

Correspondence.

Mineralogical Notes.

To the Editor of the Scientific American:

It may interest you to know that I visited the peridotite locality of Elliott Co., Ky., with Dr. J. S. Diller, of the U. S. Geological Survey, and for the survey, for the purpose of examining it, since it was surmised that diamonds would be found. Diamonds were not found, but we made some interesting observations, which will be published later on. I also visited the place where the $4\frac{1}{2}$ carat diamond was found last summer—i. e., Dysartville, MacDowell Co., N. C.—and saw the boy who found it. Although there are no diamond indications there, I have every reason to believe that it was really found there. On visiting the rock crystal localities in Ashe Co., N. C., I found a number of crystals from 5 to 60 lb., and one large single crystal of 285 lb.

New York, July 6, 1887. GEORGE F. KUNZ.

The Alien Act.

It would be well for our Pacific coast delegation to do all in their power to so amend the Alien act, that was "railroaded" through at the close of the last session, that the mineral lands and mines of our Territories shall be excluded from the effects of this impolitic measure.

"America for Americans" is all very well, and American capital for American mines is something desirable; but, unfortunately for us, our capitalists are, with but few exceptions, not mine investors, particularly in mines of the precious metals. They prefer other classes of securities. Unless the act is amended so as to admit and encourage foreign capitalists on liberal terms to invest in our mines, the result will be that a large percentage of the mines of our Territories will remain undeveloped and dormant until we, as a nation, shall have become mine workers and capital shall have become more abundant.

A very large amount of capital has been already withdrawn by English investors from this country.

No business so rapidly develops a country as that of mining. Towns and cities spring into existence like magic, giving employment to the laborer, artisan, and farmer. The rugged mountain chains and barren wastes seem destined by nature as the metallic domain most favorable for mineral deposits. The country is soon opened up by wagon roads, followed by railroads.

It is a singular fact that while we are throwing obstacles in the way of the introduction of foreign capital, our near neighbors are encouraging the development and settlement of unoccupied land, both agricultural and mineral, by building railroads, and by liberal measures the Canadian Pacific Railroad on the north bids fair to be a serious rival to our system of railroads that span the continent. On the south our sister republic (Mexico) has thrown wide open her doors and offers every inducement to both agriculturists and miners to colonize her vast territory and develop her mineral resources. Her colonization laws are liberal. The code of laws governing her mines are superior to ours in many respects. It is necessary for us also to do something to get people to invest in our mines. The law referred to does not affect the States except indirectly, but the Territories have much to complain of from its enactment.—*Min. and Sci. Press.*

Military Dogs.

Among the thousand and one inventions, appliances, and wonderful uses of men and beasts which German genius has devised to defeat France in case General Boulanger's successor becomes unpleasant, the dog plays a significant role, employed, as he is, as messenger and sentinel. Experiments have been made for nearly a year now, and have proved highly satisfactory. The dog maneuver of the Hunter battalion was decidedly the most interesting of the recent campaign. Several regiments have been furnished with the German shepherd dogs, known for their wisdom the world over. Each one is attached, so to speak, to the person of a soldier, in whom the dog soon recognizes his master, and who conducts his training. While doing duty, the dog is kept with the sentinel, and easily learns the requirements of his post. A few of the experiments performed before Colonel von der Goltz Pacha, who represented the Sultan at the ninetieth birthday of the Emperor, and has since remained to witness the reviews, were surprising. A soldier, taking the dog from the sentinel, marched off on a reconnoitering expedition. After writing his observations, and placing them in a cask about the neck of the brute, the latter was told to return to his master, which he did in an astonishingly short time. One dog employed in this service arrived at his post ten minutes before a mounted Uhlan charged with the same instructions, though the latter rode at desperate speed. But even more than this was accomplished. With a message tied about the neck, as in the former case, the dog was told to seek a distant sentinel and bring a return answer. This he did with great speed, carrying his message directly to his master without fail. It is little wonder that Pacha Goltz was

surprised at the success of the experiments given in his honor. And they are truly wonderful for the present, though bidding fair to become a commonplace institution in that great machine, the German army. The consequences and possibilities of the shepherd dog service are apparent to all who know anything of military science, and make their citation superfluous. One thing is certain, that a future war between Germany and any of its neighbors will not be conducted without its dog regiment, which, though not employed in concerted action, will perform service more valuable than the cats of ancient Egypt.—*Correspondence Tribune.*

Many Items of Interest.

