moreover, as I have endeavoured to show in the book supplying the text to the article upon which I am commenting, important consequences flow out of this theory, which consequences are themselves strong arguments in favour of the probability of this theory—consequences which show that electricity, instead of being a mere accident, may be an all-important agent in vital phenomena, an agent in many cases doing work which has been wrongly attributed to life.

The subject, no doubt, is difficult enough, but its difficulties, in the main, disappear when once the threshold of the inquiry is crossed; and my object at present is to ask my readers not to be deterred from entering by any terrors connected with the “dweller on the threshold”, but to enter boldly, and then to do me the justice to weigh my argument as a whole, and not in part, and to reserve their judgment until they can find time to read what I have myself written on the subject.

EXPERIMENTS WITH CARBOLIC ACID.

By ANGUS MACKINTOSH, M.D., Callington.

IN the interest of science, as bearing specially on the effects of carbolic acid on organic substances, I desire to record a few experiments, with their results, which I carefully performed with carbolic acid in November last, with the view of proving further to my own satisfaction certain chemical and physiological changes that I have observed in treating ulcers and severe surgical injuries with the acid. The results at which I arrived were published last year; and, in consequence, Messrs. F. C. Calvert and Co., the well known chemists of Manchester, kindly forwarded to me several samples of the different preparations made by them, to be tried in small-pox, etc. I have now tested them in many cases of small-pox with almost unparalleled success, and also in various surgical operations; and, in justice to Messrs. Calvert and Co., must say that I consider their preparations immensely superior to any other of the acid yet given to the profession.

Having had reasons for years to question the accuracy and correctness of the germ-theory of disease, and of the *modus operandi* of the antiseptic system of treatment, so ably brought before the profession by my respected teacher, Professor Lister, I last year called the attention of the profession to the fact that the beneficial effects of carbolic acid on wounds, etc., were not to be attributed solely to the destruction of atmospheric germs, but mainly, if not completely, to the chemical and stimulating effects of it on the constituents of the blood and surrounding parts. The following experiments confirm the opinion then expressed.

CLASS I. Experiment 1.—On November 8th, 1870, I mixed a quarter of a pound of bullock's blood (fresh) with two ounces of F. C. Calvert and Co.'s carbolic acid No. 5 (proportion, 10 of water to 1 acid), and covered the whole so as to admit no air. The temperature was 50 deg. *Result*, July 10th, 1871: No signs of putrefaction.

Experiment II.—On November 8th, 1870, I mixed a quarter of a pound of bullock's blood (fresh) with two ounces of Calvert's carbolic acid No. 5 (proportion, 10 of water to 1 acid), and left the whole uncovered and exposed to the air. The vessels used in this and the previous experiment were placed side by side in the same apartment. *Result*, July 10th, 1871: Not the slightest signs of or tendency to putrefaction.

Experiment III.—On November 9th, 1870, I weighed two ounces of lean fresh beef, and placed it in a pot with two ounces of carbolic acid (Calvert's No. 5, 10 water to 1 acid), and covered the contents completely from the atmosphere. *Result*, July 12th, 1871: The meat was perfectly free from putrefaction.

Experiment IV.—On November 9th, 1870, I weighed two ounces of lean fresh beef, and placed it in a pot with two ounces of carbolic acid (Calvert's No. 5, 10 water to 1 acid), and left the contents exposed to the air in the same apartment with Nos. 1, 2, and 3. *Result*, July 10th, 1871: There was no offensive odour nor putrefaction.

CLASS II. Experiment v.—In January 1871, I excised from a man's left arm a non-malignant tumour weighing a pound and a half, and dressed the wound with thin muslin and Calvert's carbolic acid No. 5 (proportion, 30 of water to 1 of acid). The acid solution was dropped freely over the muslin many times during the day. The wound healed without suppuration or putrefaction.

Experiment VI.—I amputated an old man's middle finger in April 1871, and dressed it in the same way as No. 5, with thin muslin, dropping the acid solution freely over the muslin several times throughout the day. The result was a perfect cicatrix, without any appearance of pus, suppuration, or putrefaction.

