Progress in Bacteriology.

"I believe," said M. Pasteur, many years ago, "that we shall one day rid the world of all diseases which are caused by germs." He has done much to prove his faith by his works, and so have others who are laboring in the same field. The latest achievement in that direction, the discovery of anti-toxin, appears to be one of the most important yet made. There are indubitable reports from European hospitals showing that the great claims at first made for it were not exaggerated. The use of it has cured a large proportion of cases of diphtheria, and insured immunity against the disease in others. Failures there have been, doubtless. But a comparison of the death rate among those treated with it with that among those not treated with it, but in all other respects similarly affected, satisfactorily demonstrates the value of the new remedy. And the disease thus dealt with is one of the most destructive. It has long been so familiar to us that mention of its name arouses no such horror as that of Asiatic cholera or smallpox or yellow fever. Yet its ravages, in this and most civilized countries, are incomparably greater than those of the three put together. Only two or three diseases endemic here surpass it in number of victims. A reasonably sure cure for or prophylactic against it will be one of the most beneficent inventions of modern medicine.

There seems to be reason to believe, also, that the recently devised system of inoculation against Asiatic cholera will be productive of good. It was pretty carefully tested this last fall in India, and the results have now been published. The disease was accidentally introduced into the Gaya jail, where there were 433 prisoners. Of these, 215 were inoculated. The remaining 218 were not. All were equally exposed, and, apart from inoculation, were treated exactly alike. During the first five days after inoculation no material difference between the two classes was observed. Among the inoculated there were 5 cases of cholera and 4 deaths; among the others, 7 cases and 5 deaths. The next three days, the sixth, seventh and eighth after inoculation, showed some contrast. Among the inoculated there were 3 cases and 1 death; among the others, 5 cases and 3 deaths, But after the eighth day the contrast was most marked. Among the inoculated there was not a single case of cholera, while among the non inoculated there were 8 cases and 2 deaths. It will be remembered that Dr. Haffkine said the inoculation would only be fully operative after about ten days. The actual results are two days better than he claimed. It would be premature to say that an infallible preventive against cholera has yet been discovered; but certainly this showing is significant. A third series of researches in bacteriology has marked the year. Hitherto no specific bacillus has been discovered in the lymph of cowpox or smallpox, and the failure to find it has raised some doubts concerning the validity of the germ theory itself. An elaborate series of experiments has convinced Dr. Klein that such a bacillus exists, and may be found if the lymph be examined at proper time. But at the time when the lymph is taken for the purposes of vaccination, the bacilli have already perished in the process of sporulation. Hence the lymph is found to contain no bacilli, but only spores. Dr. Klein believes he has discovered the actual bacillus, but his attempts to cultivate it have not yet succeeded. It is reasonable to expect, however, that these attempts will one day be successful, and the bacilli of smallpox, as are those of other communicable diseases, will be cultivated in an artificial medium, thus ridding vaccination of the most serious objections now urged against it.—New York Tribune.

New Foreign Postage Rates.

The new rates for foreign postage and registry have just gone into effect. The rate of letters to all parts of the world, excepting Canada and Mexico, will be 5 cents per half ounce. The rate to Canada and Mexico will remain the same as the domestic rates. Postal cards to all parts of the world will be two cents. The fee for registering a letter will be 8 cents, instead of 10 cents. Printed matter will be charged 1 cent per pound.

Correspondence.

The Russian Thistle.

To the Editor of the SCIENTIFIC AMERICAN:

Referring to your article on the Russian thistle, issue of December 29, 1894, page 406, I would suggest the advisability of the government sending some one to the native home of the thistle to find such natural enemies as may be possible, either insect or fungoid. There must surely be one or both. The success of Koebele against scale and other similar work may indicate that even noxious weeds could be kept in check.

LINCOLN FOWLER.

Phœnix, Arizona, January 9, 1895.

