Correspondence.

Practical Use of a Small Electrical Power.

To the Editor of the Scientific American:

I have a battery (primary) charging two cells of storage battery, which has been in daily use for nearly a year without once failing. From the storage cells I run a motor, one eighth horse power, giving me power enough for *all* dental operations, viz., my dental engine used in the mouth and the lathe for grinding and polishing, the electric mallet and mouth lamp. The power is fully equal to the demand at all times. As you well know, the secondary battery needs no attention whatever, and all that I have ever done to the primary battery is to pour out the water once in t o months, and put in about four pounds of blue vitriol to each jar. There are ten jars of primary coupled to give five volts and about one ampere; as a matter of fact, it will give more than one ampere during the two months, but after that period the quantity lessens. The cost of maintaining this is about 75 cents per month, and it requires about one hour to renew, if all the cells are cleansed at the same time, which is not necessary. The capacity of the storage cells is 4 volts and 35 ampere hours. This summer, before I went on my vacation, I discharged the secondary battery, and in so doing ran the motor without load for six hours continuously before it stopped. J. E. STANTON.

Boston, Mass., October 14, 1891.

[The above account of Dr. Stanton's experience contains information of value to a large number of our readers who are interested in the practical use of electricity in a small way. We would be pleased to hear from others having a similar experience.—ED.]

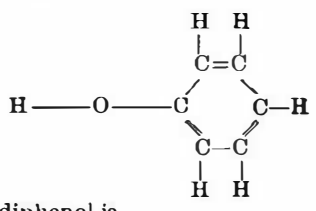
The Formula of Amido-phenol.

To the Editor of the Scientific American:

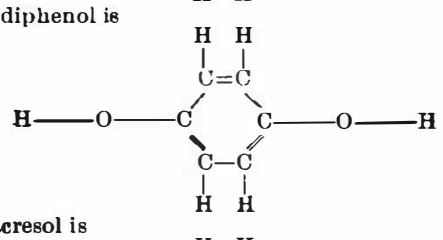
In issue dated October 17, in answer to E. B. C., you give the formula for paramidophenol as

$$C_5H_4(NH_2)OH$$

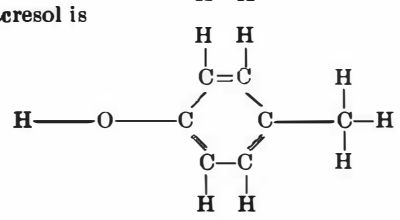
The phenols have six C's. Simple phenol, or carbolic acid, in graphic formula is



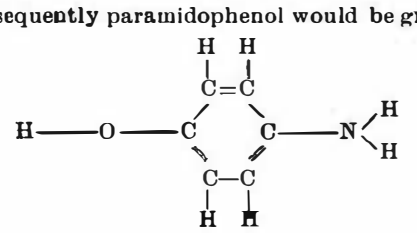
Paradiphenol is



Paracresol is



Consequently paramidophenol would be graphically



or $C_6H_4(NH_2)OH$

instead of $C_5H_4(NH_2)OH$

Am I not correct? HERBERT B. TUTTLE.

[The formula should read as you give it—

$C_6H_4(NH_2)OH$.]

The Tides.

To the Editor of the Scientific American:

If Newton's theory accounting for the tides is correct—of which I presume there is no doubt—can it not be proved, and the amount of the attraction of both the sun and moon upon the earth be ascertained, by the means suggested below?

It appears to me that at new moon a properly adjusted water wheel with a given amount and temperature of water, and under a given head, should make a larger number of revolutions at 6 o'clock than it could make at noon, as at noon the attraction of both sun and moon would be counter to the earth's attraction, and would decrease the weight of the water, while at 6 o'clock their attraction, being at right angles to the earth's, would have no effect upon the weight of the water. WARD STONE.

