

## Geographical Progress in 1873.

Judge Daly, in an able address before the American Geographical Society in this city, of which he is the President, recently reviewed the progress of explorations and other efforts toward increasing our geographical knowledge, made during the year just ended. The lecture was an exhaustive review of the whole subject and a summing up of the results obtained. The utility of geographical societies as organized means of promoting geographical discovery, as well as the necessity for their existence, is proved from the fact that there is yet one seventeenth part of the globe of which we know nothing except by conjecture.

The region which surrounds the south pole, the antarctic, covers an area of 7,000,000 of square miles. The arctic measures nearly 3,000,000. The unexplored portion of Africa may be put down at least as 1,000,000. The unknown part of Australia is certainly more than two thirds of that amount; and in this connection, attention may be drawn to the great islands of the East Indian Archipelago, stretching from the northeast corner of Asia to New Zealand, occupying the most favored part of the earth, and which have in extent the magnitude of a continent. One of this great group, Borneo, is considered the second largest island on the globe. A strip along the coast of about 100 miles deep represents what we know of it; the interior and larger portion remains unknown. So also of Papua or New Guinea, which is as large and may even be larger than Borneo. Sumatra is 1,000 miles in length, and Celebes and Luzon are inferior only to Sumatra; and there are in addition numerous islands of considerable size, some as large as Ceylon, and thousands of minute islands, many abounding in spices and mineral ores.

Regarding recent

## ARCHÆOLOGICAL DISCOVERIES.

the speaker stated that late excavations made in Rome have revealed that the ancient city, before the Republic, in the time of the kings, was large and strongly fortified, and must have contained an immense population. This is contrary to the impressions of modern historical critics. The foundations of the ancient city have been laid open, which consist of enormous works, many of which were great tanks and wells. The foundations are constructed of oblong blocks of tufa, put together without mortar, the style of building being the same as found in the ruins of Etrurian cities.

Dr. H. Schlieman terminated his excavations upon the supposed site of Troy last summer. He thinks that he has discovered Skaean gate, Priam's palace, and the great wall described by Homer. He writes of his discovery of a great wooden box containing jewels, precious stones, ornaments, and arms, such as battle axes, shields, and an immense goblet of pure gold, with two handles and two mouths, which box, he says, has disappeared. In the island of Delos a whole temple has been laid bare and the ruins of a whole city discovered, and additional excavations, attended with important discoveries, have been made in Pompeii.

A stone has been found on a farm in Parahyba in Brazil containing an inscription, which, upon examination, was found to be in Phœnician characters, which would prove that the Phœnicians had visited America at a very early period.

After fully referring to the various surveying expeditions in Central and South America,

## ASIAN EXPLORATIONS

were noted, and it was stated that the Russian campaign which culminated in the capture of Khiva has produced valuable geographical results. The most important information of changes is the addition of the right bank of the Oxus to the Russian dominions, embracing the country north of that river, east of the Sea of Aral. Forty thousand slaves have been liberated in the conquered territory, and slavery has been abolished for ever.

Mr. Jacob Halevy has explored the southern part of the Arabian Peninsula, through the interior of Yemen, a country little known and where traveling is perilous. His journey extended from Hodegeda, on the Red Sea, in a northerly direction, through the Wadi Flabouna, 18° 55' north latitude.

In this part of the country he found many Sabœan inscriptions, and saw the source of the River Kharid, which runs toward the interior of Arabia and disappears, after fertilizing the numerous oases of the Djaouf. He believes this to be the river which is alluded to in a passage of Strabo as having been crossed by a Roman army, Aelius Gallus, before entering the country of the Sabœans. Innumerable ruins in a crumbling condition, he says, cover the soil on the banks of the Kharid and its affluent, the Medheb.

## THE ANCIENT JERUSALEM.

Concerning the explorations in Jerusalem, the speaker said:

The details of this work, which occupied nearly three years, are too numerous to enter upon; shafts were sunk below the present city in various places to a considerable depth, and discoveries were made of extensive subterranean passages and galleries, winding aqueducts and canals which were cut in the solid rock, chambers, drains, sewers, wells, and tanks. A stream of running water was found, showing that fountains exist far below the surface, and are still running, a circumstance of interest, as there is now a dearth of water in Jerusalem. Inscriptions in the Phœnician characters in red paint were found upon walls, and many objects of interest were gathered, such as lamps, pottery, weights, seals, gems, and sepulchral chests, some of them very beautiful, containing human remains. An attempt was made to determine the exact position of parts of the Temple and the

site of Solomon's palace; but while the investigations have had the effect of disturbing many of the previous theories as to the precise locality of places, they have not been sufficiently certain to remove doubts, or dispense with further inquiry.