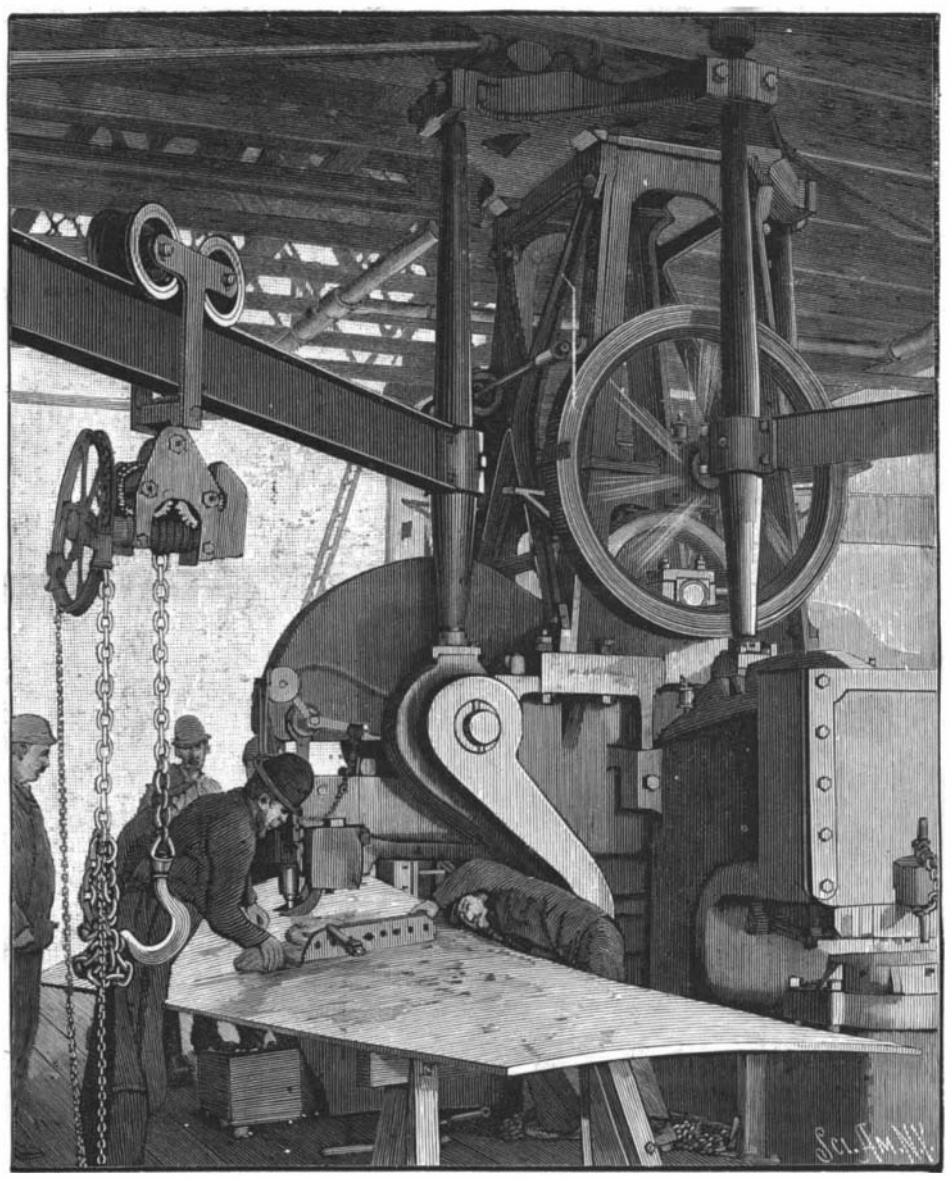
COMBINED PUNCH AND SHEARS.

To the Editor of the SCIENTIFIC AMERICAN:

In your issue of January 12, 1895, you give an illustration and description of a hydraulic punch used at Cramps. I would say that this punch [shown herewith] is not hydraulic, but worked by steam power, having an independent engine attached to the back of the punch. The engine makes some 170 revolutions per minute, the fly wheel of which is shown in your cut, that being the front. The machine is a combined punch and shears. That at the left of the illustration being a punch for rivets, etc., the punch in the front being for larger holes, and the shears being to the right, not shown in the picture, all of which are worked by the engine. The punch is thrown in and out of gear by a counterbalance weight, worked with a couple of ropes by an attendant.

STEPHEN P. M. TASKER, JR.

Cramp Ship Yard.



