came upon a fine white marble pavement, laid in Greek fashion ou a lower bed of black marble, the very floor of the temple itself. The remains of the thirty-six massive columns, sixty feet high, perfect in carving and decoration, were dug out and subsequently sent to the British Museum. The excavations will probably be continued until many other vestiges of the magnificent temple are brought to light.

ASSYRIA.

The excavations at Nineveh, carried on many years ago by Layard and others, have lately been continued by Mr. George Smith, of the British Museum, in the interest of the London *Daily Telegraph*. The most important portion of the discoveries lies in the engraved stones from which Mr. Smith deciphers the history of the nation. Deeds of property and private contracts have been found, inscribed and covered with clay, on the exterior of which the substance of the agreement was stamped as a memorandum. No less a document than the will of Sennacherib has been met with, in which that monarch leaves all his "chains of gold, heaps of ivory, a cup of gold, crowns and chains with them, all the wealth that [I have] in heaps, crystal, and another precious stone, and bird's stone" to his son Esar-Haddon. Fables of the beasts have been found; also chronological tablets which enable us to restore the chronology of Western Asia from the ninth to the seventh centuries B.C., and to correct the corresponding dates in the Old Testament, hitherto the despair of historians.

CYPRUS.

General Di Cesnola is still prosecuting researches for pure Phœnician relics on the island. The collection, at present located in the Metropolitan Museum of Art in this city, is the result of seven years' exploration; and as it includes the first known works of Phœnician art, is of the highest interest and value. The island of Cyprus is one vast graveyard, Greek graves being made in the soil which, in the lapse of ages, had obliterated the tombs of the earlier inhabitants. General Di Cesnola identified the site of ancient Idalium, which was destroyed about 500 B. C., and subsequently found the Temple of Venus at Golgos. He then proceeded to excavate the supposed sites of other cities, and in so doing made the collection now on exhibition in New York. This includes a large amount of pottery, among which is a colander still bearing a white stain which chemical analysis has proved to be that of milk. There are also a number of statues, hewn from calcareous stone and very perfectly preserved, beside a large variety of specimens of ancient glassware, ornaments, etc.

SCOTLAND.

Mr. J. S. Phené, F.S.A., has opened a number of mounds in Scotland, which, it appears, served as tombs for the early inhabitants. These tumuli are of exactly the same construction as the similar heaps found in Mexico. Some served as monuments; and in one opened at Largo, Scotland, were discovered particles of bone calcined and mingled with the *débris*. Evidence has been found that there the Norse king, Haco, after his great battle with the Scots in 1263, ordered the ships stranded on the shore to be burned. The bodies of the dead were thrown into the burning pile, together with armor, etc.; and when all was consumed, the mound was formed from the ashes.

THE RUINS OF OPHIR.

Mr. Mauch, an African traveler, believes that he has found the veritable remains of Scriptural Ophir, in lat. 20° 15′ S., long. 26° 30′ E. One edifice is still 30 feet high, and is formed of granite with beams of cedar. It stands on a mountain, the sides of which appear to be terraced. It is built in imitation of Solomon's temple. The second structure, supposed to have been the residence of the Queen of Sheba and her suite, is circular in form, with labyrinthine walls built without mortar. It is still known to the natives as the "House of the Great Princess."

Excavations are now in progress in Athens, Greece; and recent researches in Malta and Sicily have resulted in the discovery of a variety of tombs of Etruscan and Phœnician origin, regarding which we note no especial points of interest.

Correspondence.

Hardening and Tempering Tools.

To the Editor of the Scientific American:

In reply to your correspondent John T. Hawkins, whose letter appeared in your last issue, I would say that he is correct in stating that the difference in the degree of hardness to be obtained, simply by "the different temperatures at which the tool has been originally dipped," is practically very slight, providing, however, that the tool is heated to a red heat. Hence my instructions were to heat the tool to a "moderate red heat," but "not hot enough to cause it to scale," a range of degree sufficient, I think, for all practical purposes.

