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ELECTRIC LIGHTING BY INCANDESCENCE.

For some months it has been pretty generally recognized in this country that, so far as laboratory tests on a considerable scale can determine the general applicability and economy of a novel invention, there could be no serious doubt of the ultimate success of electric lighting by incandescence. At Menlo Park a number of Edison lamps have been kept alight for months together, furnishing as near an approach to perfection in the quality of the light for interior uses as one could ask for, and proving the durability and economy of the lamps. Applied to the steamship Columbia the lamps have made the voyage from New York to Oregon around Cape Horn, thoroughly demonstrating their efficiency and endurance under very trying conditions. With much labor and ingenuity Mr. Edison has reduced the manufacture of his lamps to what may fairly be called a commercial basis, judging by the scale of the manufacture, the simplicity of the processes involved, and the uniformity and cheapness of the resulting product. He has erected a large factory for lamp making, and trained a numerous corps of glass blowers and other workmen for the work in hand. He has built a machine shop, and constructed in it many costly and powerful dynamo machines and other apparatus needed in establishing the working plant of central stations for operating, in this city and elsewhere, practical systems of electric lighting. He has surveyed certain sections of this city preparatory to the general introduction of his lamps, and has made extensive preparations for exhibiting the light at Menlo Park on a scale so large as to demonstrate beyond cavil the practical value of his system for general and economical illumination.

Meantime other incandescent electric lamps, such as Maxim's and Sawyer's, have been on trial in New York and Philadelphia, developing results well calculated to confirm the belief that interior lighting by electric incandescence has got a long way beyond the experimental stage of development, and will pass to that of practical application on a commercial scale as rapidly as the inertia of vested interests and popular customs can be overcome. There are, for example, about one hundred Maxim incandescent lamps in operation in the Equitable Insurance Building in this city.

While all this certain and substantial progress has been making in this country, both to demonstrate the utility and economy of this method of lighting houses and to insure its ultimate if not speedy adoption, the electricians and practical men of England have lost no opportunity to assert the utter futility of any efforts in this direction. The ignorance and incapacity of Americans who, like Mr. Edison, have presumed to argue the feasibility of electric lighting by incandescence, have been ridiculed unsparringly, with much parade of mathematical formulæ and alleged experimental demonstration; and not a little mock sympathy has been wasted on the deluded followers of the incandescent "Will-o'-the-wisp" which was leading so many Americans astray.

It is not a little amusing, therefore, to witness the sudden conversion of these decriers of electric incandescence to a fervent belief in the applicability and economy of such a system of lighting, simply by a single exhibition by an Englishman of what appears from the description furnished to be a close imitation of Mr. Edison's lamp, that is to say, the lamp which Mr. Edison, with characteristic effrontery, has been patenting as his own. As usual, it turns out that Mr. Edison has merely copied, with phenomenal exactness, an invention which an Englishman made years and years ago, but strangely neglected to make public until some time after Mr. Edison's alleged invention had attracted world-wide attention.

At a meeting of the Literary and Philosophical Society, Newcastle-on-Tyne, October 20, Mr. J. W. Swan delivered a lecture on electric lighting, and exhibited a lamp in which light was produced by the incandescence of a slender ring of carbon in a vacuum. In the Electrician of October 30 there appears a three-page abstract of Mr. Swan's lecture, and other scientific English papers of corresponding date devote much space to the discussion of the lecture, the new lamp, and the newly demonstrated efficiency of electric lighting by incandescence. We fail to find, however, either in the abstract of the lecture or in the engraved illustration of the lamp, any strikingly original discovery or radical novelty—barring, of course, whatever has been pirated in advance by Mr. Edison and other American inventors and made known in reports of their alleged experiments and inventions. Mr. Swan's plan of distributing the current to his lamps may deserve notice at another time. While pumping the air out of the globe of the lamp, and when the vacuum approaches completion, Mr. Swan heats the filament of carbon to incandescence to expel the gas occluded by the carbon in its cold state; otherwise, he holds, the outrush of occluded gas, the moment the current of electricity is turned on to the finished lamp, would destroy the vacuum, and presumably injure the lamp or lessen its endurance. This precaution Mr. Swan thinks highly important, and doubtless Mr. Edison will agree with him, seeing that he has taken it from the first. It was clearly from this practice of Mr. Swan's that Mr. Edison got his idea of treating platinum and other substances by electric heating in vacuo, as described before the Science Association a year ago last summer. This, however, is a matter of small consequence. The remarkable feature of the case is the sudden change of attitude on the part of many English authorities with respect to the possibility of the successful application of incandescence to the problem

of interior lighting by electricity. American workers in this field can scarcely fail to be encouraged by so hopeful a sign.