## THE PENINSULA OF SINAI

has been surveyed by Professor Palmer and Dr. Drake, and they conclude the locality to be the scene of the events recorded in the history of the Exodus, and its examination has certainly furnished a remarkable corroboration of the truthfulness and accuracy of the Biblical history. The country is extremely wild and rugged, and has one of the most complicated systems of drainage in the world. Formerly it was well wooded, its mountain sides terraced with gardens; its rushing waters regulated and utilized; and this fertility lasted until comparatively modern times. Jebel Musa is considered to be undoubtedly the Mount whence the Law was delivered.

## PALESTINE.

The country lying east of the Jordan and of the Dead Sea has been undertaken by the American Palestine Exploration Society. It embraces the part of Palestine which is the least known, and is in territorial extent three times as great as the country surveyed by the English. It abounds in ruins, inscriptions and objects of great interest, and its exploration will undoubtedly throw a great deal of light, not only upon Biblical history but upon the former history of the whole country lying midway between Ancient Assyria and Egypt.

Lieutenant Steever has spent about five months in explorations east of the Jordan. He has surveyed about 600 square miles, and has prepared a very valuable map. The explorations were in Edom and Moab. Various sites have been satisfactorily identified, and the positions of Mounts Nebo and Pisgah determined. The levels of many important spots were taken, a number of ruins in Moab examined, and interesting inscriptions copied.

## AFRICAN EXPLORATIONS

are represented to be less fruitful in positive results than those of former years.

MM. Compeigne and Marche have undertaken to penetrate Equatorial Africa in the vicinity of the Gaboon. Their object was to trace the course of the Ogoone and the lakes to which it is supposed to lead, one of which is reported to be very large. The last accounts of Dr. Gandy, the commander of the West African Livingstone Expedition, are that he left San Salvador, the farthest point in the Portuguese dominions, for the country east, which is nearly a blank upon our maps. A German expedition, organized by Dr. Bastian and the Berlin Geographical Society, left last spring for the exploration of Loango.

With a glance at the reports of exploring expeditions in Australasia, Judge Daly concluded his survey with a reference to the telegraphic event of the year, which he thinks has been the completion of a line of telegraph across the entire length of Australia, from south to north, from Adelaide in the south to Port Darwin in the north, a distance of 2,012 miles.

The completion of the telegraph across Australia gives a line, from Adelaide to Gibraltar, of 12,462 miles, of which 9,146 miles are submarine. The practical result is that Australia now receives news three weeks earlier than the latest brought by the mail steamers.

## Correspondence.

## Air Poison and its Remedy.

To the Editor of the Scientific American:

The effects of fresh air upon the human system are well known to be renewed strength, increased vital force, and heightened complexion; while the fetid atmosphere of close rooms produces pallor, weakness, and diminution of the mental capacity. It is remarkable that the same body, air, should have such diametrically opposite effects under but slightly altered conditions.

After the discovery, in the last century, of the composition of atmospheric air—which is about one fifth oxygen and four fifths nitrogen—it was ignorantly believed to be the absorption of oxygen by breathing, and consequent relative increase of nitrogen, that made the air of crowded rooms noxious; but analysis abolished this idea, and proved that the relative proportions of the two gases are always the same. The oxidation of the carbon supplied by our food causes the gas exhaled from the human frame to be largely composed of carbonic acid; but the chief impurities of the air, which cause decay and putrefaction of organic matter, are the living vibrios, which multiply so rapidly that, were it not for the eternal compensation of natural forces, they would soon suffocate all other life off the earth. Their fell enemy is ozone, which is oxygen in a negatively electric state, and exists in our atmosphere in a proportion varying from one ten-thousandth to one one-hundred-thousandth. Ozone is generated by lightning flashes, which have been truly said, from time immemorial, to clear the air. The evaporation of saline solutions also disengages ozone, which is always found in increased proportion on and near the sea. Being more dense, and one and a half times more heavy, than oxygen, it descends to the earth, from which the vibrios ascend. It has also a strong phosphoric smell, and has the important property of combining with all bodies, except gold, platinum, and water. This property is its great weapon in the destruction of the vibrios.

