Scientific American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT
NO. 37 PARK ROW, NEW YORK.

O. D. MUNN. A. E. BEACH.

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NEW YORK, SATURDAY, FEBRUARY 26, 1881.

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THE ENCOURAGEMENT OF INVENTIONS—WITH A RESERVATION.

A curious phase of opinion crops out constantly in newspaper comments on patents and the rights of inventors. Even journals of metropolitan dignity and influence give frequent evidence of it, and thus unwittingly encourage the attacks upon the patent system of parties interested in the infringement of patent rights. The opinion referred to is hard to formulate, but it seems to be, in brief, that inventors ought always to be encouraged—provided they do not invent too much or do their work too well. In all secondary and relatively unimportant matters the inventor's rights should be strictly respected and rigorously guarded; but when the inventor produces some article or process of exceptional value, something that the public cannot afford to do without, after they have learned to use it, then it should promptly be taken away from him. Having control of something that everybody wants, the patentee becomes an "odious monopolist." His service to the public in producing so great a convenience is forgotten or grudgingly admitted. The direct or indirect advantage of the invention to the public may be a thousand dollars to every hundred dollars received by the inventor for its use; the thousand is accepted as a natural right and no account is made of it, while the inventor's hundred is eyed askance as so much paid for an intangible idea. It was such a simple thing! Scores of people must have thought of it if he had not; why, then, should people pay for what they might have had for nothing if they had only had the mind to think of it? No comparison is made between their condition before the invention was made and after it was adopted, but only between their condition with the invention and paying for it, and their condition having the invention and not paying for it. The visible thing is the inventor's profit, and that is grudged him.

A pretty illustration of this thankless logic is furnished in the editorial comments of the *Herald* on Judge Nixon's recent decision sustaining the right of the Bate Refrigerating Company to the processes covered by their patent.

The *Herald* says: "Our patent laws sometimes lead to practical absurdities. If there be but one safe and economical method of preserving fresh meats shipped to Europe, the vast dimensions and possibilities of this expanding trade make it for the general interest of commerce that this method should be free to all. It would be well if all patents were granted subject to revocation in the public interest on payment of a reasonable compensation. Processes are often patented of such extreme simplicity that hundreds of ingenious minds would readily discover them, and when the patent injuriously obstructs a great branch of foreign trade the public should not be compelled to await its expiration. The government which creates these artificial rights should grant them with an explicit reservation in favor of the public."

The absurdity of this position is simply grotesque. It assumes that the patent system is not designed "in favor of the public;" but that its purpose is to reward the inventor only. The truth is the patent system regards the inventor and his encouragement simply as a means to an end, and that end is the advancement of the useful arts and sciences for the public benefit. The proposed reservation would simply defeat the end aimed at by attaching a penalty to successful invention.

The alleged obstructiveness of the more perfect inventions when patented is equally absurd. Admit, for the sake of argument, the assumption that there is but one safe and economical method of shipping fresh meat to Europe. Without the inducements held out by the Patent Office that method would not have been developed, perfected, and patented. Knowing that a successful solution of the problem would be profitable to them, the inventor and his associates thought, studied, and experimented until the solution was gained, and then accepted the terms offered by the government for the temporary monopoly of their system. Without the invention there could be, it is assumed, no profitable shipment of fresh meat to Europe. With it such shipment is possible. So far there has been an extension, not an obstruction of trade. Other men are at liberty to perfect, if they can, the previously existing methods or to devise new methods. They plead that they cannot; therefore, they say, our inventor must let them use his method for nothing, or for a price which they think is reasonable. If he will not consent he is an obstructor of trade!

To revoke the "obstructive" patent because its value has led other men to covet the privilege it covers would be a breach of contract on the part of the public that would react disastrously in the discouragement of further invention. To confiscate the property indirectly by compelling the owner to surrender it at a price not fixed or agreed to by himself would be equally impolitic and scarcely less unjust. We doubt whether there was ever an invention which the inventor would not part with for a "reasonable compensation."

The *Herald* asserts that when an invention has been proved to be of great public utility the "government should possess the power to open it to universal use without waiting seventeen years for the expiration of a patent," and calls this a revision of the patent laws "in the interest of justice and common sense." If a patentee, realizing the great value of advertising in the *Herald*, should insist that the government ought to compel the *Herald* to advertise his patented invention "for the public benefit" for nothing, or at a price which the patentee or his friends might fix as reasonable, the *Herald* would probably speak disrespectfully of his intelligence.

IS GLUCOSE UNWHOLESOME?