PROGRESS OF PATENT LAW.

New volumes of Supreme Court reports and of Judge Clifford's decisions have just appeared, having many interesting decisions on patent law. Judge Clifford's learning and ability in this branch are well known. His broad and liberal views have done very much to establish and protect intellectual property; and the intelligence of his serious ill health and probable withdrawal from active duty on the bench will be heard with grave regret.

What inventions are patentable is discussed in several cases. In one the invention was called "comminuted glue." The specification said that the glue of commerce requires a long time for soaking and dissolving it. The patent was for breaking the glue into small particles of uniform size, "grains" in short; after which it might be put up for sale more conveniently and used much more easily. Judge Clifford said that this is really nothing more than grinding glue fine; which is not "new." Articles of manufacture may be new in the commercial sense, which are not new in the sense of the patent law. To render a composition of matter patentable it must be new in the sense of having different properties from anything else in common use. Ground gypsum is comparatively a new article of commerce, but it was never patentable as a new manufacture, for grain has been ground for centuries. Refined sugar was formerly sold in loaves; nowadays it is pulverized and sold as "granulated sugar." In this form it is comparatively a new article of commerce, but it was never patentable as a new manufacture, for every one knew that sugar might be pulverized in various ways. A really new machine for grinding—a new kind of mill—might be patented; but the idea of grinding an article which has previously been sold whole cannot be called a new invention. In another case the inventor said that the former mode of casting steel tires upon iron car wheels involved using a flux to promote the welding of the iron and the steel; to which there were several objections. He proposed by letting the melted iron run in at several holes instead of one, to dispense with the necessity of a flux. The judge said that welding without a flux was not new; blacksmiths have practiced it for a long time. Neither is using several holes instead of one a new idea. Therefore in both cases the decision was against the invention.

The invention must be useful as well as new; but slight utility is enough. Some one devised a child's table waiter, being a waiter having one of its edges turned down instead of up. This edge, by pressing against the edge of the table, prevents the child sitting in front of the waiter from pushing it about by his movements. The court said that this was of some use and that some was enough.

One case required explaining why so much exactness is required by the courts in drawing up specifications. Inventors are gradually learning that long and varied experience is needful to qualify a person for framing specifications aright, and that litigations or losses result from a want of fullness and accuracy in the description. The reasons why the law exacts so much in this respect are not well understood. Judge Clifford says that there are three: 1. That the government may know what they have granted, and what will become public property when the term of the monopoly expires; 2. That licensed persons desiring, during the term, to practice the invention, may know how to make, construct, and use it; 3. That other and subsequent inventors may know what part of the field of invention remains unoccupied.

Every one knows that where an accident or an honest mistake has rendered the inventor's description of his invention incorrect he has an opportunity to surrender his patent and to have it reissued correctly. In a recent case the commissioner of patents considered that an applicant for a patent was claiming more as his invention than was rightfully his, and refused to grant a patent unless the applicant would disclaim the portion deemed to be in excess of his real rights as inventor, and accept a patent for so much only as the commissioner considered he had really invented. He consented to this; and a patent for the reduced claim was issued. Some time afterward he returned, submitted his patent for reissue, and succeeded in getting one—through a new examiner or commissioner probably—which included the claim formerly rejected. The Supreme Court pronounces this a dishonest proceeding and one which cannot be sustained. The judges say that the allowance of claims which an applicant has previously abandoned in order to obtain allowance of his patent, is the occasion of immense frauds against the public. A reissue is allowed to relieve against errors by accident or mistake. When an application has been examined and the claims which are admissible are settled with the acquiescence of the applicant, for him, after the investigation has been forgotten and perhaps new officers have been appointed, to return to the Patent Office, and, under pretense of mistake in his former specification, to obtain a reissue including matters which before were intentionally rejected, is grossly improper. No such patent can stand.

Several cases have been decided upon patents for combinations; and they explain that a person may have a patent for combining old things in some new and ingenious way of working together to produce a new result, also, that under