The *American Artisan* says that graphite is an excellent substitute for red lead in making joints and connections in steam and gas fittings. The graphite mixed with the best boiled oil makes a much better joint, and it is claimed will remain tight three months or three years, and will then yield to the ordinary pressure of the tongs, whereas the red lead once set, it is next to impossible to open the joint without damage to the pipe or tongs. The graphite should be pure and of the right grade of fineness.

The *Boston Journal of Commerce* says: The best way to locate a pound in the connections of an engine is to put it on the center, and then let somebody admit steam to each end of the cylinder alternately, keeping the engine on the center all the while, while you are looking up and down the connections for lost motion. If the engine has no means of operating the valve by hand, disconnect the eccentric rod and rig a lever on the end of the valve stem.

A new method of securing veneer to its base consists in spreading glue or other adhesive matter between the veneer and the base, passing the two secured parts under a heated roller to melt the glue and cause it to enter the pores of the wood, then finally passing the connected base and the veneer under chilled rollers to harden and set the glue, and prevent the warping or shrinking of the veneer consequent upon the gradual cooling or drying of the glue.

When copper is to be soldered, and the solder is to be colored like the surrounding copper, the *Jewelers' Journal* says: This can be done by moistening the solder with a saturated solution of vitriol of copper, and then touching the solder with an iron or steel wire. A thin skin of copper is precipitated, which can be thickened by repeating the process several times. If a brass color is desired, a saturated solution of one part of vitriol of copper is used on the previously coppered solder, and the latter rubbed with a zinc wire. To gild the soldered spot, it is first coated with copper in the manner indicated above, and then with a gum or isinglass, and powdered with bronze powder. The surface is thus obtained, which after drying can be very brightly polished.

Governor Hill has signed the bill passed by the New York Legislature regulating the heating of steam cars, and it is now law. The statute makes it unlawful for any steam railroad after May 1, 1888, to heat its passenger cars on other than mixed trains by any stove or furnace kept inside the cars or suspended therefrom, except it may be lawful in case of accident or other emergency temporarily to use any such stove or furnace with necessary fuel. Provided that in cars which have been equipped with apparatus to heat by steam, hot water, or hot air from the locomotive, or from a special car, the present stove may be retained to be used only when the car is standing still, and provided also that this act shall not apply to railroads less than fifty miles in length, nor to the use of stoves, of a pattern and kind to be approved by the Railroad Commissioners, for cooking purposes in dining room cars.

This is the age of paper, and the *Western Manufacturer* suggests that an exhibition of paper objects and manufactures would fittingly commemorate the bicentenary of the first paper mill in this country, next year, to be held at Philadelphia, the birthplace of the trade. Paper is the receptacle and disseminator of science, the products of art and literature, the great means of keeping industries and commerce thriving. It barrels our flour, wraps our goods, enters into articles of personal wear and household use, and when we die sometimes forms our coffins. It rolls beneath our railway cars and forms our buggy tops. We eat off it, drink from it, wear it on our heads, necks, bosoms, and feet, carry it in our pockets in lieu of handkerchiefs, and tile our houses, line our carpets with it, pack up our goods in paper boxes, and divert our leisure moments with paper cards. We make 500,000 tons yearly, import largely, and yet, like Oliver Twist, ask for more. Rags, wood pulp, straw, old rope, the bark of the cotton plant, and even the membranes in the interior of silkworm cocoons, yield it.

The well known Perry Stove Manufacturing Co., of Albany, N. Y., have established extensive works at

South Pittsburg, Tenn., covering six acres of land and employing upward of five hundred men. To give young men the opportunity of learning the trades of moulders, mounters, polishers, nickel platers, carpenters, pattern finishers, etc., etc., they have engaged fifty of the best mechanics to teach those who want to learn, and promise liberal wages while they are learning the trade. This would seem like a good opportunity for active young men desiring to learn a useful and profitable trade.