The open air is the space in which ozone continually rules,

while the vibrios have the supremacy in close and fetid places where ozone is very seldom or never recognized. Every breath we take in such places begins to poison and to weaken our system, while every breath in the open air neutralizes poisonous agents and renews strength. D.

## The Aboriginal Americans.

To the Editor of the Scientific American:

There is, I think, abundant evidence that the osseous structure of the mound-building aboriginal peoples differed, to some extent, from that of all the present inhabitants of the globe, after making due allowance for individual peculiarities.

In my researches in this country, which was at one period densely populated by the mound builders, I have never seen anything resembling the short, strong bone running from the sixth cervical vertebra to the scapula, mentioned by Mr. R. K. Slosson, on page 244 of your volume XXVIII., and am inclined to look upon such a bone (if found) as a *usus nature*; but I have found several bones that I am unable to classify or pronounce upon, among which are the submaxillaries, of which I wrote you some time since.

I have a genuine mound builder's skull, which, although somewhat decayed, is a marvel to all who behold it and contrast it with what we know of modern man. There are marks on the skull caused by the copper ornaments with which this once noted character (for such he undoubtedly was) was buried. The man who stood under that skull was probably a stranger to disease, and knew no such thing as fear. A rifle ball would hardly fracture or enter his head, if it were to strike it in any way but perpendicularly. There is a peculiar formation where the muscles of the neck were attached, such as none of us ever saw before. This skull is an object of deep interest, and most especially would I call the attention of all phrenologists to a specimen so rare. The copper crown, with which his head was discolored, was so far decomposed that I was unable to save it.

Yellowbird, O.

S. L. N. FOOTE, M.D.

## Glue as a Healing Remedy.

To the Editor of the Scientific American:

For the last twelve or fourteen years I have been employed in a shop where there are over three hundred men at work; and, as is the case in all shops of this kind, hardly a day passes but one or more of us cut or bruise our limbs. At first there were but few that found their way to my department to have their wounds bound up; but after a while, it became generally known that a rag glued on a flesh wound was not only a speedy curative, but a formidable protection against further injury. I was soon obliged to keep a supply of rags on hand, to be ready for any emergency. I will here cite one among many of the cases cured with glue.

A man was running a boring machine, with an inch and a quarter auger attached; by some means, the sleeve of his shirt caught in the auger, bringing his wrist in contact with the bit, tearing the flesh among the muscles in a frightful manner. He was conducted to my department (the pattern shop), and I washed the wound in warm water, and glued around it a cloth, which, when dry, shrank into a rounded shape, holding the wound tight and firm. Once or twice a week, for three or four weeks, I dressed the wound afresh, and it was well. The man never lost an hour's time in consequence. The truth of this statement hundreds can testify to. I use, of course, the best quality of glue.

Racine, Wis.

J. A. FIELD.

## The Hartford Steam Boiler Inspection and Insurance Company.

This company's report for 1873 has recently been received. It is an unusually interesting and important paper, and the brief summary that we give below does but scant justice to its merits.

Inspections in 1873: Internal, 8,511; external, 23,312—total, 31,823.

Defects discovered: Furnaces out of shape, 599; cases of fracture, 1,003; burned plates, 652; blistered plates, 1,737; cases of deposit of sediment, 2,263; cases of incrustation and scale, 2,180; external corrosion, 818; internal corrosion, 333; internal grooving, 206; defective water gages, 561; defective blow-out apparatus, 253; defective or overloaded safety valves, 321; defective pressure gages, 1,470; boilers without gages, 652; cases of deficiency of water, 113; cases of loose and broken braces and stays, and insufficient bracing, 465—total, 13,866.

Boilers condemned in 1873, 178.

Boiler explosions in the United States in 1873, 58; number of persons killed, 139; number of persons wounded, 164.

Cases of distortion and fracture of furnace sheets occur from low water, deposits of sediment, and a cold water feed. It is economy to heat the feed water, because it both saves fuel and prevents wear and tear. Sheets are liable to be fractured, if boilers are blown down when heated. Blisters in plates occur from the use of iron which is not homogeneous. Blisters should be cut off; and if the thickness of the plates is much reduced, patches should be put on. The deposit of sediment gives the most trouble to steam users. When the feed water contains carbonate of lime, it will be deposited in a hard mass, if the boiler is blown down when hot; but it can be washed out, if the boiler is first allowed to cool. Grease in the boilers seems to combine with the carbonate of lime, and sink down upon the plates, keeping the water from them and causing overheating and burning. Feed water heaters, with separating plates or chambers, seem to work well when the water holds solid substances in solution. The deposits of sulphate of lime are the mos

troublesome. Potatoes and slippery elm seem to prevent and remove scale in many cases. Substances containing tannic acid also seem serviceable with some kinds of water. There should be frequent blowing off when these solvents are used. Crude petroleum seems to prevent scale when the water is principally impregnated with sulphate of lime, but is not recommended where the carbonate of lime is the principal foreign ingredient.

