Correspondence.

Self-Mending Insects.

To the Editor of the Scientific American:

One of your correspondents asks for a scientific reason or for an explanation of this most marvelous operation of the self-mending snake and the earwig; and whether any other living objects do the same.

In the extract below, taken from the Encyclopædia Britannica, he will find a statement of as marvelous operations and of still more marvelous reasons or explanations (so-called scientific explanations):

"The spontaneity of certain polyps under injury is a good example of the indwelling power of all the cells and tissues to return to the established order, to the order and harmony which had been slowly acquired, and of which the memory is vividly retained. Trembla cut a hydra longitudinally, and 'in an hour or less,' says Paget, 'each half had rolled itself, and seamed up its cut edges so as to be a perfect hydra.' He split them into four; he quartered them; he cut them in as many pieces as he could; and nearly every piece became a perfect hydra. He slit one in seven pieces, leaving them all connected by the tail, and the hydra became sevenheaded, and he saw all the seven heads eating at the same time. . .

"This spontaneity resides in every living thing, and its efforts are directed by the memory of what the species had come through in reaching its place in the scale of organization. It is able, indeed, to make pereffect reparation for injuries or losses only where the cells are little differentiated into tissues, or where the tissues are little specialized for diverse functions. In all animals, and most notably in the higher, this spontaneity is most effective for repair in the periods of development or growth."

So much from the Britannica. It is a pity that the learned pathologist has not stated where the memories are located, or how many such memories belong to each organism. Perhaps each cell contains one for itself, or each organism the sum of all the memories of its ancestry. R. O. GERCKE, M.D. Augusta, Ga.

The Mineral Wealth of Siberia,

Referring to the resources of coal and iron in Siberia a writer in one of our English exchanges says :

It is one of the finest undeveloped countries in the world, and it is really difficult to exaggerate the enormous wealth of this gigantic region. The soil is of almost inexhaustible wealth and the crops magnificent. There is almost no limit to the production of the land. The Russians themselves have but an imperfect idea of ; the immensity of their natural wealth, and other people mensions; but for convenience in construction, as well board or to glass plates, and with specially prepared outside Russia cannot realize it at all. Siberia, so far from being a region of desolation and of death, is a northern Australia, with larger rivers, more extensive forests, and mineral wealth not inferior to that of the island continent. In a very few years Siberia will be bridged from end to end with railways, and in this matter the Russian government is showing a large and wise policy. The magnificent water communications -for it is irrigated from end to end with some of the largest rivers in the world, navigable for thousands of miles through fertile and richly wooded lands destined to be the home of millions of colonists-and a canal is now being made between the Obi and the Yenisei, which will enable goods to be conveyed by water the whole way from Tiumen to beyond Lake Baikal. At Tiumen there is a railway which passes through the and bottom of the lantern when in use cut a hole an the heart of the richest mining district in western? Siberia.

The Manufacture of Japan Soy.

At a recent meeting of German chemists a Mr. Erich communicated a paper on the preparation of Japan soy, a product of which the details of manufacture are as yet imperfectly known. Soy has been manufactured will convert the back portion into a separate lantern. in Japan for over a thousand years, and forms a very and by reducing the space assist in carrying off the ${\bf c} onsiderable \ article \ of \ consumption \ in \ that \ country \ and \ smoke, \ while \ the opal \ disks of tens the \ intense \ brilliancy$ throughout the East. There are many factories of the of the burning magnesium, and helps to equalize the condiment in the country, one of the largest being at illumination. The front of the arrangement is provided Tokio, where considerably over one million gallons are with a frame, into which a sheet of ground glass slides, specially prepared for export every year. The principal with a second groove at a distance of about an inch, ingredients known to be used in the manufacture of soy into which carriers to hold different sized negatives are a very hard long-awned variety of barley, common can be inserted. So far as the lantern is concerned, nosalt, soya beans (Dolichos soya), a specially prepared thing now remains but to supply the illuminating ferment, and water. The soy beans are roasted like arrangement. coffee, the barley is partly roasted and partly malted. The roasted parts of the barley and the beans are soaked tubes, 5 or 6 inches in length and an eighth of an inch in cold water, cooled, and preserved by the addition of in internal diameter. Saw off the apex of the pyramid a liberal dose of common salt. To this are added first and replace it with a flat piece of wood, through which ferment, which causes an extremely slow fermentation, above, the other a quarter of an inch below the center, but without any considerable formation of carbonic and reaching to an inch or so of the clear glass screen, dioxide or alcohol. The degree of strength of the soy | or 8 inches from the ground glass front. The upper of air cause fermentation.

