blood, and is a very valuable manure. Nantes, and the seven adjoining counties, furnish annually twenty millions of pounds of this substance. In certain parts of Peru, the soil, which is very barren, is rendered fertile by a species of manure called *guano*; this is nothing more than the excrement deposited by immense numbers of aquatic birds in some islands of the South Sea. When a small quantity of this substance is placed on a soil composed merely of white sand and potter's clay, it furnishes an abundant crop of maize. The soil thus prepared contains no other organic matter than the *guano*, which is composed of urate of ammonia, oxalate of ammonia, phosphate and carbonate of ammonia, and some earthy salts (Fourcroy, Vanquelin). It fetches a very high price in England (£2 8s. for 200 lbs); but if we can believe the reports of the English merchants, several agriculturists have found their benefit in employing it. The *guano* of Peru has been recently introduced into France under the name of *columbine*, but true *columbine* (excrement of pigeons) is even richer than *guano* in nitrogen, containing 80 to 83 per 1,000. The Flemish agriculturists esteem the true *columbine* very highly, and farm the pigeon-houses of Picardy every year for the purpose of exporting it; they employ about four pounds worth of it for every acre (French).

In proportion as the commerce of manure became a matter of importance, the various substances employed have undergone every kind of adulteration. Since the year 1824 the animal black of sugar factories has been much sought after; but now the adulteration of this substance is so general, that it is impossible to obtain it in a state of purity. Indeed, the adulteration was carried to such a pitch that the executive government was forced to interfere, and appoint persons to analyse the suspected merchandise. Little benefit, however, accrued from this measure, because the experiments were conducted in too rough a manner. A certain quantity of the substance having been weighed, was exposed to a strong heat in a platinum or earthen capsule; in this way the loss of weight was supposed to indicate the proportion of organic matter contained in the mass. But the most common adulteration—viz, the admixture of turf-dust, escaped detection by this method.

The following is the method now generally employed for the purpose of analysing different kinds of manure. The first point is to obtain a sample which represents correctly the composition of the whole mass; this is easily effected by taking about 200 pounds weight from the mass, mixing them well together, and then dividing them into ten portions, which are also carefully powdered and sifted. Then a small quantity—say ten, five, or two scruples, is taken from each. The quantity selected is then completely dried in a glass tube (one end of which is closed) plunged in oil heated to 100° or 120°; the tube communicates with another tube full of chloride of calcium, and the latter communicates, in turn, with a bell placed on the stand of a pneumatic machine. When the apparatus is thus arranged and a vacuum formed, the whole of the water contained in the sample is expelled and absorbed by the chloride of calcium; when there is no longer any trace of aqueous vapor, the solid matter is weighed, and submitted to combustion in one of Liebig's tubes, with some oxide of copper. The carbon

is thus reduced to carbonic acid by combining with the oxygen of the oxide of copper; the hydrogen unites with a portion of the same oxygen and forms water; the carbonic acid is received into a tube filled with a solution of caustic potash, which saturates the acid. The water is partly condensed in the globular portion of the tube and partly absorbed by the chloride of calcium contained in a tube fixed to the end of the former one. While this is going on, the nitrogen passes through the alkaline fluid contained in the *tube à boules*, is dried in passing through the chloride of calcium, and is received into graduated bells which indicate the exact volume of the gas. We must not forget that the sample may contain a small quantity of oxygen; to obviate this source of error, a small leaf of metallic copper is fixed in the combustion tube, and absorbs the gas as fast as it is disengaged.

The mode of analysis just described may likewise be applied to the determination of the quality of any given soil, or, in other words, of the quantity of azotised matter which it contains, for this is the measure of its fertility. In this way the condition of the soil, at the time of letting and at the period of receiving it from the tenant, might be determined in a very accurate manner.

The experiments of M. Boussingault enable us to determine precisely the quantity of azotised matter abstracted from a soil or communicated to it by any given mode of culture.

Corn, as is well known, exhausts a soil more than any other species of vegetable; but this depends not only on the action of the roots of the plant, but because every portion of it is taken away, which, if left to decay on the ground, would have restored to the earth some of the nitrogen extracted during vegetation; besides, corn is not cut until the grain is ripe, and the grain of every species of corn contains a certain proportion of azotised matter. The effects just noticed are not produced by plants, the leaves of which present an extensive surface, absorb all the nitrogen contained in the air, and economise the nutritious elements of the soil. Upon this principle we can explain the excellent results obtained by the extensive cultivation of clover, lucern, &c. Finally, the cultivation of potatoes, which generally precede a corn crop, is attended with many advantages arising from the mode in which the land is worked; while the leaves and useless weeds which remain on the ground are, in practice, considered as equivalent to a quarter part of manure.

EFFECT OF TARTAR EMETIC ON THE GENITAL ORGANS.

TO THE EDITORS OF THE PROVINCIAL MEDICAL JOURNAL.

