Correspondence.

Mineral Wool.

To the Editor of the SCIENTIFIC AMERICAN:

In your issue of February 15 appears an article under the title "Danger in Mineral Wool," which is misleading. It is therein stated that "the threads, though very slender, being finer than cotton fibers, are of glass, and pieces of them may, unless the material is carefully handled, get under the nails, or into the skin, causing painful irritation."

The reader inexperienced in the use of mineral wool would naturally infer from this statement that the fibers are brittle and hard like glass. On the contrary, the fibers of mineral wool, when it is properly made, are soft and pliant, and can be handled without danger.

The writer has been, for many years, closely connected with the manufacture and use of this material, and has never known any one to be injured by handling it. Men, continually in the employ of this company for over ten years, have daily handled mineral wool, in the chambers where it is packed for shipment, and in applying it to its various uses, employing their bare hands to compact it in place, in the floors and walls of buildings, in refrigerators, and other places, without injury or discomfort. Neither the writer nor his associates have ever known any one to be injured by breathing dust from it. In fact, mineral wool can be handled with as much safety, and quite as little inconvenience to the handler, as brick, lumber, or other building material.

Cleveland, O. A. H. MASSEY.

Australian Platinum.

The assertion that New South Wales is exceptionally rich in the useful minerals has again become verified by the discovery of valuable platinum deposits at Fifield, in the western portion of the colony, of which the Parkes auriferous region forms part. Platinum has previously been recorded as occurring in the colony in the sea beaches between the Richmond and Clarence Rivers, on the northern coast; in ironstone and decomposed gneiss near Broken Hill, and grains of metal have not infrequently been met with by miners working various auriferous drifts in different parts of the colony. But until the opening up of the Fifield platina deposits, there had been no production upon a commercial scale. The field was first opened up in 1893, though the presence of platinum was recorded many years previously by a working miner, who received government aid to prospect the district. The formations represented are silurian slates intruded by diorite, and fossiliferous sandstones and limestone of devonian or silura-devonian age. The platiniferous lead is a little over a mile long; it varies in width from 60 feet to 150 feet, and is covered with from 60 feet to 70 feet of loam. The precious metals are practically confined to the bed rock and the drift for 3 inches above the bottom. Nuggets which weighed from a few grains up to 5 dwt. have been occasionally found. The crude metal contains about 75 per cent of platinum, and realizes at the present time upon the field 24s. per ounce. The quantity of platinum per load of wash dirt varies from 5 dwt. to 12 dwt., while the total value of the previous metals per load varies from 9s. to 37s. In the vicinity of Fifield, at an elevation of over 100 feet above the lead now being worked, beds of cement and indurated ferruginous shales occur, which are of tertiary age, or even older. These beds contain a little gold and platinum, but not where hitherto explored in payable quantities. Mr. Jaquet, geological surveyor in the New South Wales Mines Department, is of opinion that the precious metals in the recent deposits have been derived from these older conglomerates; that the latter have been disintegrated and ground sluiced by nature, and the deposits now being worked represent the resultant concentrates. Other beds containing platinum and gold probably occur under the flats in the vicinity of Fifield and Burra Burra. The prospecting of these flats, however, will be a tedious operation, since they are for the most part of great extent, and there is nothing upon the surface to indicate the path of gutters below. The development of the field has been much retarded by dry seasons and the consequent shortage of water for sluicing purposes. The Fifield platina lead has already yielded 1,200 ounces of platinum, and the gold obtained upon the whole field since 1893 totals about 1,800 ounces. At the present time 7,000 loads of wash dirt are dumped around the various claims awaiting treatment.—The Colliery Guardian.

A FRENCH statistician has given some interesting figures relative to theaters. Between 1751 and 1895 no fewer than 750 European playhouses were destroyed by fire. The average life of a theater is found to be 22½ years. In striking contrast to the comparative short life of a theater is that of the actor. In spite of late hours, hard work and a Bohemian atmosphere, the average duration of life in the theatrical profession is high.

