

may work hardship in some cases, but it incites to vigilance, and is, on the whole, vastly preferable. The same would doubtless be the case in relation to the assignment of patents.

But licenses are by the present law not required to be recorded at all. After the most thorough care and vigilance, the purchaser of a patent may find that scores of licences to make, use, and sell the thing patented in every portion of the United States have left the property, for which he has paid his money, comparatively worthless. This ought not to be so. A license should be recorded just the same as an assignment or a deed.

But there is another evil, which, although less in magnitude, is just as palpable and should not be overlooked. The 48th section of the act of 1870 summarily abolishes the appeal from the Commissioner to the courts in interference cases. There is reason to believe that this was the result of accident or mistake. Interference cases above all others should be subject to such appeals. The inquiries involved are just as intricate, and the questions of law and fact call into requisition as high an order of legal acumen, as those which tax to their utmost capacity the most experienced and clear-sighted minds that are to be found on the bench of any court in the republic. And yet, by the law as it now stands, these questions are to be decided, without any right of appeal, by a Commissioner who is wholly inexperienced in such matters, who has never read a chapter of Kent or Blackstone, and who is wholly ignorant of the great legal maxims which underlie all sound judgment in matters of that nature. Such an arrangement is outrageously improper, and should be changed at once.

We shall make only one further suggestion in this connection. After a decision by the Board of Examiners-in-Chief, we see no reason why the dissatisfied party should be obliged to appeal in all cases to the Commissioner before he can make his appeal to the Supreme Court of the District, especially in interference cases. If such a case is appealed from the Board of Examiners-in-Chief, it rarely if ever fails to be taken eventually to the court. It would save much trouble and some expense if the dissatisfied party were permitted at his option to appeal directly to the court. A change in section 48, which would make it read as follows, would accomplish the entire purpose above suggested.

"Section 48. *And be it further enacted* that, if such party is dissatisfied with the decision of the Commissioner, he may appeal to the Supreme Court of the District of Columbia sitting in *banc*. Or the dissatisfied party may at his option appeal directly from the decision of the Examiners-in-Chief to the said Supreme Court without first having appealed to the Commissioner of Patents."

CAN ANTS TALK?

No one has studied the habits of "our six-legged rivals" without becoming impressed by their ability to communicate with each other, and the wide range of intelligence which they seem to be able to convey. Information of common danger is quickly spread throughout colonies numbering many thousands, the news being brought by perhaps one or two spies. Hitherto their mode of communication has been a mystery, the most plausible hypothesis being that it was by a sort of fencing with their antennæ. Thus an ant returning from a foraging expedition meets another outward bound. They stop, strike antennæ together a few times, then proceed, No. 1 to the nest, No. 2 setting off on a new course and going straight to the place where No. 1 found her load. It would now appear that the striking of antennæ is merely a sort of salutation, as two neighbors might shake hands, while conversation goes on by other means. At any rate, according to the report of Professor Landois to the Natural History Society of Prussian Rhineland, they are provided with a sounding apparatus resembling that of the sand wasp. To have implies to use; and though its pitch is generally inaudible to human ears, its range of tone may be ample for a fully developed language. We say "generally inaudible," notwithstanding Professor Landois' belief that it is always so, having more than once noticed a faint strident, hissing sound proceeding from columns of large ants when annoyed. The next thing in order is an apparatus for making inaudible sounds audible, as invisible rays are made luminous; then some enterprising student may give us a comparative grammar of formic idioms.

THE SEWING MACHINE.

The Committee on Patents of the House of Representatives has recently reported adversely to the application for the extension of the A. B. Wilson sewing machine feed motion patent. As we have previously explained, this patent has been controlled by a coalition of manufacturers, namely, the Wheeler & Wilson, Grover & Baker, Wilcox & Gibbs, Singer, and the two Howe companies, who have made it the means of exacting immense royalties from smaller makers, and thus of distancing all competition, while at the same time of amassing colossal profits from their own large sales. The patent has already been once extended, and this second extension, had it been granted, would have continued the monopoly for a further period of seven years, during which time a score of millions would probably have been added to its already vast wealth. As it is, the invention now becomes public property, and is free to all users. The onerous royalty is thus obviated, the door opened widely for a healthy competition, and the diminution in price of the sewing machine probably to the extent of fifty per cent, will doubtless soon follow.

