pletion of the reaction corresponds to one atom per molecule of methionine. Neutralization of the perchloric acid with amylamine causes a precipitate that consists, according to analysis and properties, of practically pure methionine sulfoxide in a yield of over 90 per cent. The amorphous precipitate can be converted into the form of microcrystalline aggregates by careful precipitation by acetone from aqueous or aqueous-methanolic solution. The product decomposes at 220–230° and appears to be more soluble than any of the natural amino acids: 1 gram dissolves in about 1.5 cc of water, while about 30 cc are required by the parent substance dl-methionine. The solubility in methanol seems similarly increased. The acidity of an aqueous solution is that of a typical neutral amino acid (pH about 4.5). The compound does not oxidize iodide under the conditions which cause complete deoxygenation of cystine disulfoxide,[1] but concentrated (57 per cent.) hydriodic acid liberates almost instantaneously the expected amount of iodine.

This product, which has not been isolated previously, although it has been discussed,[2] is of interest (a) chemically, because it should consist of a mixture of equal parts of four stereoisomeric structures as the molecule contains, in addition to the "asymmetric" carbon atom, an "asymmetric" sulfur atom; (b) technically, on account of its high solubility which might be utilized in the isolation of the natural l-methionine; and (c) biologically, in connection with Hammett's[3] theory[4] on the role of intermediate oxides of sulfur in the control of cell division. Separation of the four isomers seems desirable and should also be of interest in relation with the problems of the metabolic decomposition of methionine.

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COMMENTS ON THE SHAPE, GROWTH AND QUALITY OF THE AMERICAN OYSTER

LUNZ[1] gave data showing that oyster shells from Indian shell heaps are larger than present-day oysters from South Carolina commercial beds and stated that small size of the latter is probably due to intensive commercial oystering, which prevents maximum growth. He stated that the evident quality of pre-colonial oysters far surpassed those of to-day. The situation is more complex than the short treatment indicated.

Unfortunately, there was a misstatement about the percentages by which the pre-colonial oysters exceeded present oysters in size. Ordinary pre-colonial oysters were said to be 62.23 per cent. longer and 76.89 per cent. wider than modern oysters. The correct figures are 60.67 and 42.61, respectively, according to the data.

Oysters take various shapes imposed on them by contact with their fellows or other solid materials, but there are two general shapes. On hard bottom with sufficient room oysters grow almost as wide as long and in rare instances wider. The long axis of growth curves to the right. Illustrative of this type are wild oysters of Karankawa Bay, Texas, mentioned by Galtsoff.[2] Round oysters have heavy shells with both valves cupped. They have a large adductor muscle, are usually fat, have a high gallon yield per barrel of shell stock and shrink little due to loss of fluid after being opened, so that they are always in demand by the trade.

Where oysters are crowded or growing on soft bottom and slowly sinking the shell grows straight, upright and very long. The shell is thin, much longer than wide, the bottom (left) valve alone is troughed, the adductor muscle grows rapidly forward and smaller in proportion to the size of the animal than in round oysters. These oysters are known as snappers or coons. Galtsoff and Luce[3] discussed conditions which produce them and stated that in "old times" coon oysters existed in Long Island Sound and Connecticut, with the unstated inference that these have given way to the rounder cultivated type.

Coon oysters from Coon Island, Matagorda Bay, culled for market size by an oysterman, were selected for straightness and the top valve length and width measured with a vernier caliper. The small culls were also measured. Oysters from Wells Point, Matagorda Bay, selected for market size and roundness, were measured. Measurements of unattached seed oysters from the same locality, unselected, although they were of the round type, were on hand. These data were compared with those of Lunz (changed to centimeters for comparison) in the table. Measurements of the lower valve from hinge to bill, as made by Lunz, are slightly shorter than the upper valve.

Examination of the length/width ratios show that selected oysters from Indian shell heaps were "coons," as were selected oysters from South Carolina commercial beds. Likewise, average oysters from shell piles were nearer the coon type than average oysters from

1 *Jour. Biol. Chem.*, 113: 583, 1936.
2 *Biochem. Jour.*, 22: 1417, 1928, and 26: 2041, 1932.
3 *Protoplasma*, 11: 382, 1930.
4 In its application to neoplasia a new confirmation of this theory, by sulfur oxides of the sulfanilamide type (*Biochem. Jour.*, 32, 1207, 1938, has just been added to an earlier confirmation by cystine disulfoxide (*Am. Jour. Cancer*, 26: 554, 1936).
1 G. Robert Lunz, Jr., SCIENCE, 87: 367, 1938.
2 P. S. Galtsoff, Bur. Fish. Invest. Rep. No. 6, 1–30, 1931.
3 P. S. Galtsoff and R. H. Luce, Bur. Fish. Doc. 1077: 61–100, 1930.