A NOVEL HAND CAMERA.

The Paris Photo Gazette says: "M. Joux has just lately perfected a new form of hand camera which he has used for several months, and which gives excellent results. One of the principal improvements is what he terms the 'block system.' By this arrangement it is impossible to expose the same plate twice, since the shutter cannot be released until after the exposed plate has been changed.

"The mode of changing the plate is very simple, the construction of the magazine being such as to permit of its returning completely into the box after a plate is

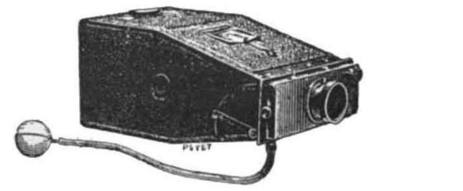

Fig. 1.

changed, and there is no lost space, the whole camera being very compactly built. As shown in Fig. 2, the changing of the plate is effected by pulling on the handle at the lower part of the side; in this way the size of the magazine (one of the sides of which is shown extended) is increased, and the extended magazine draws out with it at the same time the stack of plates, with the exception of the one situated at the top. This one, held back by two small hooks, remains in place and finally falls to the bottom when it is no longer sustained by the rest of the pile. When the magazine is pushed back, the pile of plates slide over the fallen plate at the bottom, at the same time bring-

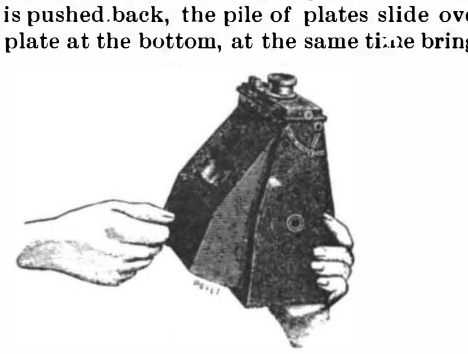

Fig. 2.

ing a fresh plate at the top into position for the next exposure.

"The magazine contains eighteen plates, and an indicator, moving automatically, always shows the number of exposed plates. A clear finder with a cover folds down into the thickness of the box, when the camera is put in its carrying case. The objective with an iris diaphragm is a very rapid Zeiss, F/8; the front part of the box is moved back and forth by means of an ornamented button, and allows a focus of from one meter to infinity.

"The shutter placed between the lenses is of variable speed; it is worked with the finger or with a

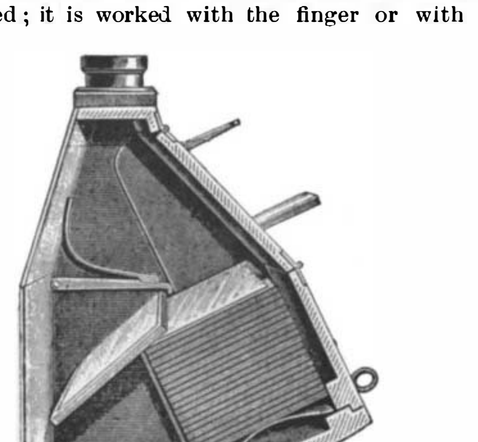

Fig. 3.—POSITION WHEN CHANGING PLATES.

bulb, and permits time or instantaneous exposures. The size of the plate is 6½ by 9 cm. The apparatus, loaded with eighteen plates, weighs 1,500 grammes, 4 lb.; its dimensions are 18 centimeters long, 8 thick and 11 wide."

Introduction of the Thermometer into France.

The history of the introduction of the first hermetically sealed thermometer into France is contained in Cosmos of recent date, with extracts from the correspondence of Pierre des Noyers, secretary of the Queen of Poland. In 1657 he sent a description of a Florentine thermometer to M. Boulliau, of Paris, with a drawing of it, which is reproduced in Cosmos, and in 1658 a specimen of the instrument was sent to Paris, and was apparently used by M. Boulliau on June 25 of that year. This thermometer was graduated by means of small black enameled knobs on the outside of the tube, and was subsequently improved by the Accademia del Cimento.—Nature.

