breccias" mentioned by Von Cotta as occurring at the margins of eruptive igneous rocks and formed at the time of their eruption. The section at Feltville furnishes indisputable evidence that the igneous rocks of the First Newark Mountain were intruded in a molten state between the layers of stratified rocks subsequent to their consolidation; and, from analogy, this conclusion should be extended to embrace all the trap ridges of New Jersey.

The distinctness with which this one question relating to the triassic trap sheets has been answered seems by contrast to make other questions in their history only more obscure. We cannot now determine in what age, after the consolidation of the triassic sedimentary rocks, the outbursts of trap occurred; nor whether the several trap ridges that traverse the triassic were formed at one time. It may be that one is thousands of years older than its neighbor.

Mr. Russell's valuable paper was illustrated by a complete series of triassic rocks from the locality at which his observations were made.

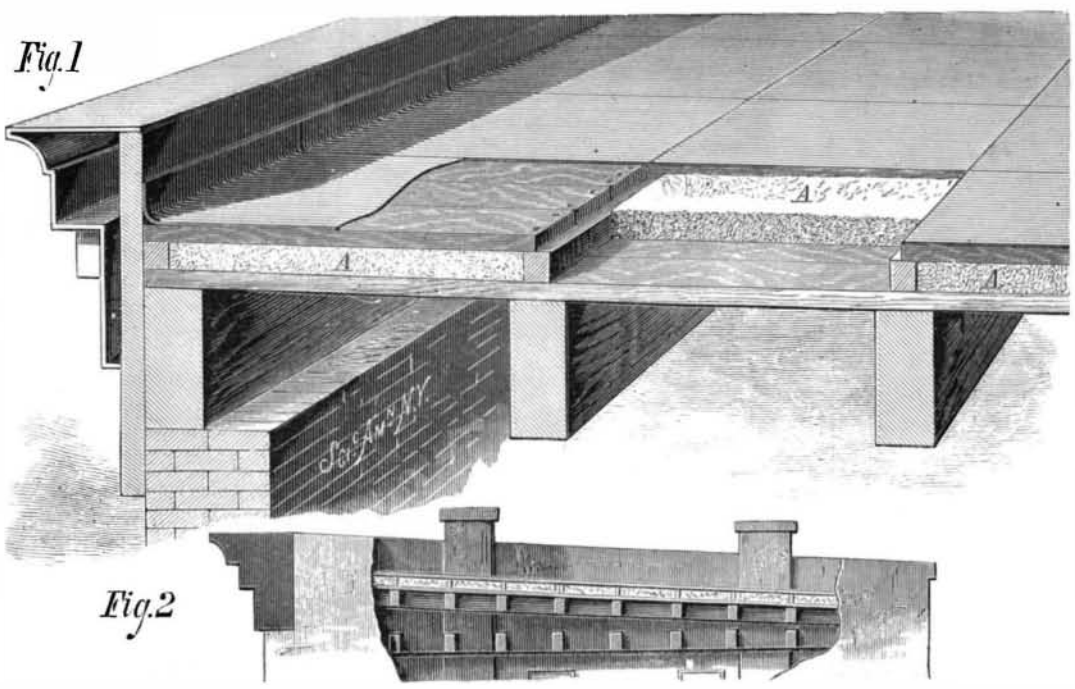
LINING ROOFS WITH MINERAL WOOL.

The advantages of the new application of mineral wool herewith illustrated are claimed to be as follows: The temperature in dwellings, etc., is insulated; the roofs are rendered practically fireproof as regards the spread of fire from neighboring structures, and the material not being liable to decay or rot, on account of moisture, dampness, etc., preserves the woodwork of the roof. It is further claimed of the cheapest grade of mineral wool to be used for this purpose that its non-conducting or insulating quality is equal to that of hair felt at even thickness, and superior to cements, mortars, etc. It weighs 28 pounds per cubic foot, or 3½ pounds per square foot over all, and as shown in the illustration is spread between studs 1½ inch high by 2 inches wide, and between two roofing floors of 1 to 1¼ inch planks. The wool, A, is leveled 1¾ inch high, and the upper planks are nailed on the studs, thereby compressing the wool ¼ of an inch, which is sufficient to render the lining compact and to prevent its settling in gable or French roofs.

Ordinary city dwellings, built in rows, are exposed to the rays of the sun on three surfaces, the front and rear walls alternately, and the roof nearly all the time. Considering that the temperature in the shade at 80° to 85° Fah., is about equivalent to from 125° to 135° Fah. in the sun, it might be asserted that more heat goes through the roof than through the walls.