GENTLEMEN,—In the anticipation that some of your numerous readers may have witnessed similar unpleasant results from the use of the *unguent. antim. potass. tart.* applied externally as a counter-irritant, I am induced to beg your insertion of the following two instances, which have fallen under my notice, in one of which the above ointment was ordered to be rubbed on the chest and in the other over

the region of the liver; in both cases the use of the ointment was followed by a copious crop of pustules all over the scrotum, and no appearance of any or the least eruption on the part where the remedy was applied. Whether this was owing to any idiosyncrasy, or to some specific effect on the genital organs analogous to the action which arsenic exerts on them, I must leave you or some of your correspondents to decide.

In May, 1838, I was consulted by J. M., aged twenty-one, the son of a butcher in this town, who was laboring under symptoms of incipient phthisis; he was ordered a pectoral mixture, and an ounce of tartar emetic ointment to be rubbed on the chest in the usual manner; after a few days elapsed I was summoned hastily to see the patient, when I found him lying in bed with the whole of the scrotum covered with a dense crop of pustules far advanced towards suppuration; I immediately charged him with having applied his hands to the part after using the ointment; but he declared he had not, and prayed urgently to be relieved of the pain, which he described as burning and intolerable; this was successfully combated by cold saturnine lotions, anodyne fomentations, and emollient poultices, &c.

Soon after the above, occurred the following case:—Mr. J. D., aged thirty-nine, a respectable farmer in the neighbourhood, called on me, suffering from pain, tenderness, and slight enlargement of the left lobe of the liver; he was, in addition to other treatment, requested to rub in every four or six hours a teaspoonful of an embrocation containing one drachm of emetic tartar; on the third day I was requested to visit him, and found him precisely in the same state as before-mentioned, with the exception that, being a married man, he was, if possible, the more concerned about the condition of his organs of generation. I likewise charged him with having touched the part with the remains of the embrocation after each application; but he, like the first patient, protested he had immediately washed his hands each time after using the remedy. Strange to say, there was not the slightest trace of any redness or irritation in either instance on the part to which the application was directed to be applied; I therefore concluded that absorption had taken place, and some specific action exerted on or conveyed to the external covering of the scrotum, similar to what is observed in persons who have been laboring in mines containing a great proportion of arsenic, or those who have been exposed to the fumes arising from the consumption or volatilisation of arsenious acid in various trades and manufactures. I mentioned these facts to an eminent practitioner with whom I was connected at the time, and he stated he had only seen *one* instance of the kind during the whole of his long and widely extended practice, and that in this he at first suspected the ointment was accidentally and thoughtlessly applied to the part.

Pereira and Rayer are the only writers whom I have consulted who have touched on this subject. The former gentlemen, in his admirable work on *Materia Medica*, remarks, "Occasionally adventitious eruptions have appeared in other parts of the body, which have been ascribed to absorption of antimony into the system. But I believe, with Rayer, that they arise from the inadvertent application of the ointment

to these parts." But in these two cases I have sufficient reason to believe that this was not the fact. In another passage the same author remarks, "as a local irritant applied to the skin, may be employed in the form of aqueous solution, ointment, or plaster. It is used in the same cases as vesicatories, over which it has the advantage of *not* affecting the urino-genital organs." (*Elements of Mat. Medica*, part I, pp. 419—20.) I may here remark, that I have found the form of plaster more certain, safer, and less liable to be followed by such disagreeable results. Should this effect be often produced, it will prove a serious obstacle to the free use of this useful, but perhaps too common, means of producing counter-irritation, and would be particularly annoying if a similar condition should occur among the more refined of the fair sex.

I am, Gentlemen,

Your obedient servant,

WILLIAM GRIFFITH, M.R.C.S.,

Surgeon to the Oswestry Dispensary.

Church-street, Oswestry, Salop,

November 5, 1842.

TREATMENT OF UNUNITED FRACTURE.

TO THE EDITORS OF THE PROVINCIAL MEDICAL JOURNAL.

GENTLEMEN,—The publication of the letter in your last week's Journal, from Mr. Worthington, on the treatment of ununited fracture, has induced me to send you the following case, as I think it shows that union of bone, although long delayed, will at last happily take place.

On the 23rd of April last I was sent for to attend a Mr. D., of this parish, yeoman, who had met with an accident, from a kick from one of his horses; being absent from home, it was two hours before I arrived at his house, and, on making inquiry, was informed they were afraid his left leg was broken. On examining the limb very minutely, for tension to a certain extent had taken place, I found a double fracture of the tibia, about four inches apart, no doubt occasioned by the tip and heel of the horse's shoe. The fractures were reduced in the usual way, and the patient went on well for a month, at which time his wife called on me, and said her husband's leg grated. I immediately went to the patient's house, and found that on the least motion of the limb I could hear distinctly a crepitus; on inquiring how long they had discovered it, I was informed about four days previously, on his getting out of bed (contrary to my express orders), when he found his leg quite powerless. I removed the splints, and found that no union had taken place in the upper fracture, but the lower one going on well; I replaced the splints, and tried to convince him of the absolute necessity of the greatest quietness; but being of restless disposition, he did not attend to it, for at an end of the week, and five from the accident, I received the same message, and found the fracture precisely in the same state as it was before. No union having taken place and the crepitus being quite distinct, I now placed a large pad one on each side of the fracture, so that the pressure of the splints was immediately on it. Having well secured the limb, and the patient, now convinced of his error, keeping perfectly still, I had