## Correspondence.

### A Need for Oxide of Titanium.

*To the Editor of the Scientific American:*

The oxide of titanium is essential in giving the yellow color to porcelain teeth. It seems of late to have become very scarce. It is not to be obtained in Boston, and a quantity lately purchased in New York is colorless and useless. Can you help us out? T. H. C.

Cambridge, Mass., Harvard University, Dental Dept.

### Tree Killing Composition Wanted.

*To the Editor of the Scientific American:*

A man or animal can be fatally inoculated with poison by a subcutaneous injection. Now, I want to know whether it is possible to do the same with a tree. To kill superfluous trees by girdling requires a good deal of labor. Is there not some substance that could be placed in an auger hole that would kill the tree?

Pueblo, Col. AN OLD READER.

### The Bowers Dredge at Tacoma.

*To the Editor of the Scientific American:*

The Bowers dredge recently illustrated and described in the SCIENTIFIC AMERICAN is now in Tacoma, having arrived in tow of the tug Vigilant, after a perilous voyage, in which the dredge narrowly escaped wrecking. It will be employed in channel work and reclaiming of land for the N. P. R.R. The owners expect to be employed in this vicinity for three years, or until the dredge is worn out. CHAS. R. MOYER.

Tacoma, W. T., June 12, 1889.

### Bursting Dams and Floods in Geology.

*To the Editor of the Scientific American:*

A question of geographical interest arises out of the bursting of the Johnstown dam. The plains of the Upper Indus are said to be strewn with angular blocks —not rolled by ordinary river action—and their presence has been explained by the supposition that huge land slides, having from time to time formed dams across the mouths of mountain gorges in lower Cashmir, created temporary lakes, and that when these pent-up waters, overtopping the dam, let themselves loose they were mixed with sufficient earth to form a flood of density enough to carry with it debris equal to glacial moraines.

How far was this flood visible down the Ohio, and how far were heavy blocks carried by the muddy waters? I remember when Mt. Leathers dam burst above Sheffield, England, the flood wave was felt for a great distance. G. DARBISHIRE.

Zolfo, Fla.

### The Recurved Double-Fanged Climbing Rattlesnake.

*To the Editor of the Scientific American:*

In the recent issue of the SCIENTIFIC AMERICAN of May 11, on page 295, is an article from the pen of C. Few Seiss, Esq., on the poisonous serpents of the United States. He has omitted entirely to mention a very important species of rattlesnake, which was first described by Audubon, and named by him the "Recurved Double-Fanged Climbing Rattlesnake." This snake has *double* instead of *single* fangs on each side of the upper jaw, and *they are recurved in shape;* and it also climbs bushes and small trees, in search of food, such as young birds, etc. I have myself killed and specially examined two specimens of this snake in my own immediate neighborhood.

The last specimen I killed only recently, and gave it to a gentleman who wished to send it to a friend in St. Louis. Will you please let me know if the snake I have described is really a *rarity* in the northern and western portions of the United States?

F. W. COLEMAN, M.D.

Rodney, Miss., June 16, 1889.

### Machinery Wanted for Making Cassava Starch.

*To the Editor of the Scientific American:*

The cassava grown in Florida is of the sweet species. Its root yields tapioca—starch or gluten—and a nutritive bran for stock. Heretofore small patches of the prolific root have been dug when required for home consumption, and occasionally an industrious housewife will grate by hand and clarify a few pounds of starch for the store. Now, however, the immense yield (about forty tons per acre) has led to the planting of considerable areas in Polk County, and the question of saving and systematically handling this weighty crop will puzzle the farmer this autumn.

Last year I rigged up a revolving grater to run by foot treadle, and kept a boy washing dirt off the roots as long as my legs would hold out. Now, I want some of your readers to suggest a machine (for one mule power) which will:

1. Wash the roots as they come from the field.
2. Disintegrate them (grating is preferable to slicing or crushing).
3. Saturate the pulp, and let the water full of starch drain off into settling tanks through fine screens, which screens must deliver the bran drained, to be dried ready for barreling.
4. To dry the settlings or cakes of starch after the clear water has been drawn off. Could chemicals be added to bleach and whiten the starch?