Science Notes.

A large collection of 17,000 stuffed birds and many series of bird skeletons has been bequeathed to the British Museum by the late Mr. Henry Seebohm, the naturalist. It is the most valuable gift made to the natural history section of the museum in a quarter of a century. Its ornithological collection is now the largest in the world, consisting of 300,000 specimens.

A new apparatus for measuring the penetrative power of shot has recently been introduced in Germany by Herr Muller. The shot is fired into a large water trough through a thick gelatine plate, which closes at one end of the trough. The shot holes in the plate immediately close up after the shot has passed through, thus preventing the escape of the water. The bottom of the trough is divided by transverse ribs, which retain the shot where it falls. When the firing is completed, the water is run off and the position of the shots observed.

Experiments made with electricity on the toxins of disease by MM. D'Arsonval and Charrin show that the effect is to attenuate the toxin, converting it into a useful antidote. The toxin of the diphtheritic and the pyocyanic bacilli was subjected to the physical action of currents of high frequency. The current had no direct influence on the vitality of the microbes themselves, but modified the liquid in which they live so as to render it noxious to them. The action of the current, it is asserted, is not chemical, but purely physical. In twenty minutes a virulent poison can be turned into vaccinating matter. Electricity is to be tried on animals infected with the toxins to see whether the effect is the same on living tissue.

According to a paper on "The Temperature Variation of the Thermal Conductivities of Marble and Slate," contributed to the American Journal of Science by B. O. Pierce and R. W. Willson, such a temperature variation does not exist; in other words, marble and slate conduct heat equally well at all temperatures. The result is of some importance to the physics of the earth's crust, and the manner in which it was arrived at displays some ingenuity. Two faces of a slab of marble or slate were kept at different temperatures, and the fall of temperature between one surface and the other was determined by means of thermopiles. Now it is admittedly difficult to determine the temperature accurately at a certain point, and borings lead to error in estimated depth. So the expedient was adopted of slicing the slab into a series of layers pressed together, between every two of which a thermo-couple was introduced. The interstices were only a few tenths of a millimeter, and experiments with different intervals proved that the errors in the temperatures observed did not exceed 1° or 2° Centigrade. On plotting the temperatures and distances, the temperature was found to have fallen uniformly throughout the slab. If the conductivity had been higher at higher temperatures, the fall on the hot side would have been more decided. The temperatures ranged from 350° C. to zero.

Prof. Ira Remsen describes (in Science) a curious case of the accumulation of marsh gas under ice. A number of skaters were on a large artificial lake covered with ice. In places white spots were noticed in the ice suggesting air bubbles. A hole was bored in the ice and a match applied. The thin jet of flame burst up and the gas was found to be marsh gas formed by the decomposition of organic matter at the bottom of the lake. Prof. Remsen suggests that skating ponds illuminated by natural gas are among the possibilities of the future.

Experiments on the spreading of disease by burial made by Dr. Loseuer tend to prove that there is little danger of infection from the practice. Carcasses of animals infected with different diseases were buried as nearly as possible as human bodies would have been. Bacilli of cholera could no longer be found in the remains after 28 days, those of typhoid fever disappeared after 96 days, those of tuberculosis after 123 days, those of tetanus were very virulent after 234 days, but disappeared after 361 days, while the anthrax bacilli continued in full force to the end of the year of investigation. In none of these diseases save that of anthrax did the germs find their way to the surrounding soil and water.