We are informed that scientific tests (Franklin Institute) and practical experience show that a roof lined with 1 to 1½ inch hairfelt or mineral wool, and 2 to 2½ inch thickness of wood (which itself is a good non-conductor), will insulate the temperature sufficiently to ward off the sun heat during the day or the extreme cold of winter nights. Hitherto the use of mineral wool for roofs was mostly confined to breweries, ice, and cold storage houses, as in these structures the questions of ventilation and insulation of heat and cold are of the utmost importance. The effectiveness of mineral wool for such purposes can now be attested to by quantities in actual use, representing in the aggregate a surface of over 300,000 square feet of 1 inch lining, though mostly used at 3 inch and 4 inch thickness for lining walls.

As to the security against fire from neighboring buildings the objection might be raised that apparently when the upper roofing planks are on fire the studs on which they are fastened and the other planks beneath them will also burn. On account of the wool between the studs no hot air can get beneath them, so that the studs are only exposed to the heat on top; and it is claimed they will only char, or at least be so slowly consumed as to give ample time for extinguishing the fire. Mineral wool being made from slag or scoria, at a heat of about 2,000° Fah., it is of course incombustible. For use on buildings it possesses the additional advantages of being (like felt) a non-conductor of sound, and it affords no abode to rats, mice, and vermin. The address of Mr. A. D. Elbers, who controls the sale and manufacture of mineral wool (made at Greenwood Station on the Erie Railway), will be found in our advertising columns.



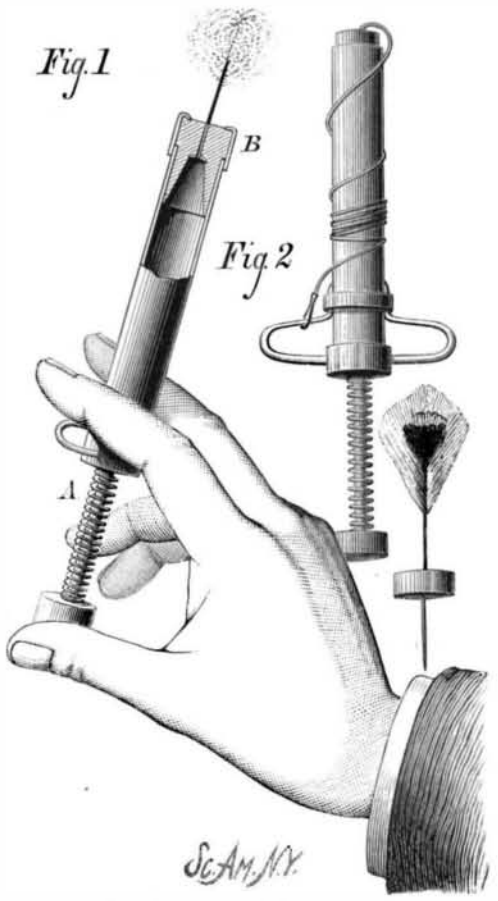
ROOF LINED WITH MINERAL WOOL.

Antidotes to Arsenic.

According to the *Répertoire de Pharmacie*, Rouyer has discovered that, although the freshly precipitated sesquihydrate of iron is an antidote for arsenious acid, it has no effect in counteracting the action of arsenite of soda or of arsenite of potassa (Fowler's solution), but that a mixture of a solution of sesquichloride of iron and the oxide of magnesium will neutralize the effect of these salts, as well as those of arsenious acid itself, and hence this mixture is always preferable in cases of poisoning by arsenic. The officinal solution of sesquichloride of iron should first be administered, and fifteen minutes afterwards the magnesia given in the proportion of 70 grains of the latter to 18 minims of the former. In an hour after the administration of the antidote a cathartic should be given. Lemonade and other acid drinks should be avoided during the treatment, since the compounds formed by the union are insoluble.

IMPROVED INSECT POWDER BLOWER.

The invention herewith illustrated is a new insect powder blower, by which the powder is distributed at will in greater or smaller quantities, and in a minute jet wherever desired.



INSECT POWDER BLOWER.

The device may also be used as a pop gun for children, and as an air gun for projecting a dart at a target. It consists, as shown in Fig. 1, of a barrel in which is a piston, around the rod of which is a coiled spring, A, which serves to retract the piston after the latter has been driven forward by the thumb, the fingers resting on projecting supports. The insect powder is placed in the barrel, and its end is closed by a stopper, B, in which is a perforated disk, the aperture in which regulates the size of the jet of powder forced out. This jet can be directed into crevices or wherever desired.

