

MINERAL SUCCEDANEUM FOR STOPPING DECAYED TEETH.

To the Editor of THE LANCET.

SIR:—I have been recently applied to by several friends, members of the medical profession, for information as to the nature of the substance used by dentists for filling cavities in decaying teeth, under the names of "*mineral succedaneum*," or "*marmoratum*," "*mineral cement*," &c. &c.; and finding, on inquiry, that their curiosity on this matter had been stimulated by an advertisement addressed to the profession which has of late appeared in your advertising columns, I offer to your use, should you deem it of sufficient importance, some account of the composition and preparation of this mis-called and much misused material.

It will, I conceive, appear a somewhat startling fact to many, and especially to the writers of the very able papers on salivation, which have lately appeared in your Journal, that a principal ingredient of this *mineral succedaneum* is *quicksilver*. The remainder is a mixture of fine filings of bismuth, tin, and silver, or of bismuth and silver, or of silver only; or, I should say, alloyed silver, inasmuch as the ordinary practice is to file up a coin, a half-crown for instance, for this purpose. Some employ a pure precipitate of silver, which forms by far the most smooth and most durable stopping.

The mode of preparation for use is this:—A sufficient quantity of the filings, or of the powdered silver to fill the cavity under treatment, is thrown into a clean mortar; to this is added a few grains of quicksilver; the composition is then quickly rubbed down with the pestle, until it forms a soft paste—a metallic amalgam, in fact. If left in this state (whether in the mortar, or transferred into the cavity to be filled, matters not) it will in a few minutes become a hard mass, of a dull whitish colour. In this state it will remain for an indefinite period if exposed to the atmosphere only; but, if subjected to the action of the fluids of the mouth, it quickly assumes a bluish-black tint, and greatly discolours the tooth into which it has been introduced. The quantity of quicksilver thus administered to a patient in a stopping of average size, is from three to four grains! The quantity of quicksilver contained in a packet which I recently purchased from an advertiser of "*mineral succedaneum*," and which was stated on the printed envelope to be sufficient to fill one tooth, was ten grains!

The use of this amalgam for filling decaying teeth has long been entirely abandoned by the American dentists, and it is now very little employed by the respectable members of the profession in this country; by some

few not at all. There are some cases, however, in which its employment, *though very differently prepared*, may be deemed justifiable, at least until some more eligible substitute may be brought forward. These cases I have detailed at length in my work on the Structure, &c., of the Human Teeth, which I published in March last. The difference in the mode of preparation is as follows:—The pure precipitate of silver is used. The amalgamation with quicksilver being completed, the mass is pressed forcibly through chamois leather, again and again, until it becomes dry and dense, very little quicksilver remaining disengaged. In this state it hardens so rapidly, that it requires very great dexterity to transfer it to the cavity to be filled in sufficient time. If well and carefully done, however, it forms, as I have before said, a smooth and durable stopping. Still there is a small proportion of quicksilver remaining, and in that consists the objection to this amalgam.

I will devote the earliest leisure time I may have to the communication of such ill effects from the use of this material as I have noted down, premising that I have only used it in the dry state, as described above, and that but very sparingly. In the mean time, I should feel especially obliged to any one of your correspondents who would inform me on the following points:—

What is the cause of the hardening of the precipitate of silver, after amalgamation with quicksilver?

What chemical change, if any, has the silver undergone when so hardened?

What additional change is effected by contact of the fluids of the mouth with this material?—I have the honour to be, Sir, your humble servant,

W. H. LINTOTT.

24, Mortimer-street, Sept. 1, 1841.

ANIMAL LIFE AND HEAT.

To the Editor of THE LANCET.

SIR:—In reply to the queries of your correspondent, Mr. Brooks, in his letter to you of the 20th inst.,—"Is there such a quality as nervous energy?" and if so, "what is it?" I beg leave to submit the following essay for his perusal; and for further information on the subject in elucidation of these views, refer him to the paper I had the honour of reading to the Westminster Medical Society, and published in THE LANCET of the 4th June, 1831.

