ably be added a part of the 13 engaged in the dye-stuff industry.

Among all the industries, the largest percentage of increase has been in that of wood distillation, including the production of wood alcohol, acetate of lime, and charcoal. The increase was from $1,885,469 in 1890 to $5,775,455 in 1900. This is, however, by no means so significant as the statistics of the soda industry, which increased from five million dollars in 1890 to over ten millions in 1900. Owing to lower price, this represents nearly a quadrupling of production. What is more important in this industry is that this country is now practically independent of foreign supply. In 1890, 60 per cent. of the soda ash and sal soda and over 70 per cent. of the caustic soda used were imported, while in 1900 only 9 per cent. of the former and less than 5 per cent. of the latter were manufactured abroad.

Considerable emphasis is laid in the 'Bulletin' on the possibilities of the alkali lakes of the Sierra Nevada as a source of supply. The production from this source has been restricted by the lack of a market, owing to the cost of transportation. With the development of the industries of the Pacific slope, and the demand from the other side of the Pacific Ocean, it is probable that these remarkable supplies can be utilized to a much greater extent than in the past. Mono Lake alone contains enough soda to supply this country at its present rate of consumption for a hundred years, Owens Lake enough for fifty years, while other smaller lakes could considerably more than double this amount.

Nearly one half of the 'Bulletin' is taken up with a 'Digest of Chemical Patents,' giving an abstract of all chemical patents issued from the founding of the United States Patent Office up to 1900. This was prepared by Mr. Story B. Ladd, and is of great value. Its value would be still more increased if it could be carefully indexed by subject and by patentee, and issued as a separate publication.

In this connection it is worth while to note that the 'Bulletin' calls attention to the inequitable patent laws of this country, by which a foreigner can, by obtaining an American patent, enjoy the monopoly of sale in this country, even though the article in question may be manufactured abroad, and owing to competition may be sold at a low price everywhere else in the world (except in England, whose laws in this respect resemble ours). On such an article the tariff serves only to increase the price to the American consumer, who is by the patent prevented from enjoying any benefit from competition. This is undoubtedly the chief reason which has hindered the development of most chemical industries in this country except those of the heavy chemicals.

J. L. H.

BOTANICAL NOTES.

A WORD AS TO INDEXES.

It is time that reform was made in the indexing of botanical books. There appears to be an impression among index-makers that people want their indexes sorted into various kinds, so that we find, for example, an 'index of illustrations,' an 'index of English names,' an 'index of Latin names,' an 'index of synonyms,' etc. If this thing goes on we may have, in addition to the foregoing, indexes of the names of persons cited; indexes of experiments, descriptions and discussions; indexes of original paragraphs; indexes of second-hand paragraphs, etc. Probably nearly every user of books will agree that more than one index is a nuisance. When one takes up a book to look for Mahonia it is awkward and annoying to find that it is not in the 'index of Latin names' but must be sought in the 'English index.' How is one to know where to look for Sapodilla, and Sassafras? In some recent indexes the first is given in the English index, while the second occurs only in the Latin index.

It may be said that after all our inveighing against indexlessness we ought to be doubly thankful for two indexes, instead of making complaints, but here, as elsewhere, it is possible 'to have too much of a good thing.' Let not the book-maker, in his zeal to avoid indexlessness, inflict upon his readers an evil which is only one remove from that in its power of annoyance. Give us a good index, and let

it include everything which it is desirable to list, but do not make separate indexes.

THE PRESERVATION OF WILD FLOWERS.

THE movement to preserve the wild flowers from the destruction which threatens them at the hands of thoughtless persons has taken form, and we may now hope for some definite results. It is not true that the people are indifferent to the fate of the wild flowers; they are merely ignorant as to any threatened danger. When once they find that certain pretty plants are in danger of extermination they are ready enough to act. In the vicinity of Colorado Springs, Colo., the 'tourists' have for years been at work eradicating the more conspicuous plants from the canyons which they visit in swarms. In some of these canyons one can now find but few of the pretty plants which once abounded there, and it has been a constant source of irritation to lovers of nature visiting these places to see these vandals clutching every beautiful thing within reach. At last the residents of Colorado Springs have waked to the fact that their treasures have been stolen, and they are now organizing for the purpose of protecting those that remain. Every 'summer resort' has suffered in like manner, and it will be necessary for the permanent residents to follow the example of Colorado Springs if they hope to preserve the plants which adorn the landscape. Wherever the feeling has arisen that such work must be done, those interested should at once consult with Charles L. Pollard, Secretary of the Wild Flower Preservation Society of America, at Washington, D. C.

THE SHRUBS OF WYOMING.

IN a recent bulletin of the Wyoming Experiment Station, Mr. Elias Nelson enumerates the shrubs of the state, and gives such popular descriptions as will serve to distinguish the species. One hundred and five species are included, of which five are Gymnosperms (of the genus *Juniperus*) the remainder being Dicotyledons. No Monocotyledons are included, apparently indicating that there are no woody species in Wyoming. In the list there are thirteen willows (*Salix*); five species of chenopods (*Chenopodiaceæ*); nine of currants and gooseberries (*Ribes*); five roses (*Rosa*); four honeysuckles (*Lonicera*); five sage-brushes (*Artemisia*); and ten rabbit-bushes (*Chrysothamnus*). No less than eighteen species of Compositæ are more or less shrubby.

There is but one shrubby species of the pea family (*Papilionaceæ*), namely the false indigo (*Amorpha fruticosa*). So there is but one shrubby dogwood (*Cornus stolonifera*). Of the heaths and their allies only three species are given.

On comparing this list of the shrubs of Wyoming with Professor Aven Nelson's 'Trees of Wyoming' published two or three years ago, we find that of the thirty-one trees there given no less than twelve are here introduced as 'shrubs.' However, all these are on the border line between trees and shrubs, and it is perhaps better to list them twice than to permanently assign them to one or the other class. In the flora here represented there are about one hundred and twenty-four species of woody plants, of which less than one sixth are certainly to be ranked as trees. This predominance of shrubs is a notable feature of the woody vegetation of the highlands of the West.

AN OLD BROWN CEDAR.

IN the Garden of the Gods, near Pike's Peak, Colo., there are many large specimens of the brown cedar, *Juniperus monosperma* (Engelm.) Sargent, and in a recent visit to that place it occurred to the writer that these trees must be very old. On the 13th of August he was fortunate enough to find the stump of a recently cut tree, on which it was easy to distinguish the annual growth-rings. These were counted for a section of the trunk, care being taken to select a portion in which the rings were of average thickness, and on this basis the number for the whole stump was calculated. In this way it was found that this particular tree was between eight hundred and one thousand years old. In other words, this tree was a seedling some time between the years 900 and 1100 A. D.

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