SUBSTITUTES FOR ETHER AND CHLOROFORM.

A committee of the British Medical Association has lately issued two reports, giving an account of some very valuable experimental trials of a number of new anæsthetic agents which they have studied, with the object of finding a substitute for chloroform and ether, the agents commonly employed by the surgeon and obstetrician. Neither of these fully meets the requirements of surgical practice, the administration of chloroform being never free from danger, and always a source of anxiety on that account to surgical operators, and especially in operations of a protracted nature, where its disastrous effects upon the action of the heart and the respiratory organs is occasionally the cause of fatal consequences; while ether, though vastly superior to chloroform in these respects, is too tardy in its action for many important operations. The purpose of the above-named committee was to find, if possible, an anæsthetic agent that should be as potent in its effects as chloroform, and that, at the same time, should affect the heart and respiration as little as ether.

From the abstract of their reports, in the *Monthly Journal of Science*, it appears that many experimental trials were made upon frogs and rabbits, with the following substances: Benzine, acetone, pyrrol, bichloride of methylene, amylene, butyl chloride, ethene dichloride, methyl chloride, ethyl chloride, nitrous ethyl ether. The experimental trials of the committee with the above-named substances were unfavorable, either for the reason that they did not complete anæsthesia, or because the anæsthesia was attended with such violent and alarming physiological disturbances that their use in surgery was not to be thought of. With two substances only did the committee obtain successful results; these were the isobutyl chloride and ethidene dichloride.

Isobutyl chloride (C^3 H^9 Cl) produced complete anæsthesia in frogs, rabbits, and dogs, in from three to five minutes, and no disturbance of the heart action or of respiration was noticed when anæsthesia was continued for half an hour or longer. Ethidene dichloride (C^2 H^4 Cl^2), an isomeride of ethene dichloride produced from aldehyde, gave even better results than the agent above described, and the committee thereupon tested its virtues upon six patients in the Western Infirmary of Glasgow, upon whom surgical operations of more or less severity were performed with its aid, and with the most encouraging results. We cannot do better, in view of the importance of these researches in the interests of humanity, than to give the committee's conclusions at length, as stated by our authority.

The features of special interest in these cases are the facts that there was no injurious effect observable on the respiratory mechanism, although in all cases the anæsthetic was given in such doses as to produce complete anæsthesia and muscular relaxation, and in one the patient was deeply under its influence for 25 minutes. 2. The pulse diminished in frequency and increased in volume, and in the deepest anæsthesia was steady, regular, full, and compressible. There was no indication of failure of cardiac action in any case—a result anticipated from what had previously been observed in animals. 3. There was never any pallor of the countenance, or blueness of the lips; but, on the contrary, and even during the deepest anæsthesia, there was a healthy flush in the face, and the lips were rosy-red. Taking into account the change in the character of the pulse and in the color of the face, it would appear that in anæsthesia from dichloride of ethidene, the blood still remains in a normal amount in the arterial and capillary systems, and does not tend to engorge the venous system and right side of the heart, as is apparently the physiological action of chloroform. It appeared, also, in further experiments with this agent on animals, that they could live for a lengthened period in a state of complete anæsthesia under its influence, while, on the contrary, they will speedily die when chloroform is used. The investigations of the committee, it would appear, have had the valuable result of supplying the surgeon with one (and possibly with two) anæsthetic agents superior both to chloroform and ether—a result of inestimable importance for the scientific alleviation of human suffering. The committee is continuing its researches, and a third report is expected at an early day.

RINGWORM.

Dr. John V. Shoemaker, in a paper read before the American Medical Association on "Ringworm in Public Institutions," states that, while treating a large number of cases of ringworm, which occurred in one of the public institutions for children in Philadelphia, he scraped some of the scales from the scalp of one of the children, and also from the chest of another, and applied them to the bodies of two cats. For three days no change was perceptible on the parts upon which the scales were placed; on the fourth a small meal-like patch was detected upon one, and on the other the hairs began to fall out. The fifth day the patches assumed the characteristic circular form, and the affection continued to spread rapidly until spots the size of a large coin were almost denuded of hair. Scales from the patches of one of the cats were reinoculated on a healthy portion of the scalp of one of the children and thigh of another, with the effect of producing the circumscribed spots of ringworm. Two specimens were now prepared, one from the inoculated child, the other from one of the cats, and revealed under the microscope fungi of a luxuriant growth, threads being present in large quantities.

Ringworm owes its origin to a vegetable parasite, the *Trichophyton tonsurans*. It generally commences among those that are improperly cared for, and, as it is exceedingly contagious, it spreads rapidly to those coming in contact with the infected. The fungus has a predilection for the strumous and debilitated, and flourishes upon them luxuriantly.

