the enzyme was precipitated and redissolved. 25 cc. of the extract were added to 35 cc. of alcohol, the solution was filtered and the precipitate was redissolved in 20 cc. of water, which was afterwards made up to 25 cc. In the case of the emulsin 25 cc. of water were added to 0.5 gram of the emulsin. To each of the 25 cc. of enzyme solution an equal quantity of 4% hydrocyanic acid solution was added and 1 cc. of benzaldehyde. The resulting solutions were occasionally shaken and kept at the room temperature for 2½ hours. The nitriles were extracted immediately. In the peach and wild cherry experiment this could be done directly, but in the emulsin experiment the emulsin was first precipitated with a drop of acetic acid and filtered off. Both the precipitate and filtrate were extracted with ether. The nitriles were hydrolyzed and the mandelic acid extracted and dried to constant weight. It was dissolved in water and made up to 50 cc., after which it was examined in a polariscope and an aliquot portion (10 cc.) titrated with a 0.22 *N* barium hydroxide. The following were the results obtained:

TABLE III.

	Rotation in a 2 dm. tube.	Cc. of 0.22 *N* $Ba(OH)_2$ used.
Wild cherry	—3.85	5.65
Peach	—5.5	7.6
Emulsin	—0.8	6.5

Grams of mandelic acid.	Grams of racemic acid.	Grams of active mandelic acid.	Per cent. of active acid.
0.9447	0.3115	0.6332	67.0
1.2707	0.2661	0.9046	71.2
1.0868	0.9553	0.1315	12.0

These results are interesting in two respects. In the first place one would hardly expect so much of the benzaldehyde and hydrocyanic acid to combine; and as we have already pointed out in the introduction, it is a surprise to find such a large variation in the proportion of the active and racemic mandelic acid, a result which can only be explained by assuming that there are two oxynitrilases present in emulsin. In one of the experiments with the enzyme from the wild cherry leaf, fully 85% of the resulting mandelic acid was active, which shows that there can be very little, if any, *l*-oxynitrilase present in this leaf.

We are continuing this investigation.

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NOTE.

Water of Crystallization of the Calcium Salt of Lauronolic Acid.—In a previous article[1] we stated that the calcium salt of Lauronolic (Laurolenic) acid crystallized with three molecules of water of crystallization, thus

[1] THIS JOURNAL, **34**, 178.

corroborating the results of Fittig and Woringer.[1] Bredt states[2] that he has found only two molecules of water.

Since Bredt's method of crystallizing the salt was somewhat different from ours, we have repeated his work very carefully, allowing a saturated solution of the salt to evaporate very slowly, either in a vacuum or from a flask on a gently boiling water bath. Under these conditions the salt crystallizes on the bottom and sides of the vessel under the surface of the liquid and an analysis gives exactly two molecules of water as Bredt states. If, however, the solution be rapidly evaporated in an open dish on a water bath, the salt crystallizes on the surface and an analysis gives approximately three molecules, although the results vary somewhat, and a considerable part of the water (between one and two molecules) is quickly lost on exposure to the air.

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NEW BOOKS.

Introduction to the Rarer Elements. By PHILIP E. BROWNING. Yale University. Third edition, thoroughly revised. John Wiley & Sons, New York; Chapman & Hall, London. 1912. Pp. xii + 232. Price, $1.50.

The present edition of this valuable book represents a considerable improvement over former editions. While the plan of the previous edition is retained, the chapter on the technical applications of the rarer elements has been enlarged and the chapter on the qualitative separation has been greatly expanded and improved. The work on the rare earths has been brought down to date and diagrammatic schemes for their separation are included. New features include a table of spectroscopic lines, plates illustrating typical absorption spectra, and a very concise tabular index. This edition of the book should prove of even greater value than its predecessors to students of the rarer elements.

C. W. BALKE.

[1] *Ann.*, **227**, 6.
[2] *J. prakt. Chem.*, **83**, 395; **87**, 20.