

AN ADDRESS ON THE PATENT LAWS.

Sir David Brewster recently delivered an introductory address at the opening of the Edinburgh University, from which we extract the following interesting passages on the subject of the patent laws:

"Among the subjects which occasionally arrest and agitate the public mind, there are few which immediately affect the position and interests of educated men. Such questions, however, have occurred, but they have generally been settled by the united wisdom of the Government and the Legislature, without any of those appeals to popular or party clamor under which great measures have been often abandoned or impaired. A question of this kind, however, has unexpectedly arisen respecting the amount of protection which inventors should receive from the Legislature; and there is, doubtless, no subject more important to educated men, whether their education has been completed in the school, the workshop, or the university. You are all aware that the author of any literary work, however small be its dimensions and however frivolous its subject, enjoys, by the laws of England, the sole right of publishing it for twenty-eight years, and during the rest of his life. The only tax exacted by the law, and that only for the benefit of the public, is the presentation of five copies to the principal libraries in the kingdom. The artist, the engineer, the draftsman, the geographer, the hydrographer, and the sculptor enjoy the same valuable right; and so complete is the protection afforded by the law that piracy is almost unknown and works thus secured constitute a property which can be as safely transferred as land or money in the funds. It is otherwise, however, with the inventor of new machines, new instruments, and new processes in the fine and useful arts. While the author can instantly dispose of his work or draw the profits which it may yield, the inventor must devote himself to the development and practical application of his invention. When his arrangements are complete, he applies for a patent and he receives a right to use his invention for fourteen years by paying fees and expenses which, half a century ago, amounted in many cases to £400 or £500. The right thus obtained was entirely illusory. His parchment, indeed, bore the Great Seal of England, but the patent could be refused, and the price of it forfeited, either from want of complete originality in the invention or from frivolous defects in his own description of it. In this state of the patent law, injurious to the interests of the public and ruinous to inventors, our distinguished Chancellor, Lord Brougham, directed his attention to the subject, and carried two bills through Parliament, which reduced the price of patents and removed many of the more obnoxious provisions of the former law. These improvements were generally acceptable, and though inventors were still dissatisfied with the large sum of about £150 or £200 which they had to pay, and with the imperfect protection which their patent secured, they nevertheless submitted to the operation of the law, in the hope that future legislation might improve it. Under these circumstances, men of science, and inventors of all classes, were startled with a proposal made by a distinguished engineer, that the patent law should be repealed, and that there should be something like free trade in inventions. In addressing an assembly of civil engineers at Sheffield, Sir William Armstrong stated that the dauntless spirit which, in matters of commerce, had led this country to cast off the trammels of protection had resulted in augmented prosperity to the nation, showing the injurious tendencies of class legislation when opposed to general freedom of action; and he expressed a hope that the same bold and enlightened policy might be extended, in some degree at least, to matters of invention. For his own part, he was inclined to think that the prestige of successful invention would, as a rule, bring with it sufficient reward, and that protection might be entirely dispensed with. Under the free trade of the present day, thus highly and justly appreciated, we receive the corn and the wines of one country in return for the iron and the coal of another; but it exceeds our comprehension how there can be free-trade between two parties, one of which is the small class of discoverers or inventors and the other the whole mass of society, who are not inventors at all,

and who, with all the influence of numbers, wealth, and position, would instantly appropriate and turn to profit every discovery in science that had a practical bearing and every mechanical idea that could be embodied in an instrument or a machine. Between such parties as these there can be no interchange of ideas and no reciprocity of interests; and as there can be no dealings between them, there can be no freedom of trade in any sense analogous to that great commercial doctrine to which reference has been made. But even under the present patent laws, as they exist in every part of the Old and New Worlds, there is already something approaching to freedom of trade. Every foreigner can obtain a patent in England, and an Englishman enjoys a similar right in return. The producers of ideas, therefore, are in every country in the same relative position nearly as the producers of those commodities which are interchanged under free trade—the non-producers of commodities deriving analogous advantages under the law—the one from the importation of useful inventions and the other from the importation of the necessaries and luxuries of life. There is still, however, another variety of free trade in inventions which, I think, is the only one that deserves the name. Were a patent right granted at the cost merely of its registration to every applicant and continued with equal security during the same period as a copyright, every new idea—every scheme of ingenuity or adventure—would be brought before the public and elaborated for the use of man. Such a scheme may be expected in some future age, when statesmen may have learned to face problems before which they now quail, and to appreciate interests to which they are now insensible. Regarding all intellectual rights as equal, and as sacred as any other species of property, it is not easy to understand why they should not be placed under the same *ægis*. *Esto perpetuum* is the brand which God and reason have stamped upon whatever man's genius or man's industry has created for the good of man. If the rich or the barren soil, which conquest has wrested from the savage or industry won from nature is protected with as much care as the life of its owner, why should we not equally protect the right achieved by genius, whether in the useful arts it creates for humanity new powers and products, or blesses our species with the divine creations of poetry, or eloquence, or art? If James Watt has bequeathed to us mechanism to bring water from its earth-bosomed springs, or iron from its stony bed, or coal from its fossil grave—if Milton has sung the loss and recovery of Paradise in strains moral, religious and sublime—why should not the philosopher and the poet enjoy the same right of property as a landlord who reclaims a moss, gives verdure to a heath, or makes the yellow grain wave over a beach of sand? I should hardly have been justified by the speech of Sir W. Armstrong in taking alarm at the revolutionary opinions which he has maintained; but it is well known that a Cabinet minister of high influence has given utterance to the same views, and a committee of Parliament has been appointed to report on the subject of patents in all their relations. The British Association was the first public body that took alarm at the new doctrines and boldly denounced them; and an inventors' institute has been formed in the metropolis to resist, by every legal means, any measure of spoliation that the Government may be induced to support. I have brought this subject under your notice in the belief that every educated man has a substantial interest in obtaining a due protection to inventors, and in the hope that in your debating societies you may regard this subject as worthy of discussion."

