

reflect the values for food as consumed. The list of foods, per adult per week, is as follows:

Bread	1 lb	Sweet potatoes	1 lb
Oatmeal	0.5 "	Potatoes	3 "
Cornmeal	0.5 "	Cabbage	2 "
Sugar	1.2 "	Lettuce	0.5 "
Milk	3.5 qt	Carrots	1 "
Cheese	0.75 lb	Beets	1 "
Butter	0.5 "	Canned corn	0.5 "
Eggs (large, grade A)	1 "	Oranges	2 "
Lard	0.25 "	Apples	1 "
Bacon	0.25 "	Bananas	1 "
Beef chuck roast	2.5 "	Dried prunes	0.5 "
Salmon	1 "	Canned peaches	0.5 "

Five stores were included in the 1939 survey, 6 in 1940, 7 in 1941, 9 in 1942 to 1952, and 8 in 1953. Three of the stores in the 1939 list and four in the subsequent lists are members of chains. A large co-operative store was included. All small stores were deliberately omitted, as well as one or two stores that cater to luxury trade and are recognized as atypical with respect to distribution costs and retail prices.

In the case of canned goods, the cheapest brands were priced. It is believed that the nutritive qualities were reasonably comparable. To obtain maximum economies in purchasing, quantity prices (up to 10 lb) were used, whenever feasible, as the basis for the calculations (Table 1).

The increases reported since 1939 are not to be considered as indicative of the extent to which the cost of living has increased. This is because cost of living indices include many items other than food and also because liberal diets are low in cereal products (which have increased the least) and rich in fresh vegetables, fruits, fish, eggs, and meat. For example, while bread, sugar, milk, and oatmeal have approximately doubled in price since 1939, the present prices of beef, cheese, butter, and eggs are about three times those of 1939; garden vegetables and potatoes are 3 to 4 times as costly as in the base year; and canned salmon, prunes, and apples are 5 to 6 times as expensive.

TABLE 1

Year	Average cost at retail price	Percentage increase over 1939
1939	\$2.28	
1940	2.28	0
1941	2.96	30
1942	3.59	57
1943	4.72	107
1944	4.26	87
1945	4.26	87
1946	4.40	93
1947	5.96	161
1948	6.81	199
1949	6.58	189
1950	6.10	166
1951	7.07	210
1952	7.04	209
1953	6.65	190

The prices used for carrots and beets are those for the trimmed vegetables and represent strictly the cost of the edible portion. It is unfortunate that in most cases retail stores still continue to sell these by archaic standards: by the bunch rather than by net weight.

Since fortified margarine is now to be regarded as an acceptable substitute for butter, and tinned mackerel is considerably cheaper than tinned salmon, even though somewhat lower in vitamin A, we have decided in the future to substitute these two items for butter and tinned salmon, respectively, in these dietary surveys. The hamburger now available locally appears to be of higher quality than that sold in 1939, although in composition it is not yet satisfactorily defined. Nonetheless, it is widely consumed. If the list of foods published above were to be amended by the replacement of butter and chuck roast of beef with margarine and hamburger, respectively, the cost of the liberal diet would fall from \$6.65 to \$5.74 for 1953.

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<sup>1</sup> The assistance of Barbara Davey and Ruth Hoag in collection and compilation of the data is gratefully acknowledged.

Received June 23, 1953.

## Description of a New Technique for Rearing Polychaetous Annelids to Sexual Maturity<sup>1</sup>

THE maintenance of developing larvae has been a major problem in life history studies of polychaetous annelids. Many techniques have been devised in the past to overcome it, e.g., the use of finger bowls (1), a plankton net sea cage (2), a balanced aquarium to which diatom cultures are added (3), and the plunger jar system (4).

The technique employed by the author utilized the principle of simulation of the natural current conditions. Three to four gallons of sea water were added to a five-gallon all-glass aquarium. Circulation of the sea water was effected by two aquaria stones connected by rubber tubes to a compressed air system and placed at opposite sides of the jar. The aquaria stones break the compressed air into fine bubbles that serve as a means of aerating and circulating the water. In this manner the water was in continuous circulation, which kept the larvae off the bottom and free from attack by bacteria and protozoa. Sea water was collected, filtered, and stored at 4-6° C until needed. The temperature of the water in the aquarium ranged from 18° to 22° C.