M. E. Chaix, says the Revue Scientifique, wishing to find out whether in calm weather the air of the seashore contains an appreciable quantity of sea salt, made several experiments in Jersey, in August, 1895. In each experiment he caused, by means of an aspirator, a thousand liters (30 cubic feet) of air to pass through a solution of silver nitrate. In every case there was not the least cloudiness of the solution, proving that the air contained no salt. This is not at all surprising, for it is well known that the air contains salt only when the wind carries off salt spray held mechanically in suspension, and derived from the wave crests; the salt of sea water cannot evaporate into the atmosphere. The evident conclusion is that, to obtain the beneficial action of sea air, we must go where the air is sufficiently agitated by the wind to continually hold sea water in suspension. Such localities are infinitely more beneficial and active.

Effect of Temperature upon Strength of Wrought Iron and Steel.

At a recent meeting of the American Society of Mechanical Engineers, Mr. R. C. Carpenter described a series of tests conducted in the testing laboratory of Sibley College, with a view to determine the effect of temperature upon the strength of wrought iron and steel. The tests were made upon a 100 ton Emery testing machine which was built by William Sellers & Company for the Columbian Exposition.

To enable the test piece to be maintained at the desired temperature for a considerable length of time, it was inclosed in a solid block of cast iron, made in two halves, longitudinally, and clamped upon the specimen. A mercurial thermometer, the upper part of which was filled with nitrogen to prevent vaporization of the mercury at high temperatures, was placed in direct contact with the test specimen within the cast iron box, which was heated from below by four Bunsen burners. This method of heating proved satisfactory, and gave very uniform results. The best specimens were turned down to a diameter of one-half inch for a length of 8·8 inches. Thirty specimens of wrought iron and twenty-five of steel were tested, the temperatures varying from 22 degrees to 825 degrees Fahrenheit.

Results.—The general results of the test show that all the curves have a point of contraflexure at about 70 degrees Fah. and another at a temperature not far from 500 degrees. The maximum strength is found at temperatures of 400 to 550 degrees Fah. At temperatures higher than this, all the materials show a rapidly decreasing strength. The variation in strength with change of temperature is marked; thus, for instance, with wrought iron, if we represent the strength at temperature of 75 degrees Fah. as 100, that at from 22 degrees to 25 degrees is 103 to 104, at 500 degrees Fah. is 126, while at 825 it would be represented by 80·7, which is 63 per cent of the maximum strength; beyond this point the strength steadily decreases.

The curve for tool steel has the same general form, the temperature of maximum strength being, however, about 400 degrees. That for machinery steel is similar, but no experiments were made at low temperatures and no critical point was observed.

The elongation in 8 inches of length for the tool steel and wrought iron is shown in curves of the same general form, which agree in showing smallest elongation when at a temperature about equal to the boiling point of water.

TESTS OF WROUGHT IRON SPECIMENS.

Temperature in degrees Fahrenheit.	Tensile strength in pounds per square inch.
23	50,500
82	48,820
250	54,010
320	57,240
475	62,610
625	54,450
825	39,330

TESTS OF MACHINERY STEEL SPECIMENS.

Temperature in degrees Fahrenheit.	Tensile strength in pounds per square inch.
73	63,650
300	68,680
525	116,370
575	105,660
680	58,120
800	55,460

TEST OF TOOL STEEL SPECIMENS.

Temperature in degrees Fahrenheit.	Tensile strength in pounds per square inch.
28	107,990
75	140,080
160	109,650
230	132,310
425	145,200
600	120,170
825	103,740

The author of the paper states that he is largely indebted for the above data to a thesis investigation of O. R. Wilson and R. L. Gordon, of Sibley College.

The New York Botanical Garden.

With the opening of spring, work will be prosecuted on the New York Botanical Garden, whose managers propose to make it one of the finest places of the kind in the world. The plans of the garden have been formulated by Cornelius Vanderbilt, president of the garden, President Seth Low, of Columbia College, William E. Dodge, Judge Addison Brown and Prof. N. L. Britton, and preparations to carry them into effect have been completed. It is expected that by the end of warm weather great advances will have been made toward beautifying the region set apart for the garden.