With reference to the colors produced upon steel, in the process of tempering it, being due to the formation of a film of oxide, it is not my purpose to treat upon the chemistry of metallurgy, but to confine myself to workshop practice as the workman understands it. "The element of time and the greater or less facility for access of the oxygen of the air," I have not found to be of vital practical importance in tempering, probably from the following causes: The tempering of steel tools should proceed slowly, because it is not so easy to determine and to obtain the precise shade of color desired when the lowering of the coloring proceeds rapidly as when it proceeds slowly. A uniformity of color is not so easily or accurately obtained under a rapid as under a leisurely lowering of the color, especially in the case of taps or other tools having protruding parts or edges, because such parts receive the heat (and hence temper) more readily than the body of the tool. Rapid tempering I therefore always discard. The method commonly employed to impart an even and particular degree of temper to tools excludes the air from the tools to a much greater degree than does the tube process given by me, although the color is, in that case, the universally accepted test. That method is to place the tools in sand heated over the fire (and kept there during the process), and covering the tools with the sand during the first part of the process, and only removing them (at the later stages) sufficiently to expose the upper surface to view that the color may be seen. Excellent results are claimed for and obtained by this process. My objections to it are that it is often advantageous to make one part of a tool softer than the rest (such as the square ends of taps, reamers, etc.), which is very difficult to accomplish in the sand process, and also that the tube process produces a more uniform temper, because the tool can be revolved in the tube, and thus receive the heat evenly all over; whereas the sand is always hotter at the bottom than at the top, and sometimes, from unevenness in the degree of heat in different parts of the fire, and from the uneven depth of the sand, hotter in one part than in another.

To dip a cold chisel in the water in such a manner as to only require "a few seconds" to bring the cutting edge to a blue, as your correspondent asserts may be done, is an error, because in such a case the band of blue will be very narrow, and but very few grindings of the chisel will remove the part tempered. A chisel should be dipped in the water about three eighths inch deep, and held there about ten seconds, and then suddenly immersed, say another three eighths inch, and withdrawn, in which case the band of blue will be a broad one, and the temper of the chisel will remain about the same after many grindings.

If, however, from an error of judgment in heating or dipping, it becomes necessary to impart to the chisel additional heat, to assist the tempering, it should not be imparted by holding the chisel over "the clear coals," because, in such a case, the extreme end of the chisel, from its excessive exposure to the heat and from its being the thinnest part, receives the heat, and tempers, more quickly than the metal behind it; hence, when the extreme end is at the proper degree of temper, the metal behind it is too hard and breaks, when used, in consequence. A better method of imparting additional heat is to take a piece of hot coal from the fire and hold the chisel over it about an inch from its end.

New York city. JOSHUA ROSE.

To the Editor of the Scientific American:

In my communication on "Hardening and Tempering Tools," published in your issue of August 1, I notice three typographical errors; and as two of them are quite serious ones, particularly the last, I shall ask you to correct the two last mentioned below in your next.

1st column, 18th line from bottom, for "takes" read *taken*. This is not very important. 1st column, 22d line from bottom, for "temperature" read *temper*. 2d column, 29th line from top, for "strongly" read *slowly*. This last is almost exactly the reverse of what is intended.

62 Cannon street, New York city. JOHN T. HAWKINS.

Treatment of Erysipelas.

To the Editor of the Scientific American:

I have just been reading an article on erysipelas (page 40, current volume), and it induces me to give you a remedy. It is powdered charcoal mixed with thick sour milk, outwardly applied with a swab as often as the itching occurs.

One of my children was attacked with erysipelas at noon. In an hour his eyes were entirely closed, and his face was frightful to be seen. I made constant application of the above, and at 3 P.M. the swelling had subsided, leaving his face full of wrinkles. The disease then passed to his neck and thence downward till it traversed every inch of him, getting to his feet at midnight, twelve hours after its first appearance. He then slept quietly till morning, when he appeared languid; a dose of senna was given, and the next day he appeared as well as usual.

I will add that erysipelas is hereditary in my husband and in myself. I have used this treatment many times, and always with the best success. ITALIA.

The Relations of Planetary Motions.