The history of a successful invention of this kind furnishes a suggestive commentary upon the wisdom of the principles which underlie our system of patent laws. Of these, the ultimate object is, solely and purely, benefit to the

community, not the mere securing of a monopoly to the inventor. But as is exemplified in the instance in point, although the proprietors of this valuable right have been allowed to exercise a species of tyranny for several years, and to exact from the public large sums, still the object has been not to afford means for them to get rich, but to induce them to improve and develop the invention. Spurred on by immense gains, those reaping the harvest have accomplished this development. More than that, they have evolved a new and lucrative industry. Ample opportunity has been afforded them for all this; and now Congress, in declining to continue the same privilege, asserts that the benefits to the public will not be so great in so doing as will be secured by removing the restrictions. Certainly the reward obtained during the period of the monopoly by its owners has been enormous, but it is utterly inconsiderable beside the profits which will now accrue to the public.

In brief, for twenty-one years we have submitted to great exactions, but in so doing we were investing sums to secure the prosperity of our descendants. By allowing a few to become wealthy over a couple of decades, we have induced them to develop a great industry which will prove a source of income to millions in years to come.

PROSPECTS FOR 1875.

We are gratified to be able to state that the subscriptions to the SCIENTIFIC AMERICAN, for the new year of 1875, are pouring in from all directions as they have never done before. We are now printing, every week, 50,000 copies of our journal, which is undoubtedly more than the combined circulation of all other papers of its kind published in the world.

We hope our friends who have not yet renewed, and all who are engaged in the formation of clubs, will send along their names as rapidly as possible. To prevent the loss of back numbers by those whose remittances are a little tardy, we electrotype each issue and preserve the plates, whereby we are enabled to print new editions of any numbers that may be required.

We recommend persons to patronize their local periodical dealers, when equally convenient for them, in preference to the mail. By receiving the paper weekly from the counter or by carrier, the objectionable creases in the paper, necessitated by the folding for the mail, are avoided; besides, it is commendable to patronize home enterprises in every thing.

We have the most gratifying assurances from all parts of the country that, notwithstanding the hard times among some of our industrial classes, the demand for scientific and mechanical information is increasing. Our subscription books, since the new year, demonstrate this fact.

SCIENCE RECORD FOR 1875.

We have much pleasure in announcing the issue of the volume for the current year, which we believe will, on examination, be found fully equal in merit to any of the preceding books of the series. The SCIENCE RECORD for 1875 contains about 600 pages, and such is the wide scope and variety of contents that the index alone fills some ten closely printed pages. The index of references is also extensive, designating nearly one hundred and fifty scientific publications that have been more or less consulted in the compilation of the work.

In the department of Chemistry and Metallurgy, which covers nearly sixty-eight pages, we have accounts of all the leading improvements, discoveries, and suggestions in these important branches, made public during the year just closed. All who are interested in either of these departments of Science, or who desire to be concisely informed as to the latest progress therein, will find the records to be of value.

The department of Technology, occupying nearly one hundred and fifty pages, contains a very large amount of new and useful information, illustrated by a variety of engravings. The new alloys, new recipes, and new processes in the various arts, here collected and condensed, are of great value, and probably not attainable in any other one work. Among the illustrated articles is the latest form of machinery for the artificial manufacture of ice: also the methods and apparatus used in gathering natural ice. Here we find described the many uses of paraffin, new methods for the ornamentation of metals, nickel plating, iron welding, new imitations of silver and other precious metals, directions for the practice of several new and simple arts, photographic improvements, waterproofing of paper, manufacture of carbonic acid, solvents for rubber, protection and ornamenting of iron, preparation of bronzes, uses of mica, production of artificial leather, artificial manufacture of precious stones, tempering of steels, and a multitude of other subjects, all useful, interesting, and desirable for reference.

Under the head of Electricity, Light, Heat, and Sound, covering fifty pages, we have descriptions and engravings of recent telegraphic apparatus, new electric motors, new machines for producing the electric light, several forms of new batteries, an engraving of the apparatus used for the new artificial light called the Bicarbon Light, said to be equal to the oxyhydrogen but cheaper and superior, better also than the electric or magnesium light. An electrical barometer, a simple little instrument, worked by electricity drawn from belts in machine shops, is represented, and a great number of other improvements and new suggestions.

The department of Mechanics and Engineering, occupying nearly one hundred pages, embraces a great variety of articles of special interest to the mechanic and engineer. The latest improvements in ships are here given, with engravings. The Bessemer steamer is illustrated, also the Castalia twin ship. Diagrams of the most recent ordnance are given. There is a chapter on the propulsion of cars and vehicles by

springs, with engravings. The latest railway improvements and structures are shown, and among them the new car of Giffard, of injector fame, which moves without oscillation.