The garden will comprise 250 acres appropriated from Bronx Park, near the Bedford Park station of the Harlem Railroad. The land abounds in natural beauties, which will, of course, be preserved.

A building with three stories and a basement, and having a total floor space of 90,000 square feet, is to be erected near the entrance to the garden for use as a museum. It will also contain rooms for a library, an economic museum, herbaria, laboratories and also apartments where students may study special subjects.

An immense horticultural house of iron and glass, covering an acre of ground, will be another feature of the garden. A central dome 60 feet high will cover the palm house, and smaller buildings of similar construction will be erected for nurseries and rain shelters.

The trustees of Columbia University have agreed to deposit its herbarium and botanical library in the museum building and the mycological herbarium of J. B. Ellis, of Newfield, N. J., will also be preserved there. Lectures will be delivered in the museum, and the work of the garden will be published from time to time in pamphlets.

Three miles of stone driveways will be constructed within the garden, and two driveway bridges, besides many foot bridges, will span the Bronx. Footpaths will afford access to every part of the garden.

A temporary nursery has been established in the garden, and about 2,500 trees and shrubs are ready for transplanting. The native flora in the garden will be preserved. The trees will be carefully labeled. Aquatic and bog plants will be cultivated in the Bronx River and on the marsh land in the garden.

The engineers have surveyed the garden and made topographical maps on a scale of 50 feet to the inch, showing every detail of the garden. These will be shown on the evening of March 26, at the reception of the New York Academy of Sciences, in the American Museum of Natural History. It is expected that several years' time will be required before all the plans for the garden can be realized.—New York Times.

Trade Marks and Trade Names.

The American Druggist and Pharmaceutical Record clearly defines the nature and extent to which protection is afforded for trade marks and names. A trade mark is a symbol arbitrarily selected by a manufacturer or dealer and attached to his wares to indicate that they are his wares. In selecting such a device he must avoid words merely descriptive of the article or its qualities, or such as have become so by use in connection with known articles of commerce. He must also avoid words—e. g., geographical names—which are descriptive of the local origin of the goods, if other persons have the right to deal in goods of similar origin. When it has become generally known in the trade that this word or symbol has been taken by one dealer or manufacturer to indicate his goods, he acquires a title to it for that purpose, and no one else can use it even innocently.

A trade name is of a different character. It is descriptive of the manufacturer or dealer himself as much as his own name is, and frequently, like the names of business corporations, includes the name of the place where the business is located. If attached to goods, it is designed to say plainly what a trade mark only indicates by association and use. The employment of such a name is subject to the same rules which apply to the use of one's own name of birth or baptism. Two persons may bear the same name and each may use it in his business, but not so as to deceive the public and induce customers to mistake one for the other. The use of one's own name is unlawful if exercised fraudulently to attract custom from another bearer of it.

Trade marks, properly so called, may be violated by accident or ignorance. The law protects them, nevertheless, as property. Names which are not trade marks, strictly speaking, may be protected likewise if they are taken with fraudulent intention, and if they are so used as to be likely to effect this intention.

It has been very correctly said that the principle of the decided cases is this: That no man has a right to sell his own goods as the goods of another. The principle may be expressed in different form by saying: No man has a right to dress himself in colors, or adopt and bear symbols, to which he has no peculiar or exclusive right, and thus personate another, for the purpose of inducing the public to suppose either that he is that other person or that he is connected with and selling the manufacture of such other person, while he is really selling his own. It is perfectly manifest that to do these things is to commit a fraud, and a very gross fraud.

The right which any person may have to the protection of a court of equity does not depend upon any exclusive right which he may be supposed to have to a particular name or to a particular form of words.

His right is to be protected against fraud, and fraud may be practiced against him by means of a name, though the person practicing it may have a perfect right to use that name, provided he does not accompany its use with such other circumstances as to effect a fraud upon others.

