Furthermore, the polyhedrosis has never appeared spontaneously in our stock. The latter was obtained through the courtesy of G. H. Bergold in June 1953.

Thus it would appear that the virus of silkworm jaundice is capable of retaining its infective capacity while stored in sealed tubes (mostly at 4°C refrigeration) for a period of at least 15 yr.

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A Theory to Account for the Effects of Early Handling on Viability of the Albino Rat

Weininger (*1*) found that early handling of the male albino rat results in greater weight, increased skeletal length, and reduced cardiovascular and gastrointestinal damage under severe emotional stress as an adult. Ruegamer *et al.* (*2*) have shown this gain in weight by extra handling to be a result of better food utilization by the rat rather than of increased food consumption.

A major change in hypothalamic functioning, involving reduction or inhibition of massive sympathetic discharge in response to an alarming stimulus and, hence, decreased ACTH output from the pituitary, is suggested (*3*) to account for the afore-mentioned results. Such a reduction in ACTH output could account for the adrenal hypoactivity (*1*) obtained under emotional stress in handled animals and, hence, for the reduction in damage to the heart and stomach of these animals compared with controls.

Such a reduction in posterior hypothalamic reaction to alarming stimuli might also, in the long run, account for the greater skeletal length and weight of the gentled rats. Fried (*4*) has found in clinical studies of children that socioemotional disturbances have a direct and adverse effect on physical growth. Thus the same stimuli in the laboratory routine may have had more of an emotionally disturbing and growth-inhibiting effect on the nongentled rats. That this is the case is certainly suggested by their greater fearfulness both in an open field (*1*) and in their home cages (*2*).

Production of somatotrophic hormone in these animals may have been reduced concomitant with a higher level of ACTH production from the pituitary, arising in turn from a higher level of emotional reactivity. An inverse relationship of STH production to ACTH production under systemic stress is suggested by Selye (*5*).

Early handling would thus appear to have induced a permanent rise in the threshold for emotional reactivity. To test this hypothesis, the peripheral autonomic response of gentled rats to a mildly alarming stimulus, in terms of changes in electrical skin resistance, tail temperature, and blood pressure, could be compared with that of nongentled controls.

Such a change in the threshold of emotional reactivity of gentled animals may have taken place through an alteration in the cortical-diencephalic relationship, particularly through increased cortical inhibition of the posterior hypothalamus. Since, as is well known, removal of the cortex or depression of cortical function, as in anoxia, increases emotional reactivity in experimental animals (*6*), it can be presumed that a general increase in the level of cortical activity of gentled rats and, thus, an increase in cortical stimulation of the posterior hypothalamus may be involved in the decreased emotional reactivity of these animals. This proposition could be readily tested by comparing electroencephalographic records of cortical activity of gentled rats with records for suitable nongentled controls.

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A Method for Marking Marine Worms

The need of a suitable method for marking or tagging polychaetous annelids was stressed by A. H. Gustafson [*Dept. Sea Shore, Research Bull.* 9, 1 (1953), Augusta, Me.]. However, none of several methods he employed proved to be satisfactory. When I undertook studies on the natural population of the marine polychaetous annelid *Glycera dibranchiata* Ehlers in the area of Wedgeport, Yarmouth County, Nova Scotia, a search was made for a suitable marking method.

After several experiments with a number of biological stains, such as methylene blue, Sudan III, alizarin red, and Bismarck brown vital, I found that only Bismarck brown stained subjects for any considerable length of time. Worms immersed for 1 to 2 hr in 1/1000 and 1/2000 concentrations of Bismarck brown in sea water took up some stain. They were afterward kept for several days in dishes of sea water, which was changed daily. However, the color faded slowly, and after 14 days practically all coloring was gone, so that the subjects could not readily be distinguished from control worms. About 50 marked worms were released into the mud of the intertidal zone, and after 48 hr they could not be distinguished by color from unmarked individuals. It was concluded that this method could be of limited use only, and an effort was made to find a more permanent method of marking.

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, *Nephthys 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.

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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.

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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.