Among the 50 cases afflicted on the occasion referred to the author found that a large percentage were the children of subjects of chronic disease, worthless and confirmed drunkards, and inmates of charitable institutions or almshouses. The affection frequently has its origin in the lower animals, and is transmitted from them to children and adults. A number of cases are on record in which it has been communicated directly from cows, calves, oxen, horses, and cats to individuals, and then to other members of the same family. A well-marked example of its direct transmission from a cow to an individual came under the author's notice and treatment a short time since. The experiments on cats, noted above, are also additional strong proof that the fungus can be transmitted from lower animals to children, and from individuals to animals, and also verify the fact that the scales of the scalp are capable of producing by inoculation ringworm on other parts of the body.

Dr. Shoemaker states that his observation has been that, when the affection attacks the body and is not complicated, it is easily cured; but when it involves the head it is a most tedious and unmanageable disease, owing to the mischievous influence of the hair. He believes, however, that the failure to promptly eradicate the disease in the majority of cases in public institutions is due to negligence, want of patience, and the inability on the part of nurses and attendants to properly understand the orders of the physician.

TELEGRAPHING TO RUNNING TRAINS.—C. M. Gariel describes the successful working of Baillehache's invention for signaling to and from trains in motion, on a part of the line which connects the Champs de Mars with the station at Grenelle. The experiments were so successful that they are likely soon to be repeated on a much larger scale.—*La Nature.*

HINTS ON THE USE OF PLASTER OF PARIS.

The plaster may be made to "set" very quickly by mixing it in warm water to which a little sulphate of potash has been added. Plaster-of-Paris casts, soaked in melted paraffine, may be readily cut or turned in a lathe. They may be rendered very hard and tough by soaking them in warm glue size until thoroughly saturated, and allowing them to dry.

Plaster of Paris mixed with equal parts of powdered pumice stone makes a fine mold for casting fusible metals; the same mixture is useful for encasing articles to be soldered or brazed.

Casts of plaster of Paris may be made to imitate fine bronzes by giving them two or three coats of shellac varnish, and when dry applying a coat of mastic varnish, and dusting on fine bronze powder when the mastic varnish becomes sticky.

Rat-holes may be effectually stopped with broken glass and plaster of Paris.

The best method of mixing plaster of Paris is to sprinkle it into the water, using rather more water than is required for the batter; when the plaster settles pour off the surplus water and stir carefully. Air bubbles are avoided in this way.—*Boston Journal of Chemistry.*

HOW TO SMOKE MEAT.—W. R. Brooks gives the following simple, but very effective, smoking arrangement for all kinds of meats, especially hams, shoulders, and bacon. The smoking is effected in a very thorough manner and in a short time. The writer had for his morning breakfast some ham which was smoked in a contrivance precisely similar to this, in six hours. The arrangement can be made by anyone without the least trouble, and it is sure to "work" every time. The device consists of a barrel of any suitable size. An ordinary barrel will smoke four or five moderate sized hams or shoulders. Both heads are removed and a movable cover provided for the top. This may be of boards, or an oil cloth or tight blanket will answer. A short trench is dug, in which is laid a length of old stove pipe. A larged excavation is then made, a few feet distant from the barrel, in which a pan of burning cobs or chips can be placed. This is covered by a tightly fitting plank. One end of the stovepipe communicates with this excavation; over the other end the barrel is placed, the earth banked up around the bottom of the barrel and over the stovepipe, to keep all tight. The meat may be suspended from a stick laid across the top of the barrel, and then all covered tight with an oil cloth or blanket. On placing a pan of smoking cobs or chips in the place provided, the smoke passes through the stovepipe into the barrel, filling it with a dense, cool smoke. Should the support of the hams, etc., break, the latter cannot be hurt by coming in contact with the fire or ashes, as sometimes happens in the regular smoke house.

RED FIRE.—There are certain recipes which, though often published, are still continually called for; and among these is "red fire," so much used in fireworks, amateur theatricals, and the like. The following is commended as both safe and cheap: Take by weight one part of shellac and four of well-dried nitrate of strontia; mix thoroughly in an unpowdered condition; heat in a tin dish to the melting point of the shellac; after cooling, the semi-fused mass is to be pulverized. This is not expensive, is safe, without tendency to explode, and burns quietly, slowly, even when strewed on damp ground, and produces a very good effect. The mixture for red fire is usually composed of nitrate of strontia, chlorate of potash and sulphur; this frequently takes fire spontaneously, especially when flowers of sulphur and imperfectly dried nitrate of strontia are employed.—*Boston Journal of Chemistry.*