Experiment VII.—A miner had both arms and face burnt in consequence of an explosion whilst blasting. The face was treated with linseed-oil and linseed-meal poultices, and afterwards with oxide of zinc

ointment. A small quantity of pus could be detected. The arms were treated with carbolic acid and linseed-oil, 1 to 20. The muslin (the only covering) was always kept wet with the oil and acid. The result was a complete cure, without any pus or putrefaction.

These experiments, in combination with those which I published last year, have completely convinced me that the detailed plan of dressing wounds recommended by Professor Lister is absolutely unnecessary for the object of healing wounds by the first intention or without the formation of pus; and that the germ-theory of disease is, correctly speaking, an error.

In the first class of these experiments, I treated the blood and beef with exactly the same quantity of the acid solution, in the same proportion; and sealed one so as to exclude the contents completely from the atmosphere, and left the other exposed to the atmosphere. Under these opposite conditions, both, in the course of eight months, presented almost the same appearance, and no appreciable distinction could be recognised between their odours. There were no marks or signs of putrefaction in either.

The second class of experiments also gave the same result, and shows that only careful attention and regular application are required to produce always similar effects. I used the muslin cloth, so as to allow a free current of air to all parts of the wounds. I firmly believe that the real difference in healing with or without suppuration is chiefly, if not altogether, owing to regularity in the application; and that the beneficial effects of the acid are to be principally attributed to its chemical and stimulating influence on the constituents of the blood and other parts concerned.

NOTES ON THE TREATMENT OF INSANE PATIENTS IN PRIVATE PRACTICE.*

By D. YELLOWLEES, M.D., Medical Superintendent of the Glamorgan County Asylum.

IF we could obtain prophetic knowledge as to the effects of remedies, or could understand a case as fully at its commencement as after we had watched its progress, this unattainable knowledge would often modify our treatment. Possessing unusual opportunities for observing insanity in all its phases, and for watching the progress of cases of which others have seen only the commencement, it has occurred to me that this special experience, in so far as it relates to home-treatment, might be usefully summarised. I hope no one will construe my remarks as reflecting on the treatment of others, or will suppose that I wish to assume the office of an instructor: nothing can be further from my intention. I know well the extreme difficulty—often the impossibility—of properly carrying out the treatment of the insane at their own homes; and it is with a view to lessen, if possible, this difficulty, that I submit the following notes.

Insane patients treated at home are apt to get—

1. *Too much narcotic medicine and too little general treatment.* This is often the case, and very naturally. The mental excitement is the most prominent symptom, the one which most alarms the friends, and for the abatement of which they are supremely anxious. Even to the practitioner, the brain-disturbance is apt to eclipse the other symptoms, and to receive undue or almost exclusive attention; whereas treatment may be urgently required for the amenorrhœa, the dyspepsia, the constipation, or other coexisting disorder, of which the brain-disturbance is probably in great measure a result. Relieving a sluggish liver, or restoring the functions of a neglected skin, often allays excitement better than any quantity of sedatives. When sedatives are necessary—and they are often most necessary and beneficial—chloral hydrate, bromide of potassium, or bromide with cannabis Indica, should generally be first used; they often answer admirably, and the injurious general effects of more direct narcotics are avoided. I am satisfied that the recovery of curable cases has often been retarded, and the condition of hopeless cases aggravated, by the undue use of opium. On the other hand, it is often of great value.

2. *Too much depression and too little support.* This is a frequent phase of home-treatment. Antimony, alone or with morphia, is often a favourite remedy; and the friends are always anxious to aid in keeping the patient low. This may, perhaps, be wise treatment in some cases; but it is very certain that brain-excitement is usually a result of *asthenia*, and requires support far oftener than depression. I know no form of excitement that is aggravated by an ample supply of the most nourishing and wholesome food. In every case it is an essential element of proper treatment, and in many cases a liberal addition of stimulants is the best sedative we can use.

* Read at the annual meeting of the South Wales and Monmouthshire Branch, July 5th.