G. DARBISHIRE,
*Chief Engineer for Peace River Phosphates.*

Fort Meade, Fla., June 17, 1889.

### Facts Concerning Flour Production.

*To the Editor of the Scientific American:*

We quote from your issue June 8: "88,200 barrels of flour is the report of a recent one week's work for the mills of Minneapolis. Is there any other place in the world where such a large production is realized?" Permit us to say that we think not. St. Louis, however, comes nearest, making, or having capacity to make, 12,025 barrels daily, or 72,125 barrels per week of six days. The Minneapolis mills, twenty-two in number, have a daily capacity of 37,475 barrels, or 224,850 barrels per week of six days. Pillsbury & Co. and Washburn, Martin & Co. can make respectively 10,900 and 8,300 barrels per day, or together 115,200 barrels per week. Minneapolis' heaviest week was a little over 182,000 barrels, while the figures you give are below the average six days' work.

HILL & SCHAAFF, *Millers' Agents.*

Richmond, Va., June 10, 1889.

### Why Engineers Should Study.

Granted that owners are sometimes short-sighted and are over-inclined to value your services in inverse ratio to the money you demand for them. Do you intend always to work in the same place? Do you not rather cherish the honorable ambition to better your condition whenever opportunity offers? Do you ever stop to consider the great changes which have taken place in the character of the steam plants of this country, and that the change is still going on in a constantly accelerating ratio? Some one has well said that there is always room at the top; and in the stationary engineer's trade this room at the top is growing larger all the time. Think the matter over, and you will soon be convinced that not one of the mechanical trades has in it more of possibilities for the future, or offers more encouragement to hard study, patient industry, and steady application than the one you have chosen.

It is not so very many years since the old fashioned slide valve engine, with its box bed and throttling governor, was to be found in nearly every engine room. Now it is hardly thought of except for the smallest and cheapest plants. It is scarcely a dozen years since the first successful attempt was made to build Corliss engines in the West. To-day there are dozens of builders of this and other types of high duty engines. The automatic cut-off engine has driven the slide valve out of the market, except for small powers. Compound engines are common, and triple and quadruple engines are not only being talked of, but are being placed in operation, and will undoubtedly be as generally used in stationary practice as they are now in marine engineering. Thousands of first-class plants are in daily service, and the demand is growing steadily. Everyone that is put in service calls for skilled attendance and furnishes work for a good engineer. The signs of the times all point to a continuance of the attempt at still further improvement in the economy and efficiency of the modern high duty steam plant. As a natural result the demand for skillful, educated engineers is increasing. Not only this; but the number of first-class power plants is rapidly increasing to meet the manifold requirements of our later day civilization. Every new application of electricity to supply the necessities or luxuries of life, every lighting station, every central power plant, every one of the thousand and one new developments within the bounds of near probability, calls for economical power, and every plant of this character furnishes employment for a good engineer. Naturally, the engineers who study the hardest, and are the most thoroughly posted in the practical details of their trade, will get the best positions; and the best positions are worth working for. Are these not good reasons why the engineer should educate himself in the theory and practice of his trade?—*Stationary Engineer.*

AN ingenious and determined attempt to intercept the signals passing along the Marseilles cable of the Direct Spanish Company was recently discovered in the course of some repairs to the underground lines in the streets of Barcelona. The superintendent found that at one spot the ground had been undermined and the four cables cut, the conductors on both sides being connected to insulated wires, which were taken to the wall of the house opposite. Outside this house the leads from each cable were connected together by a binding screw, so that communication between Marseilles and Barcelona was not interrupted. A careful inquiry was at once instituted by the authorities, and it was speedily discovered that the wires had been, at a period which can be traced, led into the cellar of the house opposite the mine, the hole in the wall having since been carefully bricked and plastered up.

