SCIENTIFIC BOOKS

The Manufacture of Sulphuric Acid and Alkali with the Collateral Branches. A Theoretical and Practical Treatise. By George Lunge, Ph.D. Fourth edition. *Supplement to Volume I. Sulphuric and Nitric Acid.* New York, D. Van Nostrand Company. 1917. Pp. xii + 347. Price $5.00.

This volume represents rather a new idea in bringing books up to date. The last edition of Lunge's great treatise on sulfuric acid was published in February, 1913. The great advances made along this line, as along almost every line of chemical technology, in the past four years have rendered no little material in the book quite out of date. At the same time a new edition of such a large and expensive work seemed hardly called for. The author and his publishers have found an excellent solution of the problem with which they were confronted by issuing this supplement. All the new matter is printed consecutively with reference to the paging of the original, quite like a volume of footnotes. While the book thus necessarily lacks literary form, to the technological student it is unexpectedly readable, furnishing, as it does, a complete review of the progress of the acid industry for the past four years.

On looking through the book one is struck with the immense amount of work that has been done since the opening of the war, most of it directly occasioned by the inexorable demand for explosives. Sir William Crookes little dreamed, when a few years ago he delivered his now classic address on the wheat supply of the world, that he was making such a world-wide war as the present possible. He saw the peoples of the world rapidly becoming wheat-eaters; the possible wheat lands of the world largely utilized; the only possible source of increased wheat supply a greatly increased production per acre; this increased production only attainable by greatly increased quantities of nitrogen fertilizer; and the only important source of fertilizer, the Chile saltpeter beds, facing exhaustion in a few decades. The clear statement of the problem naturally set chemists at its solution, which of course involved methods of utilizing the inexhaustible supply of atmospheric nitrogen for the manufacture of nitric acid and ammonia. But nitrates are as indispensable for munitions of war as for fertilizer. Ten years ago the other nations would have been helpless at the hands of Germany as soon as their first meager supply of explosives had been shot away, since Germany had foreseen this shortage and long ago "stocked up." On the other hand, had the Chilean niter beds sufficed for the Allies until Germany's supply was exhausted, she would have been at their mercy. Thanks to the stimulus of Sir William Crookes's address, as far as explosives go, the war can continue indefinitely, but after the war the farmer and the wheat-eaters will come to their own, as Sir William intended they should.

The problem of combining atmospheric nitrogen had been commercially solved a few years before the war opened. Lime, saltpeter and nitric acid were being manufactured at Notodden in Norway, and the Rjukanfos, with its 250,000 horse-power, was largely ready for utilization in 1913. Calcium cyanamid was being made at half a dozen plants in different countries, and from this ammonia was easily obtained. The Haber process for combining nitrogen and hydrogen into ammonia was probably being worked commercially in Germany early in 1914, and processes for oxidizing ammonia into nitric acid were becoming available. All of these and numerous lesser processes sufficed to free Germany from dependence on the Chile niter, and the Allies have profited no less.

Equally necessary for munitions is concentrated sulfuric acid, which indeed is demanded in almost every chemical industry, and while the advances in its manufacture have been less striking than has been the case with nitric acid, fully two thirds of the volume is taken up with its progress. These developments have been divided between improvements in the contact process, and the old lead-chamber process, and in the concentration of the chamber acid.

It will interest technologists to know that

the book contains at least brief descriptions of practically all patents bearing on the subject during the period covered by the book, and the information regarding progress in Germany during the war is probably fuller than has elsewhere appeared.

The book contains a full author and subject index, which is particularly valuable, since it includes references both to the original fourth edition and to the supplement.

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AN ENCYCLOPEDIA OF PEACHES

The Peaches of New York. By U. P. HEDRICK, assisted by G. H. HOWE, O. M. TAYLOR and C. B. TUBERGEN. New York Agricultural Experiment Station, Geneva, 1917.

Two comparisons come easily to mind on opening Professor Hedrick's "Peaches of New York." The first is with Poiteau's "Pomologie Française"; the second is with Professor Beach's "Apples of New York."

The beauty of the ripened fruit has always appealed to persons of literary taste and esthetic sensibility, and such persons have often wished to make permanent record of the delights of their gardens and orchards. There have been many notable books, covering more than a century of time, extra-illustrated with colored plates of fruits. The "Pomologie Française" may be mentioned as one of the best early examples of such work.

It might not be much to expect that the "Peaches of New York" would excel any book of a hundred years ago, and yet this standard has been so rarely reached that it is a compliment to say that any one anywhere approaches it. This new book, however, surpasses the old in two fundamental particulars, in the excellence of its plates and in the scientific assemblage of taxonomic data.

Professor Beach's "Apples of New York" comes into the comparison as being the great beginning of this notable series, which now includes the "Grapes of New York," "Plums of New York," and "Cherries of New York." It will be seen that the technical processes of color-photography and printing as applied to this line of work have been greatly improved, even in these last few years, for though the photographing of peaches is much more difficult than the photographing of apples, the color plates of the present volume are emphatically superior. And this point will bear some emphasis, considering how important such plates are as a means of description, and considering that the accurate description of varieties is exactly the main objective of the series.

One must see, too, that the science of systematic pomology has made great progress since the days of Poiteau and Turpin. There have been catalogues of varieties with descriptions and lists of synonyms of course for nearly 200 years, but as a matter of fact the science of systematic pomology is practically a development of the last dozen years. It is, moreover, as yet almost an exclusively American science, having been developed largely by the critical pomological workers in the experiment stations and the United States Department of Agriculture. Professor Hedrick, with his quite unusual facilities and his corps of trained assistants, has been able to bring these modern methods of systematic study to a high degree of perfection. It is not too much to say that, in breadth of view, bibliographic comprehensiveness, and critical examination of detail it would be hard to find better work anywhere in the older fields of taxonomic science.

Emphasis is placed upon the systematic or encyclopedic features of the work, for these are certainly the most important. There are dozens of books and hundreds of bulletins where the reader can more easily find a discussion of how to grow peaches, but the present work will long be the first reference for all those who want the last word on the description or nomenclature of varieties.

The title is of course a brazen misnomer. The book is not limited to the peaches of New York, and probably was never intended to cover any such narrow view. It is a book for the whole United States and the peach-growing portions of Canada. In fact one might better call it "Peaches of the World," for it will doubtless be consulted as widely as Poiteau's fine old book written over seventy years