RAPID DRY COLLODION PHOTOGRAPHY.

In the practice of photography the pictures are usually taken on glass plates, from which prints are afterward obtained on prepared sheets of paper, by permitting the rays of light to pass through the glass plates and fall upon the prepared paper. A problem of great interest to photographers has been the discovery of a dry collodion process by which plates can be prepared and rendered as sensitive as by the usual "wet collodion process." By the wet process the plate is finally prepared and the negative picture has to be taken and finished on the spot where the view is taken. This is easily accomplished in a

house, but the traveling artist, who takes pictures of the sublime and beautiful in nature, is required to carry a load of articles to operate by such a process. To avoid this he employs dry plates, but hitherto these have not been made so sensitive and certain as wet plates, hence they require to be much longer exposed to the light. As shadows and figures in nature are constantly moving; it is very essential to obtain sensitive plates. The following is the substance of a paper upon this very interesting subject, recently read before the British Association for the Advancement of Science, by Thomas Sutton:—

Dry plates have been produced by an improvement and have proved to be as sensitive as wet plates, and they have preserved their good qualities for many weeks. Their sensitiveness depends upon the accelerating effect of bromine in dry collodion, and in this respect an analogy exists between the daguerreotype and dry collodion processes. In the former a silver plate, simply iodized, is extremely insensitive, but when submitted to the fumes of bromine its sensitiveness is increased a hundred-fold, the same thing happens in those collodion processes, wet or dry, in which the free nitrate of silver is washed out of the film. A collodion film, simply iodized, and without free nitrate, is as insensitive as an iodized daguerreotype plate, but a bromo-iodized collodion film without free nitrate may be rendered as sensitive as a bromo-iodized silver plate. In the wet collodion process the most exalted sensibility is conferred upon a simply iodized film by the presence of free nitrate of silver; but free nitrate cannot be retained in a dry collodion film, because it not only crystallizes on drying, but by becoming concentrated as the water evaporates, dissolves the iodide of silver, and forms a curious and interesting double salt, the exact properties of which have not yet been fully investigated. The principle, therefore, of preparing a rapid dry collodion plate consists in using bromo-iodized collodion, and removing all the free nitrate, which is the element of instability.

But the image produced upon a bromo-iodized silver plate, developed with mercury, is extremely thin and superficial, as may be proved by transferring it to a sheet of gelatinized paper; and similarly, the image developed by pyrogallic acid upon a dry bromo-iodized collodion film is thin and too transparent to yield a good printing negative. It is necessary, therefore, to apply to the film a coating of some organic substance, in order to give density to the dark parts of the negative. Many substances have been used for this purpose, viz., gelatine, metagelatine, albumen, various sirups, gum arabic, infusion of malt, tannin, &c., and experimenters have almost without exception, exhausted their ingenuity in varying these preservative coatings, as they are called, instead of seeking in the use of bromine for the true accelerating agent. The preservatives named have not all the same effect, and besides affecting the sensitiveness of the film, they also determine the color of the finished negative; gelatine and gum giving a black, tannin a red, and albumen a yellowish color to the deposit in the dark parts. Much, therefore, depends upon the selection of a proper preservative, when the most exalted sensitiveness is required.

One more difficulty remains to be overcome, and it is this. When a collodion film has once been allowed to get dry, and is wetted a second time, it is very liable to split and leave the glass; or if a preservative has been applied to it, it is very liable to rise in blisters, which spoil the negative. But this may be prevented by giving the glass plate a preliminary coating of india-rubber dissolved in kerosolene.

The operations in the rapid dry process are, therefore, as follows:—

1. Clean the glass plate, dry it thoroughly, and apply to it a solution composed of one grain of india-rubber dissolved in an ounce of kerosolene.
2. Coat the plate thus prepared with bromo-iodized collodion, containing an equal number of atoms of iodine and bromine, added in combination with cadmium. There should be about 5 grains of mixed iodide and bromide of cadmium to the ounce of collodion.
3. Excite the film in a bath composed of 30 grains of pure recrystallized nitrate of silver, slightly acidified with nitric acid.