TABLE I

MEASUREMENTS IN CENTIMETERS AND LENGTH/WIDTH RATIOS OF OYSTERS FROM MATAGORDA BAY, TEXAS, COMPARED WITH DATA OF LUNZ[1]

Type of oyster	Number	Average length	Average width	L/W ratio
Small round	200	3.57	3.08	1.16
Market size round.....	112	9.48	7.58	1.25
Small coons	139	7.63	3.81	2.00
Market coons	153	11.74	5.07	2.32
South Carolina Oysters				
Selected shells, Indian shell heaps	10	16.61	6.50	2.56
Selected oysters, S. C. commercial beds..	140	9.93	4.90	2.03
Ordinary shells, Indian shell heaps	50	10.90	6.38	1.71
Ordinary oysters, S. C. commercial beds..	150	6.78	4.47	1.52

commercial beds. Oysters in the latter category averaged only 2.67 inches in length. The quality must have been poor, for minimum legal market size in most Southern states is 3 or 3½ inches.

Both sets of data show that the length/width ratio increases with size for both round and long oysters, but the increase is greater for the elongate type.

Coon oysters often grow in shallow water and are taken by hand so much that wading for oysters is known in some localities as cooning. This oyster was more easily obtained by the American Indian than the round oyster from deeper water. It seems plausible that small populations of Indians had the choice of larger oysters than those coming from intensively fished wild reefs of certain localities to-day. However, well-cultivated beds and some wild beds produce oysters comparable in size, although shorter in length, to any the Indian was able to obtain.

GORDON GUNTER

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THE FERMENTATION TEST FOR VITAMIN B_1

IN October of 1937 there appeared in SCIENCE a short note by R. J. Williams[1] on the use of yeast or other fungi for vitamin B_1 tests. In it Dr. Williams coupled our fermentation test[2, 3, 4] with Schopfer's growth test. Reference to the original note on our fermentation test[2] will show that the test is in no way related to growth and, in fact, test conditions tend to exclude growth of the yeast.

No attempt was made, at the time, to correct the impression created by Williams's note because it was thought that the reader would readily detect the error. However, in a recent book on vitamin B_1 by R. R. Williams and Spies[5] these authors have repeated the remarks referred to above.

It is to be hoped that by calling attention to the above inaccuracies in the literature, a more correct appraisal of the fermentation test will be made possible. This useful and rapid method for the determination of vitamin B_1 has been successfully employed in our laboratories for several years.

ALFRED S. SCHULTZ
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APPEAL FOR AID FROM CZECHO-SLOVAKIA

IN a letter of October 31 from Professor K. Absolon, curator of the Moravian Museum, Brno, Czecho-Slovakia, the writer appeals for aid with subscribers to the monthly *Příroda* (Nature), which as a result of the recent crisis has lost many local subscriptions and is thereby endangered in its existence. Professor Absolon asks that this matter be brought to the attention of the American libraries and establishments, as well as workers in natural history. The periodical in question has now reached thirty-one volumes. Its contents resemble those of *Popular Science Monthly,* with many original scientific reports and observations. All the original contributions, especially for the future, are and will continue to be provided with translations of their titles and text of illustrations, as well as with an adequate summary in English, French, German or Italian. The yearly subscription price of the periodical for America is $3.00.

A. HRDLIČKA

U. S. NATIONAL MUSEUM

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ANIMAL PARASITOLOGY

Traité de zoologie et de parasitologie médicale et vétérinaire. By M. NEVEU-LEMAIRE, professeur agrégé des facultés de médecine, Paris. Published by Vigot Frères, éditeurs.

IT is just fifty years since the appearance of the great treatises of Blanchard on human parasites and of Neumann and Railliet on those of domestic animals which gave to scientific students reference works of comprehensive character for the rapidly expanding

[1] R. J. Williams, SCIENCE, 86: 349, 1937.
[2] A. S. Schultz, L. Atkin and C. N. Frey, *Jour. Amer. Chem. Soc.,* 59: 948, 1937.
[3] *Ibid.,* 59: 2457, 1937.
[4] *Ibid.,* 60: 1514, 1938.
[5] R. R. Williams and T. D. Spies, "Vitamin B_1 and Its Use in Medicine," Macmillan, 1938.