External corrosion is frequently caused by the exposure of boilers to the weather, and by leakage and dripping. It is a bad practice to put ashes on top of the boiler, wood ashes being the most liable to produce corrosion. Coatings of felt or calcined plaster can be used with benefit. Ashes are frequently allowed to accumulate in the ash pits of boilers, and, becoming wet, produce corrosion.

Internal corrosion is caused by scale, or by acid in the water. If the latter occasions the trouble, the surest remedy will be to abandon the water and get a supply from another source. The dyes discharged from factories into streams frequently render the water unfit for use in boilers. This difficulty can sometimes be remedied by neutralizing the acid by the use of soda or soda ash. It should be remarked, however, that all the solvents and neutralizers mentioned above should be used with great caution, as their indiscriminate application is frequently productive of more harm than good.

Internal grooving or channeling probably arises from unequal expansion and contraction, in connection with the use of impure feed water. Glass gages are sometimes stopped up by a mixture of grease with the impurities of the water. The lever safety valve is most commonly used, and, under the care of a competent and reliable man, is all that is needed. It should, if possible, be so arranged that it cannot be tampered with. It should be raised every day, in order to prevent corrosion and sticking to the seat. Pressure gages should be tested every few months. The height of the water in a boiler should always be ascertained before starting the fire. It is not unusual to look after the fire first and the water afterward; and in many cases, boilers have been nearly ruined from this cause.

Many boilers are braced imperfectly, or not at all. Boilers are frequently left without examination for months, and the bracing becomes defective. Steam users take too many chances, under the advice of boiler makers who are ignorant or careless.

The above will be sufficient to show that there is no need of mysterious theories to account for boiler explosions. Boilers, with the best of care, will wear out, and the process is much hastened if they are improperly set and badly managed.

The Company employs about 30 inspectors, who inspect the boilers under their care quarterly and semi-annually. Defects, when discovered, are pointed out; and unless they are repaired, the Company's liability ceases.

#### SCIENTIFIC AND PRACTICAL INFORMATION.

##### ADULTERATIONS IN YELLOW AND RED CHROMES.

The yellow and red chromates of lead, employed as pigments, frequently contain sulphate of lead. This substance is insoluble in strong nitric acid, and in this way it can be detected; but a neater and more convenient method, proposed by Dr. Julius Löwe, consists in the use of hyposulphite of soda. The finely pulverized pigment is placed in a moderately concentrated, cold solution of pure hyposulphite of soda, when the sulphate of lead readily dissolves, leaving the chromate unacted upon. After filtering, the filtrate may be tested for lead by adding a solution of the neutral chromate of potash, when the yellow chromate of lead will be precipitated. If it is desired to ascertain the amount of the sulphate of lead present, it may be precipitated by sulphuretted hydrogen gas, or by sulphide of ammonium, as sulphide of lead, which is then purified and converted into sulphate of lead by the use of fuming nitric acid, and weighed. This method is preferable to the one depending on the insolubility of sulphate of lead in nitric acid, as proposed by E. Duvillier recently, since there might be other insoluble adulterations present, as, for example, barytes.

##### THE DETECTION OF BLOOD SPOTS.

M. Sonnenschein states that tungstate of soda, strongly acidulated with acetic or phosphoric acid, throws down albuminoid matters from very dilute solutions. These precipitates, insoluble in a large excess of water, dissolve in alkalies, especially if hot. If defibrinated blood is treated with this salt, a red brown precipitate is formed, which becomes clotty on boiling. All the coloring matter is precipitated. To detect blood spots by this means on clothing, the suspected portion is cut off; and after having been treated with distilled water, the filtered solution is precipitated with the above reagent. The precipitate, washed and treated with ammonia, takes a reddish grey color. If phosphoric acid be present, it must be carefully washed away before treating the precipitate with ammonia.