### PHOTOGRAPHIC NOTES.

*To Remove Yellow Stains from Negatives.*—A correspondent in Sivas, Turkey, says it will require several days' journey in his distant land to consult a professional photographer in regard to the information he seeks, and asks the SCIENTIFIC AMERICAN to tell him how to remove successfully a yellow tinge on one end of a valuable negative.

The cause of the stain is probably due to insufficient fixing of the plate originally. Hence the treatment is different than if it was a pyro stain caused during development. The latter stain can be removed by immersing the plate in a clearing solution composed of:

| | |
|---|---|
| Alum | 2 oz. |
| Citric acid | 1 " |
| Water | 10 " |

for several minutes. The plate should be soaked in water for 10 minutes prior to being placed in the above, provided it has been dried and printed from.

Another formula for removing silver stains produced in printing from ordinary silver paper is to mix two solutions:

| | |
|---|---|
| *a.* Sulphocyanide of ammonia | ½ dr. |
| Water | 1 oz. |
| *b.* Nitric acid | ½ dr. |
| Water | 1 oz. |

Mix equal parts of *a* and *b*, fresh for each negative, and apply to stained portion or immerse the negative in the solution. When the stain disappears, the negative should be washed and followed by an application of a saturated solution of chrome alum.

When the stain is caused by insufficient fixing, it is said to be removed by converting the silver in the film into an iodide and then dissolving out by cyanide of potassium. The method recommended by Mr. Drake is as follows: Soak the plate for five minutes in clean water, meanwhile make a solution of iodide of potassium, 20 grains to the ounce of water, now put the plate in this solution, and let it stay for ten minutes. If the stain is very old, keep it in for half an hour. Now dissolve half a drachm of cyanide of potassium in one ounce of water. Take the plate and put into this, and gently rub the stains with a tuft of cotton wool (absorbent filtering cotton will do), free from grit, until they are quite gone. If the stains are very old, make the solutions stronger, and soak for a longer time.

The stain due from insufficient fixing is usually very difficult to remove. A plan which we have thought of, but not yet tried, is to change the color by slight intensification.

First immerse the plate in a weak solution of bichloride of mercury and water until the film commences to bleach.

Then wash and immerse in a solution of cyanide of silver similar to Monkhoven's formula. The cyanide of silver converts the film into a bluish color and might also transform the yellow stain in the same manner.

*Black Negative Varnish.*—A simple way is to dissolve two grains of lamp black in half a drachm of turpentine, then add it to the clear negative varnish, shaking well at each addition to insure thorough mixing. If the quantity is too small, add successive amounts of the black until the requisite color is reached.

*A New Transparent Film.*—We are informed that by a recently perfected process, transparent celluloid only 3-1000 of an inch thick can now be easily manufactured, capable of rolling up like paper. On the film thus made the sensitive emulsion is spread. The film is exposed in the camera and developed the same as a gelatine plate, and when done is ready to be printed from. It is to be made by the Eastman Company, of Rochester, N. Y., who have introduced bromide paper so largely in this country.

*Platinum Toning Bath for Gelatino-Chloride Paper.*—In Dr. Liesegang's interesting journal, *Der Amateur Photograph*, Mr. Alfred Stieglitz gives the following platinum toning process for gelatino-chloride printing out paper (known as aristo paper):

| | | |
|---|---|---|
| *a.* Neutral oxalate of potash | 2 parts. | 166·66 grms. |
| Phosphate of potash | 1 " | |
| Water | | 1,000 c. c. |
| *b.* Potassium platinous chloride | 1 part. | |
| Water | 20 " | |

For use are mixed, just before toning, 6 parts of A with 1 part of B. The prints are as usually at first washed out, and then toned. To obtain a black tone, the prints are allowed to remain for twenty-five to forty minutes in the solution without moving. They will acquire in the toning bath a bluish violet tone. After fixing, however, the blackish tones will be observed. The prints treated with this bath will keep better than prints toned with gold, as they are not affected by sulphureted hydrogen and similar gases. They are fixed and washed as usual. M. Stieglitz promises to continue his experiments.—*Mr. H. G. Gunther, in Photo. News.*