type to justify fully the expenditure. Unfortunately it is disfigured by a great number of typographical errors, for most of which the authors are, clearly, not responsible. A reform in public printing offices is necessary, for, in too many cases, reports are a source of annoyance and confusion of face to those who prepare them.

JOHN J. STEVENSON.

Les matières colorantes azoïques. GEORGES F. JAUBERT. Docteur ès Sciences, ancien Préparateur de Chimie à l'École Polytechnique. Petit in-8. (*Encyclopédie scientifique des aide-mémoire.*)

This little book appears as one of the volumes in the 'Encyclopédie scientifique des aide-mémoire,' now being published in Paris under the direction of M. Léauté, Member of the Institute. It is a sequel to a previous volume in the collection, and by the same author, entitled 'L'Industrie du goudron de houille.'

The subject matter is divided into the following chapters: 1. Nitro colors; 2. Azoxy colors; 3. Azo derivatives; 4. Aminoazo colors; 5. Oxyazo colors; 6. Azo colors dyeing upon mordants; 7. Polyazo colors derived from monamines; 8. Polyazo colors derived from diamines. The chapters on the Nitro and Azoxy colors are inserted as introductory to the Azo colors. The few pages of text present are devoted to a brief statement of the most important general properties of the Nitro, Azoxy, and Azo dyes; while the body of the work is made up of a tabular classification of the more prominent Azo colors, under the following column headings: Scientific and trade name; method of preparation; chemical formula, empiric and constitutional; literature, patents, etc., properties, reactions, etc., industrial application. It will thus be seen that the classification is practically the same as that made familiar to all color chemists by the tables of Schultz and Julius, and also used by Hehne, Green, Seyewetz and Sisley, and others. The book is, however, of a much more convenient size than the work of Schultz and Julius, although its scope is more limited. The newer Tetrazo colors, which have played such a prominent part in the substantive dyeing of cotton, are very fully listed. Several typographical errors will be found in the text and in the constitutional formulas.

Dealing, as it does, with the most numerous and the most important group of all artificial dyestuffs, the Azo Colors, this succint classification should prove most useful both to the student and to the manufacturer.

M. T. B.

A Century of Vaccination and What it Teaches. By W. SCOTT TEBB. London, Swan, Sonnerschein & Co. 1899. Second Edition.

In this book of 403 pages, Dr. Tebb presents at considerable length the usual anti-vaccination arguments, directing them by English examples especially to an English audience, and attacks the compulsory vaccination common in England before the law of 1898. Much of the space in the book is taken up with settled questions or matters not directly concerned in the point at issue; for example thirty pages discuss admittedly inconclusive experiments performed about 1800, thirty are spent on the unsanitary conditions of England in the last century, and of any place in war time, and twenty-six more give examples of small-pox occurring after vaccination and revaccination.

Dr. Tebb's reasoning is three-fold: First, that an attack of cow-pox does not secure immunity against small-pox because the latter disease sometimes follows the former; second, that serious injuries are produced by vaccination, and third that even if immunity could be gained by vaccination, compulsion would be unjustifiable. Immunity from any disease is a clinical fact not yet by any means fully understood; and it is well known both that some persons variously estimated at from 1 to 2 per cent. are naturally immune to small-pox, just as there are some immune to almost every other infectious disease, and that small-pox sometimes occurs and even proves fatal after both vaccination and revaccination and after a previous attack of small-pox. All now claimed is that successful vaccination confers against small-pox an almost absolute immunity for six months, and then further for an unknown and variable length of time a certain degree of immunity which is greater than can be gained in any other way except, by taking the disease. The

author attacks the argument for vaccination founded on the diminution in the amount of small-pox during this century by pointing out that typhus fever without the help of vaccination has also been much reduced in prevalence in the same time, and that both diseases are less frequent on account of better sanitary conditions. The comparison of typhus fever to small-pox, however, is deceptive first because as the clinical separation of typhus from typhoid fever became general only about the middle of this century, the reduction in typhus cannot be properly estimated, and second, because the improvement in sanitation does not apply equally to both. Crowding in filthy and unventilated rooms is necessary for the development of 'camp,' 'jail' or 'ship' fever, but small-pox for centuries went into the palace as well as into the hovel. The circle of infection of typhus fever is small, that of small-pox is large. Dr. Tebb's mode of reasoning is capitally illustrated by the following: "I have shown that a part of the decline of small-pox and especially that part which has taken place in children is not necessarily a saving of life, but only a shifting of the mortality on to some other disease such as measles or whooping cough." According to this reasoning, as the children probably have to die any how from some disease, they may as well die from small-pox.

The author devotes a chapter to the discussion of epidemics in various English towns, and points out that the epidemics occur in well vaccinated just as in poorly vaccinated places, and that they can be controlled without recourse to vaccination. To obtain all the facts about all the places mentioned would be a long task, but the vital facts about two of his examples, Leicester and Sheffield are well known. In unvaccinated Leicester, during the epidemic of 1892–1893, there were 21 deaths, 19 in unvaccinated and 2 in vaccinated persons over ten years old. In well vaccinated Sheffield in the epidemic of 1887–1888, there were 68,000 vaccinated children of whom ½ per cent. were attacked and 2,200 unvaccinated children of whom 10 per cent. were attacked; there were also about 200,000 vaccinated persons over ten years of age of whom 2 per cent were attacked and about 3,500 unvaccinated persons of whom 9 per cent. were attacked. The above well illustrates the established fact that vaccination protects somewhat for years, but only absolutely for from 6 to 8 months.

A long chapter which embodies the second argument is that devoted to vaccinal injuries. To clear the way for criticism of this it may be said that there is no dispute that injuries sometimes follow vaccination, that skin eruptions are moderately frequent, and that all varieties of sepsis are possible when the wound is made or cared for in an unclean way or when infected virus is inserted. Thirty pages are, however, given up to proved and unproved cases of so-called vaccino-syphilis. The truth with regard to this infection is that invaccination of syphilis is possible when vaccination is done from arm to arm, probably impossible and certainly unknown when done with calf virus. Moreover in the 5¼ million primary vaccinations done during the session of the Royal Commission in England, 1889–96, there was not a single case proved, and every alleged case was investigated. Twenty-one pages give some account of the contradictory evidence relating to the invaccination of leprosy. If this invaccination is possible when done from arm to arm, an assumption which has not been proved, yet it has at present no public importance in England or the United States. Tuberculosis and tetanus consume eight pages, yet there is no case on record in which tuberculosis was ever conveyed by vaccination, and although there have been several cases where tetanus has been alleged to have followed vaccination, yet even granting that this is so, it simply enforces the rule that vaccination should be only performed in a cleanly way.

The third argument of Dr. Tebb against compulsion may, now that compulsion no longer exists, be left as the expression of his individual opinion.

For information relative to some of the above questions, the writer wishes to thank Dr. J. H. Huddleston, who has charge of the vaccine laboratory of the New York City Health Department.

W. H. Park.
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GENERAL.

The U. S. National Museum has just published a careful translation, by Mr. E. O.