Dr. Richardson saw forty with him. It was true that one person visiting another had taken the fever, but then he had eaten and drunk there. The fever emanated from the main sewer. The authorities do right in considering the case of H.R.H. the Prince of Wales non-infectious.