MOVING DAY FOR FISH—About one-sixtieth of the fish collection in the Natural History Museum at Stanford University is shown here as it is being moved to temporary storage to allow for remodeling. Jay M. Savage, holding a stuffed sturgeon, has supervised the moving.

BIOCHEMISTRY

Sewage-Grown Algae

➤ PROGRESS TOWARD development of operations combining sewage disposal and algae farming are reported by scientists at the University of California.

Dr. Harold B. Gotaas and W. J. Oswald state that research with a small, experimental pond confirms the suggestion of earlier laboratory work that such a combined operation is possible.

The method would provide an efficient means of sewage disposal, recover much of the nutrients of the land now being lost in the sea, and yield large quantities of fodder for higher animals.

In their experiments, the scientists empty sewage into an open holding pond, then seed the sewage with algae. The algae provide oxygen which makes bacteria in the sewage thrive. The bacteria decompose the organic material, and in the process give off carbon dioxide which stimulates the growth of algae.

From time to time the algae crop is harvested, and the residue of converted waste is shunted into the ocean.

The scientists got their idea from the practice in some cities of treating sewage in large holding ponds. Algae grow in these ponds, but not enough for harvesting.

In the Berkeley experiments, a recirculating pump seeds new sewage with some of the algae already in the pond. This establishes a continuous process. The scientists found that the faster sewage is taken in the more vigorously algae grow, and at the same time optimum treatment of liquid waste is achieved.

Dr. Gotaas pointed out that other methods suggested for growing algae require "feeding" the plants compressed carbon dioxide and inorganic growth nutrients, both costly. Municipal sewage, on the other hand, contains the nutrients, and is more than free since its disposal is generally expensive.

The experiments indicate that a million gallons of sewage would yield about 1,000 pounds of dry algae. In the San Francisco Bay area, where around 300,000,000 gallons of sewage are produced daily, the yield of algae by such a method would be about 150 tons per day.

Dr. Gotaas said the algae-growing process also appears to be adaptable to many agricultural and organic industrial wastes as well as to sewage.

Emphasis to date has been on algae growth studies. A satisfactory method of harvesting the algae on a large scale will have to be worked out before the process can be put into operation.

Science News Letter, October 17, 1953

CHEMISTRY

New Insecticide Can Get Into Cow's Milk

➤ GO EASY on the use of chlordane and another new insecticide, heptachlor, around dairy barns and pastures where cows feed.

This advice seems justified on the basis of findings reported in *Science* (Oct. 2) by Drs. Bernard Davidow and Jack L. Radomski of the U. S. Food and Drug Administration and Dr. Ray Ely of the U. S. Department of Agriculture.

They fed heptachlor to a cow. Within nine days a more poisonous derivative of the chemical, heptachlor epoxide, was found in the cow's milk at a maximum and constant level of 1.8 parts per million. This would have given a concentration of 44 parts per million in the butterfat, where the chemical is concentrated.

The cow was fed a pretty high dose of the insecticide and the amount found in the milk was "minimal." But since heptachlor epoxide is toxic to mice and probably humans, milk from this cow while getting the heptachlor might have been dangerous, especially for children.

Heptachlor is an ingredient in the insecticide, chlordane, so the warning on the one applies also to the other. The scientists warn, also, that tests should be made not only for the original insecticide chemical, but also for derivatives of it.

Before heptachlor and chlordane can be recommended safely for use around dairy barns and cattle pastures, scientists need to learn the highest amount the cow could eat without having the chemicals turn up in her milk. Studies on this will be the next step.

Science News Letter, October 17, 1953

DENTISTRY

False Teeth Should Look Natural, Not Perfect

➤ "ARTISTIC DISARRANGEMENT of the teeth" makes a set of false teeth look well in the wearer's mouth. The reason is that few people have "perfect" teeth of their own, so a set of perfect teeth looks like false teeth.

The point was explained by Dr. Frank C. Hughes of Indiana University School of Dentistry at the meeting of the American Dental Association in Cleveland.

"Modern denture base materials, together with recent developments in gum characterization have done much to improve artificial dentures (false teeth)," Dr. Hughes said.

The "artistic disarrangement of the teeth" together with characterization of the teeth and gum restoration can, he said, "produce a startlingly life-like result."

Occasionally, whistling and lisping occur with artificial dentures. These sounds may be caused by habit which can be corrected in cooperative work by dentist and patient.

Science News Letter, October 17, 1953