[Your idea of the relative difference of the sun, and moon's attraction at noon and night is no doubt true; but the direct attraction of the sun's and moon's force does not agree with the tidal development which follows the moon's position by six hours. Whatever the difference is, in the gravity of falling water, it will be least at noon and greatest at midnight at time of new moon; since the moon's mass is only about one-eightieth of the earth's, and its distance thirty times the diameter of the earth, the lifting force at a point upon the earth's surface which has the moon in the zenith, expressed as a fraction of the earth's gravity, equals $\frac{1}{88\,400\,000}$, or a body of water weighing 4,000 tons has a total variation in weight of about one pound, due to the position of the moon, whether in the zenith or nadir. Attempts have been made to observe directly the variations in the force of gravity produced by the moon's action, but they are too small to be detected with certainty by any experimental method yet considered. The differential force of the sun is so much smaller than that of the moon that it may be left out in questions of the above kind, and is only manifest in the problem of the precession of the equinoxes.—ED.]

Is it Mineral Wax?

To the Editor of the Scientific American:

There is a legend among the Indians here that a Spanish vessel loaded with beeswax was wrecked on the beach near here about one hundred years ago. On the beach at the mouth of Nehalem River, in this county, about forty miles south of the mouth of the Columbia River, is found large quantities of wax, having the appearance of a mineral, at first sight, but on closer inspection and with ordinary tests appears to be pure beeswax. In fact it is gathered and sold as beeswax, and one man residing at Nehalem makes a regular business of gathering it and shipping it to Astoria, where he receives the regular market price of beeswax.

It is washed ashore at high tide, apparently having been unburied from the shifting sand bars by the waves, and it is common to see a man plowing on the beach to unearth the treasures of wax. It has also been found at quite a distance from and considerably elevated from the beach, in the black soil, where large trees are now growing. It occurs in pieces of various sizes, from the size of a walnut to one hundred and fifty pounds, and some of the larger pieces are said to have borne inscriptions in some unintelligible language. The Indians use it for torches.

Inclosed you will find a small piece, and if you are unable to determine from this what it is, will send you more, as it is very plentiful in this county, almost every one having samples on their mantelpieces.

W. F. D. JONES.

Tillamook, Oregon, October 10, 1891.

[The specimen is probably mineral wax. The fact that it is found in the soil at a distance from the beach and elevated above the sea level entirely discredits the Indian legend.

The occurrence of mineral wax or resins in the lignite beds of the Northwest and British Columbia has been known for several years. The results of partial examination of specimens were published in the Geological Survey reports. The occurrence in quantity indicates the possibility of a Cretaceous or Tertiary lignite bed in the neighborhood. The wax belongs to the hydrocarbon series allied to the retinites and ambers—the fossil remains from the resinous trees of the Tertiary age.—ED.]

Leprosy in China.

To the Editor of the Scientific American:

I read with much interest an article on "Leprosy" in September 19, 1891, number of the SCIENTIFIC AMERICAN; and after reading the article in question it struck me that your readers perhaps might be interested in knowing what ideas are prevalent with regard to the dreaded disease which formed the substance of the said article in your valuable paper, in a country like China, where it has been flourishing for so many centuries.

Having lived in China for a number of years, and having traveled extensively during that time in the service of the Chinese government, I have often come upon whole districts and towns where leprosy was prevalent; and speaking and reading Chinese fairly well, I made several inquiries, with a view of ascertaining the natives' ideas as to the origin, spread, and prevention of that fearful disease.

