

why they should be so singled out is not stated. There is a considerable collection of development formulæ in addition to the above, but only one here and there has the name of its author attached. It would have been better if the author's name had been given in every case, with a reference to the source whence the formula was obtained. Various fixing solutions are given, neutral and acid, one including "acetone-sulphite," but alkaline fixing baths are not represented. Among "stain removers," too, weak alkaline solutions do not appear to be mentioned, though they are the best solvents of the coloured oxidation products of developing reagents.

In a few cases the compiler has ventured to state that one or the other formula is "the best," without quoting any authority or giving any reason for the preference. Among "hypo. eliminators," for example, "the best is plain water," but potassium percarbonate "is the best chemical destroyer of hypo." A soluble hypochlorite was the first "hypo. eliminator" suggested, now many years ago, and it remains unsurpassed, if equalled. It is, however, not mentioned here, and its omission is not due to the ease with which, if carelessly used, it attacks the silver image itself, because sodium hypochlorite is given as a stain remover.

Each of the thirty-three chapters is on a different subject, ranging from "The Studio" and "The Work-room," and the various operations that are generally understood as practical photography, to the "Facts of Copyright" and "Toilet and Hygiene." This last section treats of stained finger-nails; eyes affected by the coloured light of the dark room; skin irritation caused by developers, potassium bichromate, &c.; and similar subjects. The volume is full of information, and cannot fail to prove useful to the photographer who keeps it at hand.

*U. S. Department of Agriculture. Field Operations of the Bureau of Soils, 1901. Third Report. Pp. 647+ case containing thirty-one maps. (Washington: Government Printing Office, 1902.)*

THE book under notice constitutes the third of the series of reports on the work of the Division of Soils, which is engaged in mapping the distribution and describing the agricultural characteristics of the various soil types met with in selected areas of the United States. The general scope of this remarkable undertaking has already been discussed in these columns when reviewing the Report of 1900 (*NATURE*, November 6, 1902); the present volume shows that the work of the Division has so far been appreciated by Congress that its progress has been assisted by increased appropriations, enabling it to enlarge its working staff and cover a greater area in its annual survey. The reports now presented deal with the most diversified types of land, and speak of the variety in the conditions under which farming is carried out in the United States. On the one hand, we read of intensive systems of agriculture, analogous to our own, as in New Jersey and Pennsylvania, old settled districts in touch with large centres of population, farming high, and either purchasing fertilisers or keeping stock to make manure; then we pass, as a contrast, to parts of Virginia and Georgia, which were ruined by the war and left without capital or energy, where it is still the custom to crop out the soil by continuously growing corn or wheat, and then clear a fresh farm, leaving the old land to fall back to scrub until it accumulates sufficient decayed vegetable matter to be worth breaking up again.

In the western States the contrasts are just as great between the arid regions, which are still "dry farmed," and can only produce a crop of barley or wheat every other season, the land being fallowed in the intervening

years to gather two years' rainfall for the needs of one crop, and the rich irrigated land of California, famous for oranges, apricots, and other valuable fruits.

Two of the most interesting crops which come in for notice in this book are tobacco and sugar beet; in both cases the industry is being very rapidly developed in the United States; indeed, the production of beet sugar is an affair of the last two or three years only, and the expansion has been largely brought about by the energy and advice of the Division of Soils. Anyone seeking a striking example of the way a State can utilise scientific research for the fostering of a national industry cannot do better than study the work on tobacco of the United States Department of Agriculture.

Interesting as these volumes are to the agriculturist from the variety of the crops and the farming conditions described, they are equally valuable to many students of pure science; to the botanist they form a treatise on what might be called applied ecology, to the chemist and physicist the "alkali land" problems will appeal; the geographer will find illustrations, often accompanied by excellent photographs, of the most varied types of land surface and the changes to which they are subject; while the economist, as noted above, may obtain abundant material for his special study. An accompanying report sets the whole cost of the Division of Soils as a little under 8000*l.* for the year 1901; of this, the Soil Survey, exclusive of laboratory work, required a little less than half, 3,53 dollars per square mile for the 5596 square miles covered in the year, or almost exactly a farthing per acre, not an excessive charge on the capital value of the land! A. D. H.

*Theoretical Organic Chemistry.* By J. B. Cohen, Ph.D. Pp. xv + 578. (London: Macmillan and Co., Ltd., 1902.) Price 6*s.*

THE author commences his preface with an apology for bringing out a new book on organic chemistry. We are not, however, prepared to agree with Dr. Cohen that an apology is necessary. There are not very many good and complete text-books on organic chemistry in this country, therefore a new book—provided that it is good—would not be at all out of place. At another place in his preface the author says, "The production and uses of common materials, which come under our daily observation, are frequently relegated in some text-books of organic chemistry to a background of small print; in others entirely omitted." Dr. Cohen particularises such substances as lanoline, linseed oil, gelatine, the tannins, turpentine, &c. Our interest is at once aroused and we turn up turpentine, and this is what we find:

"Turpentine oil is used as a solvent in the preparation of varnishes, for mixing with pigments, as an embrocation, &c. It absorbs oxygen, when heated in presence of water, and the oxygenated water is employed as a disinfectant and deodoriser."

There is very little here about the production of turpentine. We then turn to linseed oil; here we are more fortunate, because there are seventeen lines devoted to telling us that the oil may be used for preparing linoleum, oil-cloth, and that it is employed in making varnishes and paints—but not a word as to its production. Again, the treatment of gelatine, tannin and lanoline can scarcely be called exhaustive. We are not at all sure that it is desirable in a text-book, the size of the one before us, to describe such substances in detail, but when the author lays claim to treat them more fully than they are treated in other text-books, one is rather surprised to find them dismissed with such scanty notices.

Of course, details of this kind do not condemn a book, and, in many respects, the book is very good.