Life and heat are both derived at birth from the parent, but are maintained afterwards by the air and nutriment received into the system from without (through the medium of the stomach and lungs), by the agency of the chemical affinities existing between their constituent particles, and exercised in the appropriate apparatus afforded

by organisation, or the structural endowments of the system, for their development and life's manifestation. The principle of life or nervous power is, in short, electricity, which is evolved from the blood at the extreme point of the circulation in the capillary vessels—the vessels of nutrition, assimilation, and secretion, under the excitement of caloric; and in which vessels caloric is, at the same time, further evolved, for the perpetuation of the process, and is the result of the combination which is simultaneously effected between the oxygen of the blood derived from the air in respiration, with carbon, one of the constituents of the nutriment, received also into the blood from the stomach: and further, be it observed, that this evolution of heat or slow combustion of carbon is attended with an evolution of electricity, and is, in reality, the principal source of its production in the system; for it is a fact, that whenever oxygen enters into chemical union with a body, electricity is evolved, as we see exemplified in the galvanic trough.

And thus the source of caloric and electricity, or vital temperature and nervous energy, being the chemical changes effected in the composition of the blood in the capillary vessels or organic structure; hence the general and equable temperature and vitality, or *organic life* of the system; the same in kind exactly as exists in vegetable creation.

In the animal creation there is, however, to the organic, superadded an animal life, connected with organs of sense and volition, and influenced through the medium of the brain and nerves. This is, however, superinduced by, and wholly dependent upon, the organic life. This leads me to observe, that the nervous system consists of brain and spinal marrow (the latter, however, being a mere prolongation of the former, I shall speak of both under one general term—brain) and nerves. The latter proceeding from, and being connected with the brain, fulfil the office of conveyances of electricity and impressions from and to the brain; and to fulfil both these offices, there are consequently provided two sets of nerves,—one of sensation, and the other of volition; the former proceeding from, and being connected with, every capillary vessel throughout the system, collect the electricity from its source, and transmit it and sensation to the brain,—the common receptacle and general depository of the system, as well as the seat of sensation. The electricity thus brought to the brain, it excites the various operations of the mind, or the organs of sense connected with it, to their respective functions; or is transmitted by the second class of nerves to the muscles of the body for their excitement, at the pleasure of volition; or is conveyed by another pair of nerves—the pneumogastric—to the lungs in aid of the

respiratory function, and to the stomach in furtherance of that of digestion, as well as to the liver and the other abdominal organs connected with digestive and secretive processes, and associated in the formation and purification of the blood.

In addition, however, to those already enumerated, there is another set of nerves—the sympathetic, connected with the heart, stomach, and bowels, and all the rest of the involuntary or vital organs. These nerves are derived from twigs or fibres detached from every nerve of sensation, and are the importers of electricity, before it communicates with the brain: hence the action of the heart in the circulation of the blood, and functions of digestion and assimilation in its formation, being primary in the scale of animal existence to the sensorial and voluntary functions, or those of the brain, are the first to receive an electrical supply, and the last to lose it, as long as any is generated in the capillary system; and hence it is that after the decapitation and apparent death of an animal, vitality in these organs is still maintained for a considerable time; in short, for as long a period as any oxygenated blood is furnished by the arterial trunks for chemical change and excitement of the capillary vessels. And thus it is the arteries are found empty after death; and further, that reoxygenating the blood by inflating the lungs, and imparting heat at the same time to the apparently dead, that resuscitation and animal life is so often restored.

In this brief display of the subject, I hope I shall have satisfied Mr. Brooks that there is such an influence as nervous energy; and for the facts and reasoning which I might have adduced in support of my explanation of its nature and source, I beg leave to refer him to the paper previously alluded to in your pages of the 4th June, 1831. I am, Sir, your obedient servant,

C. SEARLE, M.D.

Bath, August 24, 1841.

COLOURS OF THE SKIN IN MAN.

To the Editor of THE LANCET.

SIR:—In a letter on the origin of the different races of man, one of your correspondents has observed, “that the different colours of the skin are but the effects of living in different climates;” as a proof of which he states that the Jews partake of various degrees of colour, according to the place they inhabit, and upon the coast of Malabar are jet black. It would be absurd to deny the vast influence that climate exercises upon the human race; but we must look for other causes in order to account for the differences which so strongly mark the varieties of man. A West Indian climate may act powerfully upon the skin of an European; yet the offspring of white parents