On one occasion I came upon whole leper colonies at, and close to, the city of Yen Ping, in the province of Fu-chien. I asked the prefect of Yen Ping Fu if he knew anything about the cause of the disease (which in Chinese is known as Ma Feng) and what steps the local authorities took to prevent the spread of the disease. He answered me that very little was known about the cause, but that leprosy was about as old as China itself. It is, however, probably caused, he said, by "a small animal, but so small as to be invisible to the eye, and on the whole not perceptible to the senses at all." This struck me at the time as very interesting, as it proved that the Chinese had made a shrewd guess—ages before the "civilized West"—at the now so commonly discussed bacillus. The prefect further said that the general idea was that the seeds of leprosy entered the *rice* through the water in certain localities, and that it was through the food that the disease to some extent was propagated, and of course through actual *bodily* contagion! There were numerous asylums at Yen Ping Fu for lepers, but they were allowed to go about a good deal. The lepers in the said district were allowed to intermarry, but no marriage was allowed between healthy people and those suffering from leprosy. I was shown a good many young boys and grown-up girls, several of whom showed no outward signs of the disease, and several of whom even were very good-looking, but who nevertheless all of them had the taint of the disease. The Chinese claim to be able to recognize the existence of the disease in such cases by the peculiar, nearly *abnormally healthy* complexion! The guess at the bacteria is said to have been made many centuries ago; many remedies (all, or most, of which were exceedingly unlikely) have been proposed from time to time, but the prefect said that really there was no remedy, and only one way of preventing the spread of the disease, namely, by keeping the lepers strictly in their asylums and prohibiting marriage of lepers altogether, and thus stopping the spread of leprosy by *contagion* and *heredity!*

There are many superstitious notions in existence in China with regard to the cure of the disease. Thus a Chinese official told me that many of the natives thought that a person suffering from leprosy could be cured by marrying a healthy person of the opposite sex: and great cunning has often been used to conceal the disease, and thus carry out matrimonial plans of such kinds, with a view of curing either the son or daughter as the case might be.

This, of course, proves the ignorance of the masses and also how still further new channels are opened for the propagation of the disease. On another occasion a women offered me and a friend some "peanuts"; an official who was traveling with us rushed up, saying only: "Ma Feng, pu mai," which means: "Leprosy, don't buy," which proves that the Chinese are fully convinced that the contagion can be communicated by touching or eating anything which has been handled by lepers; and it also proves, as your correspondent of September 19 mentions, the great risk one unknowingly runs in buying fruit or any other kind of produce coming from places where lepers are allowed to go about at large. Whatever some "western" physicians may say as to the non-contagion of the disease, I think no sane person will deny that the experience gained through *thousands* of years in a country like China must and does prove something, especially as after all most of our present knowledge of medicine is based on observation and tradition. Besides, the Chinese knew the use of vaccination as a preventive against small pox more than six centuries ago; and, although they of course do not possess our knowledge of chemistry and surgery, they have always been careful recorders of history within their own sphere of knowledge. "V. G."

Vancouver, B. C.

Long Distance Electrical Power.

At a recent meeting of the Engineers' Club, Philadelphia, the secretary read, for Mr. Coleman Sellers, a letter communicating information obtained from recent letters from Switzerland respecting the electric transmission of power from Lauffen to Frankfort, a distance of 175 kilometers, or about 100 miles.

A 300 horse power turbine at Lauffen supplies power to a three-phase dynamo which furnishes currents of 65 volts, which are at once transformed to 25,000 volts and carried to Frankfort by a three-wire line, each wire having a diameter of 4 millimeters.

The wires are carried by porcelain insulators with oil grooves, on wooden poles about 50 meters (164 feet) apart. At Frankfort, the high tension current is retransformed to an alternating current of 65 volts. This current supplied (on the evening of September 14) 1,000 incandescent 16-candle lamps and a three-phase receiving dynamo of 100 horse power.

From considerations of safety, the horse power developed at Frankfort has not yet exceeded 120 horse power, and the tension actually used has not exceeded 15,000 volts, the quantity reaching only 1,500 amperes. The 100 horse power dynamo furnishes at present only 40 horse power to a centrifugal pump.

Owing to the false indications given by ordinary amperemeters and voltmeters, the number of watts recorded is greater at Frankfort than at Lauffen.

Thought Transference.

Professor Lodge, president of the section of Mathematics and Physics at the late meeting of the British Association, used the following language: "May there not also be an immaterial (perhaps an ethereal) medium of communication? Is it possible that an idea can be transferred from one person to another by a process such as we have not yet grown accustomed to, and know practically nothing about? In this case I have evidence. I assert that I have seen it done and am perfectly convinced of the fact."

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