

When silver nitrate was applied to the surface of *G. dibranchiata*, it stained the area on which it was applied dark brown. Several laboratory experiments gave promising results. Field tests showed that worms marked by silver nitrate and released were still marked when recovered after 30 days.

Worms of 4 to about 30 cm in length were marked with silver nitrate in the form of a commercial "caustic pencil," composed of silver nitrate 40 percent and potassium nitrate 60 percent. When a worm was touched with the caustic pencil, a whitish mark appeared at the place of contact. This was due to the formation of silver chloride. At the same time it was observed that the segments on which the whitish mark was visible temporarily contracted. After some time, the whitish mark turned dark brown.

By means of various combinations of dots produced by silver nitrate on the dorsal and the ventral surfaces, worms can be marked according to different groups. I employed this method to mark *G. dibranchiata* according to different size-classes.

From a few laboratory experiments with *Nereis virens* Sars, *Nephtys caeca* (Fabricius), and a few dead shells of *Mya arenaria* Linnaeus, it appears that the method can be extended successfully to the marking of many soft- and hard-bodied animals.

W. L. KLAWE

Atlantic Biological Station,
St. Andrews, New Brunswick

13 April 1954.

Sorption of Carbon Dioxide by Nut Meats

During some packaging experiments with shelled walnuts and pecans in transparent, flexible plastic bags, packages in which the air had been displaced with carbon dioxide prior to sealing often developed sufficient vacuum to cause the package to collapse, drawing the film tightly around the contents in a manner similar to that of a package sealed under vacuum. The use of nitrogen instead of carbon dioxide did not produce this effect.

Data on the sorption of carbon dioxide by dried-milk powder were reported by J. A. Pearce [*Can. J. Research* 23(F), 327 (1945)]. He found that whole-milk powder, at 35°F and approximately 74 cm of mercury, absorbed more than 0.4 ml of carbon dioxide per gram of milk powder. Under like conditions, only about 0.012 ml of nitrogen was absorbed. Pearce also showed that there is some sorption of carbon dioxide by skim-milk powder, although the rate and amount are less than those of whole milk. He concluded that carbon dioxide is sorbed not only by the butterfat but also by the other constituents of milk powder.

In tests at Beltsville, walnut meats (containing 68 percent oil) in a closed system absorbed 0.3 to 0.4 ml of carbon dioxide per gram during the first hour. Thereafter the rate was extremely low. Oil extracted from the nuts by pressure sorbed about 0.6 ml/g in ½ hr (with very gentle agitation of the oil), whereas

the fat-free meats (walnuts that had been ground and solvent-extracted) sorbed only 0.17 ml/g in 24 hr. Oil that had been saturated with carbon dioxide and then held under vacuum for 15 min absorbed only about half as much of the gas as it did originally. This seems to indicate that vacuum alone does not completely degas the oil. However, when this oil was heated to 145°C and then cooled to room temperature, the carbon dioxide uptake was found to be approximately the same as that of the original sample.

It appears that the vacuum developed in packages of nut meats packed in an atmosphere of carbon dioxide is due chiefly to sorption of the gas by the oil in the nuts and to some slight amount of absorption by other nut constituents.

A. W. WELLS

U.S. Department of Agriculture, Beltsville, Maryland

14 May 1954.

Sagacity of a Crab

Seventy-seven years ago someone who was more sagacious than I presented observations under the title, "Sagacity of a lobster" [Anon., *Nature* 15, 415 (1877)]. That observer's wariness was exhibited by the fact that he remained anonymous and by the fact that he used the word *sagacity* rather than *intelligence*, in which I shall imitate him here, since *intelligence* and even more precise terms such as *preference* have aroused considerable criticism when applied to lower animals. *Sagacity* has the advantage of less common usage and in one sense, especially formerly, it was used to indicate keenness of sensory perception without necessarily implying understanding. However, where one begins and the other ends is hard to say, and loosely the two words are considered to be synonyms.

Swimming crabs are given to swimming in dangerous situations, come enemies or not, as at the surface well sky-lighted for predators in the waters below. In shallow waters of the Gulf Coast, the blue crab, *Callinectes sapidus*, may be observed at the surface 5 mi from shore, valiantly fighting off attackers in a losing battle [G. Gunter, *Publ. Inst. Marine Sci.* 1 (2), 7 (1950)].

This habit of the blue crab led to an episode that I observed some 3 yr ago and upon which I have cogitated considerably since, with no answers. Since the actions of the crab in question seemed to approach what is commonly known as "intelligent," and since I am mindful of the various Horatios of behavior who would guard us well from mental connections with the lower animals, I have not heretofore had the temerity to record the observation. However, since the circumstance will be difficult or impossible to duplicate experimentally and may not be seen often again in nature, I now muster the courage.

One morning a half-grown blue crab was swimming at the surface with the incoming tide, alongside the dock and some 14 ft beneath my feet. The water was turbid. Suddenly a fish attacked from an angle below.