The offense is not merely in duplicating, for similarity, not identity, is the usual course when one seeks to benefit himself by the good name of another; but in many cases the effect of imitation depends upon the propinquity, especially where the name is one applied to a business or a store, and the similar use would not lead to deception. But it is different where the field of action is a locality, or the commercial world, as in the use of a trade mark. Though sometimes a name assumed at the formation of a business on a small scale may become important, where the success of the article or the enterprise of the proprietors extends the original limits, and the right to protection will grow with the growth of its reputation and the territory covered by its sale.

The End of an Electric Patent War.

The long fight between the General Electric Company and the Westinghouse Electric and Manufacturing Company has at last been ended. For nearly a year those largely interested in the two companies have been endeavoring to come to some arrangement which would reduce the competition between the two concerns, which are the largest manufacturers of electrical appliances in the country. The rivalry between the companies has been great, and has resulted in many expensive lawsuits. It is said that the patent litigation between the two companies has cost several millions in legal expenses and for the services of experts. The result of this litigation has been to increase competition, lower prices and benefit many smaller concerns. The following statement has been given out by the General Electric Company:

"Negotiations between the General Electric Company and the Westinghouse Electric and Manufacturing Company have resulted in an arrangement with respect to a joint use of the patents of the two companies, subject to existing licenses, on terms which are considered mutually advantageous.

"It has been agreed that after certain exclusions the General Electric Company has contributed 62½ per cent and the Westinghouse Electric and Manufacturing Company 37½ per cent in value of the combined patents, and each company is licensed to use the patents of the other company, except as to the matters excluded, each paying a royalty for any use of the combined patents in excess of the value of its contribution to the patents.

"The patents are to be managed by a board of control consisting of five members, two appointed by each company and a fifth selected by the four so appointed. Both companies have acquired during their existence a large number of valuable patents, and numerous suits have been instituted in consequence of the infringement of these patents by one party or the other, or by their customers. In the prosecution of these suits large sums of money have been expended and the general expenses of the companies have in this manner been greatly increased. It is expected that the economies to be effected will be very considerable, and that the two companies and their customers will be mutually protected.

"The especial incentives which led to the arrangement at this time were the recent decisions in favor of patents of the Ge eral Electric Company controlling the overhead system of electric railways, the approaching trials on a number of other important General Electric patents on controllers and details of electric railway apparatus and systems and other electrical devices, and the equally strong position of the Westinghouse Company in respect to power transmission, covered by the patents of Nikola Tesla, and in view of its other patents in active litigation, some of which are of controlling importance."

The Sandstorm in New Jersey.

The face of the great sand plains of south Jersey have been considerably changed by the recent high winds, which caught up the sand and piled it against houses, fences or any other obstruction. Cuttings and ditches have been filled in, great piles of sand were caught by bushes and heaped up in some places until the sand mound was over twenty feet high, and some of the roads are almost impassable, owing to the amount of sand which was blown on them. The Pennsylvania Railroad had men at work day and night during the storm to keep their tracks from being buried in sand. The sand sifted into houses and barns, covering everything with a gritty deposit. Travel in this part of the country during the high winds was almost impossible, for the sand was blinding and worked into clothing so as to irritate the skin, while hundreds of people are suffering from sore eyes as the result of their exposure to the great sandstorm.

To Bore Glass.

Strong glass plates are bored through by means of rotating brass tubes of the necessary diameter, which are filled with water during boring. To the water there is added finely pulverized emery. The boring cylinder is put into motion by means of a drill or bow drill. Weaker glass can be provided with holes in an easier manner by pressing a disk of wet clay upon the glass and making a hole through the clay of the width desired, so that the glass is laid bare here. Then molten lead is poured into the hole and lead and glass drop down at once. This method is based upon the quick, local heating of the glass, whereby it obtains a circular crack, the outline of which corresponds to the outline of the hole made in the clay. The cutting of glass tubes, cylinders, etc., in the factories is based upon the same principle, says a Pittsburg paper called China, Glass and Lamps.