The arrangement of the device for a pop gun is shown in Fig. 2, the cork being inserted in the open end of the barrel, and forced out by sudden pressure of the piston. The feathered dart used is represented in Fig. 3. Patented through the Scientific American Patent Agency, March 5, 1878. For further particulars address the inventor, Mr. Michael Mark, New York city, N. Y.

Keep Your Mouth Shut.

At the Royal Institution, London, recently, Professor Garrod lectured on the protoplasmic theory of life, and in speaking of respiration drew attention to some few facts of practical importance which, though well known to physiologists, are too often disregarded by the public. The relative time occupied in inspiration and expiration is such that the carbonic acid breathed out to a distance is out of the way before the next inspiration, the air for which is drawn in from the immediate neighborhood of the nostrils. The distance to which breath is exhaled through the nostrils is well illustrated by smoking through the nose. During the day our nostrils are kept clear of interference, as we sit or walk; but at night bed clothing is apt to get so arranged as to retard the current of carbonic acid breathed out, and some of it is thus a second time inhaled, instead of the incurrent being, as it should be, of pure air. Another practical point mentioned was the importance of keeping the mouth closed and of breathing through the nose in cold weather. Air should not reach the lungs at a temperature much below that of the blood, and air is much more warmed in passing through the nose passages than in going directly from the mouth. In speaking of the evolution of carbonic acid, Professor Garrod mentioned a point which, he thought, had not received due recognition, which was that the "protoplasmic" vitality of the body led to the oxidation of pabulum supplied and the consequent formation of carbonic acid, just as muscular work, whether voluntary or not, produced a similar result. Pettenkoffer's experiments with men were illustrated on a small scale, with a tame white mouse, in a glass vessel duly supplied with food, and a current of air so arranged that the carbonic acid breathed out by the mouse was collected in lime water, so that the amount in a given time, and varying with activity or rest, could be estimated.

New Disease among Wool Sorters.

Dr. Bell, of Bradford, England, has directed attention to a new disease among wool sorters, which has been developed since the introduction of mohair and alpaca into the trade. Sudden and unaccountable deaths took place among the workmen, which at length became so frequent as to convert the suspicion into a certainty that something was wrong. Masters and men were equally anxious to understand and prevent the disease. Eminent medical and scientific men have been consulted, and post mortem examinations made, but the cause and nature of the disease were not satisfactorily explained. The symptoms of a typical case might be summarized as follows: No rigor, thirst, pain, vomiting, nor purging; very slight cough; no expectoration; quick breathing, great exhaustion, weak rapid pulse, clear mind, extremities cold, perspiration clammy, gradually decreasing temperature, death in fifteen to twenty-four hours. The medical man is usually at a loss to account for death.

The matter has been fully discussed and a variety of theories suggested, against which an equal number of objections have been made. Dr. Bell's views met with some unanimity. They were as follows: he attributed the evil to the inhalation of a septic poison produced by the decomposition of animal matter in damaged bales, producing septicæmia.

Street Cars Propelled by Compressed Air.

The Second Avenue Railroad, of New York city, has one of the Pneumatic Tramway Engine Company's cars. Upon each platform is a steel lever, by means of which the car can be started, stopped, or its direction reversed. The car is of the same general model as that of ordinary street cars. It has six tubular air receivers situated under the floor of the car. The air is compressed by an engine which is standing at the side of the depot, and is introduced by a rubber hose into these receivers. That air passes through an engine situated between the axles, and propels the car. Sufficient air to enable the car to make the entire circuit of Manhattan Island, if necessary, can be stored at one time in the receivers.

The experiments made have proved completely satisfactory. The car lately ran from 63d to 95th street and back in about twenty minutes, with two or three stoppages. It is claimed for the car thus inspected that it can be stopped more readily than the horse cars, and that its rate of speed can be increased to thirty miles per hour, while it can make nine miles per hour and still not appear to go faster than the horse cars. The car which was run is only a model, and it takes about four hours to charge its receivers with air, but machinery has been ordered which will perform the work in less than a minute.

One of these air engines, it is said, can easily draw a whole train of ordinary street cars. A company composed of twenty-five capitalists has been formed to manufacture cars upon the above model. It has already received an order for five cars from the Second Avenue Company. These will be used on the upper part of the Second Avenue route.

SPIDERS' WEBS.—Leuwenhoek has computed that one hundred of the single threads of a full grown spider are not equal to the diameter of the hair of the human beard; and consequently, if the threads and hair be both round, ten thousand such threads are not larger than such a hair. He calculates that 4,000,000 of a young spider's threads, which are much finer than those of full grown spiders, are not so large as the single human hair.