Cleaving eggs or trochophores of the polychaete worm, *Nereis grubei* Kinberg, are placed in the aquarium. By the time the larvae are ready to feed, about 2 weeks after fertilization, sufficient diatom growth is present. Dried, ground mussel gonad and thalli of green algae are added periodically to assure

<sup>1</sup> Contribution number 113 from the Allan Hancock Foundation, University of Southern California.

an adequate food supply. The worms can be removed and isolated into Petri dishes after the onset of feeding.

The advantages of the aquarium circulation systems are many. The worms can be reared with a minimum of attention, food can be available without the possibility of contamination as soon as the animal is ready to begin feeding, and large numbers of worms can be reared to sexual maturity. By the use of this technique, the author has reared *N. grubei* successfully through the F<sub>2</sub> generation.

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Received February 10, 1953.

### Glass Needles and Latex

IN an investigation of the fascial spaces of the face and neck, rubber latex was used as an injection material. Unfortunately, when efforts were made to inject various spaces with latex by means of a large syringe and metal needle, the latex always solidified in the needle and would not flow, no matter how high a pressure was used. After consultation, ammonia and other alkalies were first mixed with the latex, but to no avail; it always solidified almost immediately in the needle. The idea then occurred to us to try glass needles made by drawing out a glass tube over a Bunsen burner. Very surprisingly the rubber flows perfectly through them. The latex solidifies in any metal needle but flows freely through a glass needle of the same bore. We venture no explanation of this phenomenon, but since the fact is not apparently well known, this note may save others from considerable trouble and disappointment.

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Received May 4, 1953.

### The Use of Enzymes in Sulfa Drug Analysis

It has been noted that some samples of medicated chicken feed containing sulfaquinoxaline upon long standing suffer an apparent loss of sulfaquinoxaline when analyzed by the AOAC tentative procedure (1) (extraction with caustic and colorimetric determination using the Bratton-Marshall method [2]). These same

feeds, however, appeared to be as efficacious in the treatment of coccidiosis as freshly prepared feeds. This led to the assumption that sulfaquinoxaline was being bound in the feed, possibly to the protein, in such a way that it was available to the chicken as a coccidiostat but was not extracted quantitatively by the AOAC procedure. It was found that a short digestion of the feed with ficin, a proteolytic enzyme occurring in the latex of the tropical tree *Ficus*, would release the so-called bound sulfaquinoxaline and it could be quantitatively determined by the usual procedure. Other enzymes may behave in a similar manner, but have not been tried to date. As typical examples of the assay results we offer:

Sample	Theory	Original date	Current assay date	Per cent SQ	
				AOAC	Ficin
Synthetic					
A	0.0150%	2/53	2/53	0.0130	0.0150
B	0.0163	2/53	2/53	0.0145	0.0170
Commercial					
1	0.0125	1/52	2/53	0.0086	0.0124
2	0.0125	1/52	2/53	0.0070	0.0115
3	0.0125	3/52	2/53	0.0088	0.0103

In these experiments a 5-g sample is shaken for 30 min with 100 ml of 0.1% ficin, then 5 ml of 0.5 N NaOH added and shaken for an additional 15 min. The mixture is made up to 250 ml and centrifuged. A 50-ml aliquot is shaken with 3 ml of concentrated hydrochloric acid and made up to 100 ml and filtered. The color is then developed on a 15-ml aliquot by the Bratton-Marshall procedure.

It is recommended that other investigators who are interested in the problem of assaying the sulfa drugs in the presence of protein might investigate the use of ficin or some other proteolytic enzyme.

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Received June 19, 1953.

*Correction.* In the paper "A New Series of Highly Active Local Anesthetics" (*SCIENCE*, **118**, 138 [1953]), in Table I, fourth column "Topical cocaine ratios: Corneal (rabbits)," the value for WIN 4510, the most active compound in the series, should read 500 instead of 1000.

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