COMBINED PUNCH AND SHEARS.

Dyed Grasses.

If natural dried flowers are scarce, the void is filled by the many beautiful grasses now used to so large an extent. Foremost is the Vera grass, with its bold and striking tree-like plumes, now very largely imported and dyed in various tints—salmon pink, canary, autumn tints, a combination of red, orange, golden brown, shades of green, pink, and magenta, the newest being heliotrope, as fashionable in artificial flowers and grasses as in those of nature; and next in importance is the Pampas grass in magnificent plumes, undyed and dyed in various colors. Some novel Japanese and African grasses are strikingly handsome; the latter are from the Congo, some in rich, dark colors, and some delicately silky; they include the "Elephant" and "Congo" reed grasses. Barley and oats are seen dyed in very pleasing colors, one being a bright bronze. Eulalia, Bromus, Briza, Erianthus, Lagurus, Panicum, and others, with dyed forms or the feather grass in abundance.

Artificial Illumination.

The Lancet, London, has lately investigated the relative merits of the various systems of illumination now in vogue, among them the incandescent gas light system of Welsbach. The following are the results: The incandescent system of electric lighting must, of course, rank first from the point of view of health, since it affords a soft, agreeable light, without giving rise to any vitiation of the air; there is no combustion, and, consequently, there are no products of combustion, complete or incomplete. From the same point of view we are bound to place next, in the face of the result of our present inquiry, the incandescent gas light in its improved form. It is even less productive of carbonic acid gas than the average oil lamp, and consumes not quite one-half less gas than the existing type of burners, giving rise, therefore, to the evolution of half the heat and half the amount of carbonic acid gas, while its illuminating power expressed in candles is more than three times as great as the best ordinary gas burners or the incandescent electric lamp, each of which does not generally exceed 16 candle power, unless a very great expense is no object to the consumer. We are far from saying that the incandescent system of gas lighting has attained to the highest pitch of perfection; still, we are well within bounds when we regard it as the system of gas lighting which utilizes most efficiently and most economically the full powers or duty of coal gas as an illuminating agent. Some have expressed fears that the burner is a delicate instrument—much too delicate—for the part it is destined to fulfill; but we have found with ordinary care—and care is well worth a little exercise in view of the enormous advantages the system affords—that these fears need not exist. We understand that in practice the average life of a mantle, taking risk of breakage into consideration, is between three and six months, but the mantles have been frequently known to last over a year, at the end of which time their lighting efficiency was still good. One more important point, already slightly touched upon, is that, in spite of its high illuminating powers, this burner does not require a gas possessing any special illuminating value itself; and as it is the maintenance of a high illuminating value which contributes in a large measure to the cost of coal gas, the general adoption of the incandescent system of gas lighting would probably lead to the production of a cheaper gas, possessing little illuminating power, but adapted equally well for the incandescent gas burner, which would then contrast more favorably with coal as regards cost for heating purposes. The production of a cheaper gas since the introduction of the incandescent system of lighting has, we believe, engaged the serious attention of engineers, chemists and others, and we may expect to hear more on this important question before very long. To hygienists this is an extremely important aspect of the incandescent gas system, inasmuch as it is obvious that the introduction of cheaper gas, by its more extensive employment for fuel, would tend to free London from the reproach of being a city which, during the greater part of the winter, is enveloped in vilely suffocating fogs. There is, therefore, we think, a future for the new system of far-reaching importance to the community.

Ornamenting Glass.

A new method of ornamenting glass has been discovered recently by Gorlitz, of Zurich. The method is not a very expensive one and the results obtained are said to be very beautiful. The design to be reproduced on the glass is first engraved on "positively" on a printing plate of rubber, and this plate after being coated with varnish is pressed against the glass. The glass is then covered with bronze powder or other suitable material. The portions forming the design will remain empty and therefore transparent. The glass is then placed in a frame which has a backing of strong paper board, over the front of which is mounted a bright sheet of tinfoil or tin plate. It will be seen that the design will therefore be shown by a reflected light through the transparent portions of the glass, while its other parts will form a background stamped in relief. The common plan for producing enameled writing and designs in relief on glass has been to apply enamel paint by means of a brush.