PHOTOGRAPHIC NOTES.

Illuminating Negatives by Artificial Light for Copymethods of illuminating negatives by oil, gas, electric, or the oxyhydrogen light the Br. Jour. of Photo. describes a simple method, which consists in the use of magnesium ribbon. It says :

Since magnesium has at last come down to so modeslides or enlargements are made.

the light may be allowed to fall upon a white sheet and in the highest degree. passed, by reflection, through the negative to the ca-1 Not the least recommendation of this apparatus bevery well for lantern slide purposes where the sensitive ' will serve a variety of purposes. plate is exposed in the camera, and thus protected from While the above described arrangement is well addition to those who have addressed us on the sub-i rent. ject, will think it worth while to erect a simple lantern on the lines of the one we shall describe.

make the arrangement clear.

square front to be adhered to.

ing manner:

internal dimensions of the side of the reflector, and cut also two rectangular pieces of such size that, when placed together to form a V-shaped trough, the two triangular pieces will fit in at the proper angle to complete the reflector. The square ends of the two rectangular sides will then serve as feet, upon which the reflector will stand without further assistance. Before fastening the sides together, mark on each a line parallel with, and 6 or 7 inches from, the front or base edge, and nail or glue on four fillets of wood to form a rabbet each of the triangular pieces which will form the top and plates are more expensive. ing purposes, the upper one to be fitted with an external chimney to carry off the smoke.

When the frame is put together, let it be lined with white paper or painted dead white. Fit a square of process, and consists in the following: clear glass into the rabbet formed by the fillets already mentioned, and in the center of this cement a disk of; opal glass about an inch in diameter. The clear glass Potassi Nitrat This of the simplest. Procure two narrow brass a diastase solution, and afterward a specially prepared the two tubes are passed, one a quarter of an inch and finish by precipitating with alcohol, or by setting

be passed through a cork into a small bottle of methylated spirit, and so converted into a permanent spirit ing.—In an article giving an account of the various lamp. A small aperture cut in one of the sides and glazed with blue glass will enable the operator to watch and regulate the supply of magnesium during use.

When required for work, all that is necessary is to light the spirit lamp by passing a taper through the air inlet at the bottom and to allow that to burn conrate a price, there remains no valid reason why a cheap, | tinuously. When an exposure is to be made, a strand convenient, and highly powerful light should not be of magnesium ribbon is passed slowly, but regularly, available for the purpose we indicate wherever lantern through the upper tube, and being ignited by the spirit flame, continues to burn as long as the supply is kept

The simplest mode of using it scarcely requires any up. If the reflector be constructed of the shape and apparatus or preparation, all that is necessary being to ; angle given, and the light arranged at a distance of 8 ignite it at a sufficient distance from the negative, with inches from the front glass, the illumination over a or without the intervention of a translucent screen; or surface of a foot square will be brilliant and uniform

mera, in which case the perfection of uniformity is se- yond its efficiency is its economy. It may be made by cured. But though these makes hift methods may answer, any one who can use tools at all, for a few shillings, and

extraneous light, for enlarging they are wholly useless, adapted to the burning of ribbon, we can suggest a since the sensitive surface is usually freely exposed, and ; more simple plan, which consists of inserting a metal it therefore becomes necessary to inclose the light in a sheet on the bottom of the box, then placing upon it suitable lantern. This is not a difficult task, and as, | the new magnesium powder and gun cotton compound, with the aid of magnesium, it removes all the difficulty and igniting and flashing it by means of a wax taper of equal distribution of the light without inconveniently inserted through a small hole in the back of the box, lengthening the exposure, no doubt many amateurs, in $\frac{1}{2}$ or by a platinum wire made red with an electric cur-

