

the various forms of fish pass are considered—the pool fishway, the oblique pass, queen's gap, and the various forms of fish ladders. The various forms are described, but are quite insufficiently criticised. The oblique groove, "Schrägpass" (under which, by the way, is included the queen's gap pass, "Wehreinschnitt") is dealt with at some length, although it, *i.e.* the oblique groove, was years ago considered utterly useless in Britain, where it was chiefly tried.

The information upon fish ladders is arranged under headings "Fischtreppen mit Stegen," "Fischtreppen mit Sperren u. Einschnitten," and "Lachstreppen mit Sperren u. Schlupffoffnungen," no distinction being drawn between step fishways and inclined fishways, although, in Britain and America at any rate, the latter form has been considered vastly superior to the former.

Seeing that the author in his preface undertakes the consideration of foreign fishways as well as of German ones, we should have expected to see more fish ladders described and discussed, especially those of this country and America, where this branch of engineering has had plenty of scope. The "Smith's Ladder" at the lower falls on the Ballysadare River is described and figured, but no mention is made of the ladder at the Collooney Falls on the same river, which is a combination of Cail's and Smith's inventions. The first Smith's pass, and one of the most successful in Scotland—that at Deanstone, on the Teith—surely deserved mention, as did the inventor. The "queen's gap" at Poolquay Weir, on the Severn, is described in detail, although the weir was washed away in 1881, and has never been rebuilt.

Part iii. is devoted to fish-ponds. There is only one reference to an English fish farm, and none of the numerous American hatcheries, where pond construction has been carefully studied, are mentioned.

Much of this part of the book is of less value from the British fish culturist's or engineer's point of view, because in Germany coarse fish, such as the carp, are a staple food, and are reared in large numbers, whereas most of our fish culture is concerned with the Salmonidæ. As the author says:—

"Der Karpfen ist derjenige Fisch, der sich am besten für die Teichwirtschaft eignet. Er ist ein Edelfisch, leicht zu ziehen und schnellwüchsig, so dass er gute Erträge liefert,"

and this section of the book is written very much from this point of view.

Much of the information as to the construction of ponds and their inlets and outflows is, of course, ancient, and can be found in such books as the "History of Howietoun," by the late Sir R. Gibson-Maitland.

The book is doubtless a useful exposition of some of the existing fish passes and ponds, but in such a work we should have expected to find fuller criticisms and summaries, for instance, as to the value of one form of pass compared with another.

On the whole, we think a more useful book could be written from a British engineer's point of view.

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#### OUR BOOK SHELF.

*Photographic Chemicals and How to Make Them.*  
By W. Taylor. Pp. 107. (London: Iliffe and Sons, Limited.) Price 1s.

THIS small volume of a hundred pages consists of explanatory remarks on various chemical operations, such as filtering, weighing, boiling, and so on, and concise instructions for the preparation of twenty-one substances that are in common use by photographers. The author considers that "the processes may form a pleasant variation upon ordinary photographic methods." He adds that "it must not be supposed that there will be a saving of cost," but "the pleasure and amusement afforded by the manipulations, to say nothing of their value educationally, if followed out with due care, should do far more than compensate for the trifling increase in expense." The instructions given are clear and correct, and are illustrated by several good figures of really practical apparatus, but, as is often the case in such volumes, the style is uneven. If the book is intended for those who will profit by being told how to test with litmus paper and how to bend a glass tube, and need to have figures to show what kind of things a pestle and mortar, an evaporating dish and a pair of tongs are, then the descriptions of processes are far too lacking in detail. They are more of the character of instructions that might be given to a student of chemistry who has had experience in a well appointed laboratory. We very much doubt whether the author or anyone else has boiled away sulphuric acid "in an empty grate"—of an ordinary room, presumably. The open air is suggested as an alternative place for the performance of this and many other operations which would very speedily render it impossible to live in any room where they were going on. The risk of accidents or desirable precautions might have been set forth a little more prominently in case the volume should fall into the hands of those who know nothing of chemistry. However, there are many young people who have "done" a little chemistry at school, and these will no doubt find it useful. It may be noted that the method described for preparing anhydrous sodium acetate is not efficient; it is necessary to fuse the dried salt.

*Dictionnaire des Engrais et des Produits chimiques agricoles.* By E. S. Bellenoux. Pp. x+158. (Paris: Schleicher Frères et Cie., 1904.)

THIS is meant to be a handy book of reference for the farmer and the agricultural student, in which any material used in agriculture may be looked up and information obtained as to its nature, use, adulteration and the like. The arrangement is alphabetical under such heads as "analysis of the soil," "ash," "nitrogen," "purchase of manures"; the treatment is popular, and though results of experiments are occasionally given, there are no references. The scheme of the book causes a good deal of overlapping, and we doubt if the same end of easy reference would not be better attained by a good index to an ordinary book covering the same ground. The information provided is not very well selected nor always correct; for example, we read, "le sulfate d'ammoniaque a, au contraire, la propriété de remonter des profondeurs du sol où l'eau peut l'avoir entraîné et de revenir à la surface: c'est un sel *grimant*, ainsi qu'on l'a dénommé, et c'est cette propriété spéciale qui le fait employer avant l'hiver afin que les pluies le fassent pénétrer jusqu'aux racines. Si on l'emploie au printemps, il faut l'enfouir par un labour et ne jamais le répandre en couverture. . . . L'azote du sulfate d'ammoniaque est directement assimilable par les plantes."