The manufacture of glucose and starch sugar having increased with surprising rapidity recently we are frequently asked whether its use will injure the health. Some claim that it will, others assert the contrary. Reliable experiments by competent persons are rare, and every fact which throws any light upon the subject is welcome and will have its effect. We are, therefore, willing to give place to certain statements made by Dr. J. Nessler, of Baden, in regard to his own experience with starch sugar. In Germany the starch is made from potatoes, and of course German glucose may possess some properties unlike ours, which is made from corn-starch. The specimen used by Dr. Nessler in his experiments may or may not have been a fair average of the glucose made in that country, but his statements will suggest to courageous parties at home the propriety of putting American glucose to the same tests or similar ones.

This kind of sugar has been used for nearly fifty years, says Dr. Nessler, for improving sour wine, in making beer, and in confectionery. Since starch is not injurious to the health, and the sulphuric acid is almost completely removed, it was assumed that no hurtful substance could be formed by the action of dilute acid on starch. Up to a very recent period no one harbored a suspicion that starch sugar could exert any injurious effect. This kind of sugar is cheaper and is better fitted, for other reasons too, for making cheap drinks than cane or beet sugar. It had, therefore, been recommended officially and privately, even by Dr. Nessler himself, under the conviction that the use of brandy could best be checked by the manufacture of good and cheap drinks.

Not long since A. Schmitz, who drank natural wine one day and wine containing glucose the next day, tried the experiment of injecting the unfermentable substance contained in starch sugar into the veins of a dog. He noticed that starch sugar had, or might have, a stupefying or narcotic effect.

Incited by these statements of Schmitz, Dr. Nessler began some experiments with the unfermentable constituents of such sugar. He obtained from Alsace a 20 per cent solution of a sugar which was free from arsenic and in which there was 26 per cent of unfermentable substances. To the solution he added enough yeast to set up fermentation, and when this was added, filtered the liquid and evaporated one liter of it to a sirup. The alcohol and any other volatile product of fermentation were thus expelled. This sirup was now diluted to 100 c.c., so that it contained ten times as much of the various unchanged constituents as the original solution. At 7 A.M. he took 50 c.c. (nearly 2 fluid ounces), representing 100 grammes of sugar, and at 10 A.M. as much more. Its taste was bitter and repulsive. Toward noon he felt rather badly, but not sufficiently to be able to ascribe with certainty any hurtful action to the extract which he had taken. At 2 P.M. he took as much of the residue as represented 100 grammes of sugar, but this time it had not been evaporated so far as the first time, but only to two-fifths. An hour later a violent perspiration broke out, and a little later a violent headache set in which lasted until late in the night.

A few days later Dr. Barth, assistant at the experimental station, took the unfermented portion from 90 grammes (over 3 ounces) of the starch-sugar at 10 A.M. The fermented and filtered liquid was again evaporated to three-fifths. A cold perspiration soon showed itself, attended with a tightness of the chest. At noon he had no appetite, and threw up the soup which he had eaten. In the afternoon he was seized with a violent headache that lasted until evening, and the next day he did not feel well.

Dr. Nessler thinks there can be no doubt left a substance injurious to health remains in the liquors made by fermenting this sugar. Possibly not all starch-sugar has the same effect, but there is always a bitter substance or extract left after fermenting and evaporating, which turns the plane of polarization to the right. It is probable that all are more or less injurious according as it contains more or less of this substance.

Whether this substance is formed during the fermentation or was already there, and whether its injurious effects are not destroyed or neutralized by the alcohol in which it is usually dissolved, are questions which he does not attempt to answer.

WRITING INK.

There are few chemical preparations the use of which has become so general as that of writing ink. And yet it is rare to find an ink that fulfills all the conditions required of it. This is explainable upon the ground that ink recipes are not constructed according to any chemical formula, but that we are compelled to rely upon empirical experiments and make use of the results gathered by practical experience. A good black ink must flow easily from the pen, and must yield either immediately or in a short time a deep black writing. It must not corrode metallic pens nor destroy the paper. Further than this, a good ink should contain no considerable sediment when kept in airtight bottles. In ordinary ink bottles a sediment will always form, and the more it is exposed to the atmosphere the faster it will form. An ink that is to be used for important documents must not be washed out with water or absolute alcohol so as to be permanently illegible.

Ink may consist of either a clear solution of any dyestuff, or, as in the case of common black ink, a finely divided, insoluble precipitate suspended in water. The chief materials used for making this ink are gallnuts, green vitriol, and gum, which are employed in the most varied proportions. The