The departments of Rural Economy, Botany, Horticulture, Agriculture, etc., are full and interesting. The latest egg hatching machine is illustrated; so are the habits and form of the Colorado potato beetle, etc.

Under *Materia Medica*, Therapeutics, Hygiene, we have a large amount of new and important information, from the most reliable sources, profitable to every reader.

Pisciculture is an interesting department, containing engravings of the most recent methods for hatching and cultivating fish, with descriptions. The farming of fish is rapidly growing in importance, and there is evidence of more profit, with less labor, to be made from the streams that flow through the land than from the adjoining land itself.

The department of Natural History and Zoology will be found especially interesting, as the amount of new information acquired during the past year, from various expeditions, is large and important.

In the department of Geography, the past year has been prolific of new and interesting information. A series of views of the remarkable cañons of the Colorado is given, which convey an idea of the astonishing natural formations that exist in our West.

Astronomy is full of useful interest; some of the results of the Transit of Venus observations are given, together with a mass of new and valuable matter.

The department of Biography is illustrated with the portraits of several eminent men of science, and will be found unusually interesting.

Taken altogether, the SCIENCE RECORD for 1875 is a book of unrivalled importance and value. All who desire to have before them, in condensed form, the year's progress in Science should possess a copy. Sent by mail, prepaid. Price \$2.50. Published by Munn & Co., office of the SCIENTIFIC AMERICAN, New York.

AN ANCIENT METRIC SYSTEM.

The library of Assurbanipal, King of Assyria, found during Mr. Layard's excavations at Nineveh, shows that Science had made no little progress in Asia twenty-five hundred years ago. This curious library consisted of flat, square tablets of baked clay, having on each side a page of closely written cuneiform cursive letters, which had been impressed on the clay while it was yet moist. The great majority of these tablets are now in the British Museum, and have been found to contain the remains of an immense grammatical encyclopædia. There are also fragments of many mathematical and astronomical treatises, with catalogues of observations, tables, calculations of eclipses of the moon, and observations of solar eclipses, the earliest of which occurred nearly a thousand years before the beginning of the Christian era. There are also fragments of law books and legal records, books of chronology, manuals of history, accounts of Assyrian and other divinities, collections of hymns in the style of the Psalms of David, a geographical encyclopædia, works on natural history containing lists of plants and animals, of timber trees employed in building and furnishing, of stones fit for architecture and sculpture, etc. Perhaps the most interesting of all these lists is a classified catalogue of every species of animals known to the Assyrians, showing a scientific nomenclature similar in principle to that of Linnæus. Opposite the common name of each animal is placed a scientific and ideographic name, composed of two parts, a family name and a characteristic epithet denoting the species.

A still more remarkable indication of the scientific advancement of the ancient Assyrians appears in their system of weights and measures, in which, as in the French system, all the units of surface, capacity, and weight were derived from one typical linear unit. The basis of the system was the cubit (equal to 20.67 inches). This was divided into sixty parts, corresponding with the minutes of the degree. The cubit, multiplied by 360, the number of degrees in the circle, produced the stade, the unit for large distances. The fundamental unit for areas was the square foot, the square of a measure bearing to the cubit the relation of 3 to 5, or 12.4 inches of our measure. The cube of the foot was the metreta, the standard of all measures of capacity; and the weight of a cubic foot of water gave the talent, the fundamental unit of weight; the sexagesimal division of the talent gave, first the mina (= 510.83 grains), and second, the drachma (= 8.51 grains).

The sexagesimal system was employed throughout their mathematics, the unit being invariably multiplied or divided by sixty, the result again by sixty, and so on to infinity. "This, it is very evident," observes Lenormant, "was the result of a wise combination of a very practical character, intended to combine the advantages of the two systems of dividing unity that have been in dispute at all times and among all nations—the decimal and the duodecimal." We still follow this Chaldeo-Assyrian system in the divisions of the circle and in our divisions of time.

Water glass deserves more extended household usage. Mixed with paint or whitewash it gives increased durability and a fine gloss, it is an excellent fireproof cement, and when dry is also waterproof. It is a good adhesive mucilage for mending china, glass, or wood, and made into a wash is the best coating for brick vaults.

Dr. GUTTCHEIT recommends rubbing warts, night and morning, with a moistened piece of muriate of ammonia. They soften and dwindle away, leaving no such white mark as follows their dispersion with lunar caustic.