##### THE TELEGRAPH IN CHINA.

The Great Northern Telegraphic Company has recently established a line between Woosung and Shanghai. Twenty words are sent for a dollar. This is the first successful attempt to introduce the telegraph through the main portion of the empire, as previous efforts have been met with violent opposition from the people, who cut the wires and destroyed the poles.

##### NITRITE OF AMMONIA.

M. Berthelot has recently succeeded in producing this body for the first time in a crystalline state. Nitrite of baryta is placed in sulphate of ammonia. The precipitated sul-

phate of baryta is collected on a filter, leaving the nitrite of ammonia in solution in the liquid. The crystallization of the latter cannot be obtained by heat, as the same causes a rapid decomposition of the substance; hence the liquid is placed under the receiver of an air pump, with very hygroscopic materials. In spite of these precautions, however, and although the operation is conducted at the freezing temperature, about two thirds of the product become decomposed. The balance, however, is pure nitrite of ammonia, crystallized in white needles. The body is remarkable for its explosive properties, detonating violently at 165° 2' Fah., or by reason of a shock, with a force nearly equal to that of nitro-glycerin.

##### A CIRCULAR COMPASS NEEDLE.

M. E. Duchemer has addressed a note to the French Academy, in which he claims that a circular compass needle possesses the following advantages over the usual form:

1. A magnetic power, for a given diameter, double that of a needle whose length is equal to this diameter.

2. The existence of two neutral points instead of one, which has the effect of maintaining the position of the two poles constant; the magnetism seems to be so energetically preserved that even the strongest sparks of a Holtz machine do not cause any displacement of the poles of the magnet.

3. A more satisfactory means of suspending the magnet when it is well mounted and balanced by a plate of agate; it seems then to move as if placed in a liquid.

4. An increase in sensibility of the magnet proportional to its diameter.

5. The possibility of neutralizing the magnetism of the vessel by means of a second magnetic circle, changing the position by an amount calculated beforehand, and thus permitting the compensation of the compass before the sailing of the vessel. This idea was suggested by Captain D. Venie.—*Comptes Rendus*.

##### NEW EXPERIMENTS IN CONVECTION.

The phenomenon of convection of heat in a liquid, consisting in that the superior portion of the mass is always at a more elevated temperature than the lower part, can be clearly illustrated by the following novel experiments:

Two glass tanks are placed before a white surface; one is filled with cold and the other with boiling water. A solution of starch is freshly prepared in a large test tube, and, by the addition of an aqueous solution of iodine, colored a deep blue. The liquid is then warmed until this color just disappears, care of course being taken not to add an excess of iodine, which would prevent this action; and the tube is then plunged into the cold water. The blue color, brought back by the cooling, will appear first in the lower portion of the tube, and will gradually extend upward, thus proving that it is the lower portion of a warmed liquid which first becomes sufficiently cooled to cause a return of the tinge.

In the other tank, containing boiling water, a similar test tube, containing a blue liquid obtained by the addition in excess of caustic potash to a solution of sulphate of copper and tartaric acid, to which a little grape sugar is added, is placed. The formation of yellow oxide of copper begins at the surface of the liquid and descends gradually to the lower portions, showing that it is the upper part which first attains the temperature necessary to cause the re-action which precipitates the oxide of copper.

##### The Fireproof Building Company.

On January 12, a fire test was made of the Fireproof Building Company's concrete, at their works, corner of Corlears and Cherry streets in this city. Below we give the details, which will doubtless be interesting to our readers: The company had constructed a small house, and a model of a mansard roof. The latter was open at the top, and was made with wooden rafters, covered on both sides with the concrete blocks, the inner blocks being 1½ inches in thickness, and the outer ones, 2½ inches. The inner blocks were hollow, and the outer solid. A part of the outer covering was slated, and a small space was covered with plastic slate roofing, which consists of ground slate mixed with a residuum of coal tar until it acquires the consistency of common mortar, and is then applied with a trowel to a double layer of felting, the slate mixture having a thickness of about ¼ of an inch. This was arranged so that the edges were not exposed, being covered by the common slate. A fire was made both within and around this model, and was allowed to burn for 35 minutes. During its continuance, loud explosions occurred, caused by the hard finish breaking off from the inside of the blocks, the material not having been thoroughly dried. When the fire was extinguished, it was found that the ordinary slate had crumbled to a serious extent, while the plastic slate was uninjured. The concrete blocks were apparently unchanged.

