and topographic differences—may modify or destroy stratification. It was found in 1937 that instability of the water strata, due to mixing, began in the latter part of September at the upper river stations and slowly progressed downstream toward the deeper waters of the bay, where effective mixing did not begin until late October. The stratification of winter, which has not yet been studied seriously, seems to be notably different from that of the summer season.

It appears that oxygen stratification in the Chesapeake Bay differs markedly from that prevailing in the Western Basin of the North Atlantic. Seiwell's[1] extensive investigations have shown that in that ocean region, where salinity stratification is not well developed, there is an oxygen-poor layer at intermediate depths, characterizezd by oxygen contents less than 60 per cent. of total saturation. That layer lies between a surface layer and a bottom layer, both of which are relatively rich in oxygen. On the other hand, in the Chesapeake Bay the surface stratum, which has low salt content and high oxygen content, is underlaid, at least in summer, by a bottom layer of much higher salinity and exceedingly low oxygen concentration. Seiwell's results, together with those of other students of Atlantic and Pacific waters, have contributed much to our general knowledge of marine environments, and further study of the various factors that control bathymetric oxygen variations should lead to a better understanding of many fundamental problems in oceanography and its diverse applications in the fishery industries.

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THE EFFECT OF ARSENIC ON THE TOXICITY OF SELENIFEROUS GRAINS

DURING investigations on the "alkali disease" or selenium poisoning and investigations on the comparative toxicities of several elements including selenium, tellurium, arsenic, vanadium, nickel, tungsten and molybdenum it was observed that, at the concentrations used, selenium was the only one of the elements to cause severe liver pathology[1,2,3,4,5] in the rat.

More recent experiments on the combined toxicities of selenium in combination with the above mentioned elements have revealed that the feeding of arsenic along with seleniferous grains prevents the characteristic symptoms of selenium poisoning in rats. The addition of 5 ppm of arsenic as sodium arsenite to the drinking water has given full protection against liver damage caused by 15 ppm of selenium in the form of seleniferous wheat. Two and one half ppm of arsenic gave only partial protection. The animals receiving 5 ppm of arsenic in their drinking water and 15 ppm of selenium in their feed also appear to be free from the other characteristic symptoms of selenium poisoning. Experiments also indicate that arsenic is effective in preventing liver damage and the general toxic effects of inorganic selenium as well as organic selenium (selenium occurring naturally in grains).

The feeding of arsenic to livestock to prevent selenium poisoning is not recommended on the basis of these results but since arsenic is effective it is hoped that some other elements or compounds which are in themselves non-toxic will be effective. Experiments are underway, and certain compounds have given promising results. Experiments with larger animals are also underway. A more detailed report is in preparation.

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"ANOMIA" PECTEN LINNAEUS

LINNAEUS, in the tenth edition of "Systema Naturae," 1758, p. 702, describes a fossil shell, *Anomia pecten,* in these words: "A. testa semi-orbiculata depressa multistrata; valvula altera plana (List. Angl. 243., t. 9, f. 49). Testa inferne s. margine cardinis linea recta s. transversa." No locality was given, but a specimen is contained in his cabinet at the Linnaean Society, London.

Lister's figure, cited by Linnaeus, is of a specimen "ex fodinis carbonum Fossilium juxta Hallifax," and is quite recognizable as *Pterinopecten papyraceus* (J. Sowerby, 1822) known to occur in the Halifax Hard Marine Band in the Coal Measures. The above description could be held to apply to this shell. By a strict application of the rules of nomenclature J. Sowerby's specific name would appear to be invalidated by Linnaeus's previously described species.

On the other hand, there is no doubt that Linnaeus had before him Swedish Silurian brachiopod shells long known as *"Strophomena" pecten* (Linn.). Knowledge

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[4] A. L. Moxon, S. Dak. Agric. Expt. Station *Bulletin* No. 311, 1937.

[5] Unpublished data—this laboratory.