To the Editor of the Scientific American:

In your issue of July 11, you refer to some recent researches of mine in regard to the asteroids. The second of the propositions quoted, permit me to say, is an error committed by myself in transcribing from my note book. The following instances of remarkable relations between the mean motions of certain asteroids are especially interesting:

Let $n^{(11)}$, $n^{(50)}$, etc., represent the mean motions of Parthenope, Pales, etc., the numerals in parentheses denoting the minor planets in their order of discovery; and n^{V}, n^{VI} represent the mean motions of Jupiter and Saturn. Let also $L^{(11)}$, $L^{(50)}$, etc., represent the mean longitude at a given epoch, Then

$$n^{(50)} - 3n^{(78)} + 2n^{(11)} = 0 \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (1)$$

$$L^{(50)} - 3L^{(78)} + 2L^{(11)} = 180° \quad . \quad . \quad . \quad . \quad . \quad (2).$$

The exact similarity of these equations to those found by Laplace, connecting the motions of Jupiter's first three satellites, is at once apparent. The origin of the relation, whether we accept the nebular hypothesis or Proctor's theory of planetary accretion, may be accounted for as in Note VII., Vol. II., of Laplace's "System of the World."

But were the relations expressed by (1) and (2) rendered rigorously exact by the mutual attraction of Pales, Diana, and Parthenope? This, to myself, seems wholly improbable. The required explanation is to be looked for in the perturbing influence of Jupiter and Saturn. A comparison of mean motions gives the following equations:

$$2n^{(11)} - 9n^{V} + 7n^{VI} = 0 \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (3)$$

$$n^{(50)} - 3n^{V} + 2n^{VI} = 0 \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (4)$$

$$n^{(78)} - 4n^{V} + 3n^{VI} = 0 \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad (5).$$

Eliminating n^{V} and n^{VI} from (3), (4), and (5), we obtain equation (1). The mean motions are taken from the *Annuaire* for 1874. DANIEL KIRKWOOD.

Bloomington, Ind.

A Queer Looking Prescription.

To the Editor of the Scientific American:

Your article in No. 4 of the present volume, entitled as above, is both sensible and just; and the facsimile of the prescription referred to is indeed a queer-looking thing, but it can be matched by those of a Brooklyn M. D., as a number of druggists can testify.

Thinking that some of your readers would like to know what they were taking, should they conclude to have this recipe compounded, I send an elucidation of it:

"R. Tinct. colombæ, 3 drams.
Mistura camphoræ, 1 oz.
Spir. eth. nitr., 1 dram.
Aqu. menth. pip., 1 oz.
Aqua dist., 2 drams.
Capiat cochleare amplum,
ter in die.

JAMES CLARK."

In plain English, it is a mixture of tincture colomba, camphor water, spirit of niter, peppermint water, and distilled water, with directions to take a tablespoonful three times a day. J. M. HUGHES.

187 De Kalb avenue, Brooklyn, N. Y.

Petrifaction vs. Putrefaction.

To the Editor of the Scientific American:

In *The Columbian Register*, of New Haven, June 20, it was stated that the body of Alanson Dyer, who died at Rutland, Vt., in March, 1872, of congestion of the lungs, was recently disinterred and found to be petrified. At death the weight was 145 pounds, and when disinterred, 1,200 pounds, the gain being 700 per cent.

If the body retained the same proportions, it seems to me that the claims of the skin worm are rejected, and that petrifaction takes full sway as soon as the sexton has finished his work.

This bone has undoubtedly been often picked by the savans, but have any of them ever broken the bone, examined the marrow, and found the reasons why? If they have, and will answer the following questions, I should like very much to see their answers in the columns of the best scientific paper in the world: 1. What prevents putrefaction and decay? 2. What elements are combined to produce petrifaction? 3. From what source or sources comes this tremendous accumulation of weight?

Stratford, Conn. TRUMAN HOTCHKISS.

REMARKS BY THE EDITOR.—Putrefaction is not a process of oxidation, but the presence of oxygen is necessary to its commencement. Every case of putrefaction begins with decay; and if the decay or its cause, the absorption of oxygen, be prevented, no putrefaction occurs. The most putrescible substances are preserved indefinitely by enclosure in metallic cases from which the air has been completely removed and excluded. Chemical matter recently liberated is ready to form new chemical compounds. This burial undoubtedly took place in very damp ground. This earth was charged with water containing a great amount of lime, silica, alumina, etc., in solution. The water being taken up by the body during putrefaction, the mineral ingredients accumulated in it and formed a hard, stone like mass.

EVERY day sends to the grave a number of obscure men, who have only remained in obscurity because their timidity has prevented them from making a first effort; and who, if they could have been induced to begin, would, in all probability, have gone great lengths in fame.—*Sydney Smith.*