The next test was made with the house. This was a small building about 8 feet square, and the same height. It was built near the factory chimney, with a flue running into the chimney. The walls were 7½ inches thick, and an inside wall, also 7½ inches in thickness, was built on one side, a hole being made in the outer wall on that side, so that a thermometer could be inserted. The walls were made of solid blocks. The roof of the building was composed of wooden rafters, covered with solid blocks 4 inches thick, and having blocks, 2 inches in thickness, suspended from the bottoms of the rafters. The floor was constructed in a similar manner. A large fire was made in the house with logs soaked in oil, and was allowed to burn for 50 minutes. After the fire had been burning for 20 minutes, the inner wall had hardly become heated through. The space between the two walls was filled with steam after the fire got well under way. During this test a large block of concrete with three holes in it had a piece of wood put into one, some paper into the

other, and a handful of shavings into the third. The holes were then closed with cement, and the block was thrown into the fire, a bucket of oil being also thrown in immediately afterwards. After the fire was extinguished, a workman, reaching into the building, chipped away pieces of the floor and ceiling blocks. The beams were thus exposed, and they were found to be damp and scarcely warm to the touch. The large block was broken open and its contents were found to be in a similar condition. After this test, the visitors were shown a floor, built of these blocks, and weights were put upon it to prove its strength.

The blocks with which the foregoing experiments were made are composed of cement, consisting chiefly of the hydraulic lime of Teil, which is said to combine great strength with lightness. The blocks used for partitions have been found capable of resisting a crushing force of 800 pounds per square inch, and the weight of these blocks, 4 inches in thickness, is 11 pounds per superficial foot.

We should have stated that the fire was quickly extinguished by water at the conclusion of the tests, and that the blocks showed no signs of cracking, under this severe proof.

Those who have carefully perused the foregoing statements will see that these tests are not conclusive as to the fireproof qualities of the material. As a general rule, buildings do not take fire immediately after completion, and before the cement is dry. It would be interesting to see an experiment with this concrete after it had been thoroughly dried.

##### THE RIBBON POST.

The Ribbon Telegraph Post Company, of Manchester, England, have recently introduced a light and graceful form of iron pole or pillar, constructed as represented in the annexed engraving, extracted from *Iron*. The ribbons are made around a mandrel, which is provided on its exterior with spiral intersecting grooves. The latter form a receptacle for the ribbons, which are wound on by machinery, without twist or strain, and in such a manner that the gradual decrease of the pole is compensated for. The first series is put on from right to left, beginning at the bottom; the next, in the reverse direction, commencing at the top. The latter ribbons, of course, overlap, and are, at this stage of the operation, temporarily secured to those beneath them by bolts fitted in holes previously punched in both, so as to coincide exactly at the points of intersection.

The core of the mandrel is then removed, causing it to collapse, when the pole is withdrawn and placed upon a cylindrical bar, ready for the insertion of the angle irons. These, previously punched, are secured by rivets to the intersections of the ribbons, the temporary fastenings being taken out. The cap, the nature of which depends necessarily upon the uses to which the pole is to be devoted, is then put on; and the base, consisting of various forms, strengthened with extra iron and inserted, for some little distance, with the ribbon and secured to a plate which affords a strong support, is added.

The strength of poles thus constructed is said to be very great. Two, without angle irons, measuring 10 feet by 8 inches, supported a weight of 10 tons without sinkage, deflection or collapse. The total weight of a telegraph post 31 feet long is about 434 pounds.

On rocky ground, these posts can be fastened directly to the surface of the rock; no lightning conductor or earth wire is required, since the poles are themselves conductors; no ladders are needed; they offer small resistance to the wind, and are ornamental and durable. It is suggested that they may be advantageously used as substitutes for the heavy iron pillars or clumsy wooden supports frequently employed in the construction of conservatories, porches, etc.

THE OHM.—The term "ohm" is derived from the name of the celebrated electrician who first ascertained the laws of electrical resistance, and is a measure of resistance of which it is the unit, in the same way as we use the inch or yard in the measure of length. The "ohm," as a unit of resistance, was adopted by a committee of the British Association, many years ago, and is now the acknowledged standard of resistance throughout the world. The ohm represents the resistance of about 210 feet of copper, wire No. 16, or galvanized wire No. 8, unexposed to disturbing causes and in a temperature of 60° Fah.

To pass our time in the study of the sciences has, in all ages, been reckoned one of the most dignified and happy of human occupations.—*Brougham*.