Chromo-Collotype Process.—One of the latest inventions patented in this country is the chromo-collotype This consists, roughly, of a wooden body with ground or chromo-lichtdruck of F. L. Hosch, of Munich. As glass front, and acts at the same time as lantern and many of the readers will probably remember, the late reflector combined, the ground glass intercepting the Jos. Albert, of Munich, many years ago invented a whole of the light, both direct and reflected, and be-; similar process. He photographed a painting three coming converted into a powerfully actinic radiant | times. The first negative was taken through a red colsuitable for either enlarging or reducing purposes and ored glass plate, the next through a blue glass plate. for negatives of any size. The details of construction and the last through a yellow glass plate. In this are so simple as to scarcely require a diagram, so we way he obtained three negatives, all of the shall endeavor, by means of a verbal description, to same size, but in taking of which respectively the rays of the three primary colors-red, blue, We may premise that though the instrument we de- and yellow-had been absorbed. From these negscribe is constructed for use with negatives up to $12 \times atives$ he secured three lichtdruck plates, one from 10, and is equally available for quarter plates, it might each, the first of which he printed in red, the second in be made of any smaller dimensions if preferred, though, i blue, the third in yellow, one over the other, and thereby as nothing is lost in the larger size, and little added to he obtained more perfect pictures than could possibly the cost, we should strongly recommend the 12 inch be got by any other method. The Hosch process, though being also based on photography, is a different The shape of the lantern, or reflector, is a hollow; one. In this process a painting is photographed, and pyramid, the base of which is 12 inches square, clear, behind the resulting negative is exposed a lichtdruck and the sides slope at an angle of sixty degrees, which plate. From this plate as many prints as color plates will make the height of the pyramid, roughly, between ; are required for the finished picture are taken on well 10 and 11 inches. Such are the interior shape and di-sized paper. The prints, or off-sets, are fixed to cardas in use, the structure may be built up in the follow-joil colors painted gray on gray, then they are all photographed again. In the negatives thus obtained, the Cut two pieces of wood accurately to the shape and highest lights, and also the margins of the picture, which should print perfectly white, are backed, then lichtdruck plates are exposed behind the prepared negatives, which are washed, etched, and respectively printed in the colors yellow, red, flesh tint, and blue, one over the other. 'The advantages of this process are that a considerably smaller number of color plates are sufficient for the reproduction of a painting than in the case of chromo-lithography, and that the finished pictures are much more perfect and of a greater softness than chromo-lithographic prints. On the other hand, or projection against which to fix a square of glass. In more time is occupied by this process, and the printing

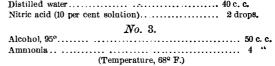
Sresniewski's Gelatino Emulsion.-Professor Eder, in Ural mountains to Ekaterineburg and Perm, through inch and a half or two inches in diameter, for ventilat- reviewing a new handbook of photography, written by a Russian dry plate manufacturer, M. Wiatcheslaus Sresniewski, describes a new method of preparing gelatine emulsion. It is a modification of Mr. Henderson's

No. 1. Gelatine (Nelson's No. 1)..... 1 gramme. Carbonate of ammonia.....

...

sium iodide	0.5 .,	
No. 2.		
e of silver	10 grammes.	
	10	

depends upon the time used in the process of manufac- tube serves as a guide for the magnesium wire. The ture, which varies from one to three years. If kept lower tube carries a strand of cotton wick, kept satuvery long time, but the action of light and free access it is passed through the upper tube. If the outside

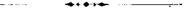


First add No. 2 to No. 1, then mix it slowly, and well shaking, with No. 3. The emulsion is kept for eight to

ten hours in a room of the usual temperature. At last add a warm solution of—

Gelatine	18 grammes.
Water	120 c. c.

and washing with water.-Hermann E. Gunther, in Photo. News.



THE Klamath Indians have built up a considerable carrying trade along the Pacific coast. In their large cool and out of the light, soy can be kept good for a rated with spirit, and serves to light the magnesium as canoes, hewn out of the solid trunks of immense trees, they carry dairy and farm products for the settlers and end of the wick tube be bent at a right angle, it may return with groceries and other supplies.