There will be held in Paris, beginning on the 27th of August and lasting until the 28th of September, 1887, an exposition of useful insects and their products, and of noxious insects and specimens of their injuries. This exposition is conducted by the Societe Centrale d'Apiculture et d'Insectologie, under the patronage of the Ministre de l'Agriculture. There is also to be given in this exposition a place for insecticides, and various devices for destroying insects. It is to be opened to foreign as well as French exhibitors.

The Fastest Passenger Steamer Afloat.

The Queen Victoria, the pioneer vessel of the new line intended to ply between Liverpool and the Isle of Man, lately arrived in Liverpool. This vessel, with her sister ship the Prince of Wales, will form the Manx line of the Isle of Man, Liverpool, and Manchester Steamship Company. The vessels, which have been built by the Fairfield Ship Building Company, are both of extremely handsome model, and are fitted with engines of proportionately large power. The dimensions of both vessels are as follows: Length over all, 340 ft.; breadth, 39 ft.; moulded depth to upper deck, 24 ft.; gross tonnage, about 1,500 tons. The vessels are each divided by bulkheads into nine water tight compartments. The water tight doors between the engine and boiler space are constructed with the angular lever self-closing arrangement, which the Fairfield Company are now fitting into most of the vessels built by them. On a clutch being actuated, either from the stoke hole or from the deck, the door automatically closes, advancing slowly at first, and then shutting sharply, cutting through any coal that would otherwise impede its passage. A heavy mass of lead, suspended from a lever, supplies the motive power. The upper deck is exceptionally spacious, affording a promenade the full width and length of the ship. The main deck also affords a roomy promenade. The general fittings of the vessel have been carefully devised, and every expedient for the comfort and safety of the passengers has been adopted.

The engines of the Queen Victoria are of exceptional power; they are expected to indicate 6,000 h. p., and to propel the vessel at the rate of 20 knots, equal to 23 miles, per hour, on regular service. They are compound diagonal and direct acting, having two cylinders and surface condenser. The high pressure cylinder, which is placed uppermost, is 61 in. in diameter, and the low pressure beneath it is 112 in. The valves are actuated by the usual double eccentric and link motion. The main working parts of the engines are made of steel, the shafts and crank pins being made hollow. The paddle arms and feathering floats are made of steel. The boilers are double ended, and are supplied with forced draught. The fans are placed one on either side, over the boilers, and are driven by a small high speed engine situated between them.

The Queen Victoria sailed from the Tail of the Bank, Greenock, to Liverpool, in the remarkably short time of nine hours twenty-three minutes, representing an average speed of $22\frac{1}{4}$ knots, or 25.62 miles, per hour.

An Electric Headlight.

The *Master Mechanic*, in connection with a description of an electric headlight used on Lake Shore & Michigan Southern engine No. 411, and a view, reproduced from a photograph taken at night, showing its effect, says: It will be seen that 23 telegraph poles are visible, but under more favorable conditions 45 poles have been counted, which is equal to a distance of about $1\frac{1}{2}$ miles. A newspaper has been read by the light four miles away, and the time of night has been seen on a watch face nine miles distant. The reflection of the light in the clouds has been noticed 12 miles away. The headlight is the invention of Mr. Howard L. Pyle, and has been in operation between Cleveland and Erie nearly a year, giving entire satisfaction. In snow-storms it is noticed that the snow and sleet melt the instant they touch the glass, which is kept warm by the light. The locomotive runners say that targets, switch-lights, and semaphores can be distinctly seen, and the colors are as readily discernible as by daylight. A man can be seen three fourths of a mile away. The illumination on the track for a mile ahead is so noticeable that it gives good warning to wayfarers of the approach of the train, thus in a measure obviating the necessity of using the bell or whistle. Mr. Pyle is said to have overcome the various obstacles heretofore encountered in experiments of this kind. He uses for motive power a Bailey rotary engine.