



STUDY IN SYMMETRY—This horny head is a model of the housefly. It is part of an exhibit of almost 100 photographs being shown at the American Museum of Natural History in New York. The pictures were selected from the 200,000 negatives in the museum's file that contains shots taken as far back as 1869. It is the first large showing by the museum's photographic division.

NUTRITION

Protein From Sharks

► THE FLESH of sharks and rays caught off the coasts of India have been found to be a high protein food source, foreseen as a vital and inexpensive weapon in the world's fight against protein malnutrition.

A finished product with an 85% protein content, or more than twice that of cheese and almost four times that of frozen raw beef, was obtained in laboratory experiments by G. B. Monhanty and A. B. Roy, of the Department of Fisheries, Orissa, India.

Reporting their find in *Science* (Jan. 7), the two scientists stated that this hydrolyzed fish protein produced from the flesh of waste fish contains all the principal amino acids in amounts that are fairly adequate for human consumption in comparison with other food products.

"It is very useful in treating cases of malnutrition, tuberculosis, and duodenal and ventricular ulcers and as a supplement to the diets of convalescent patients," they stated.

The general properties of hydrolyzed fish protein are that it is easily soluble in water, it keeps well in powder form, and it has

a greater whipping power than egg albumen.

In addition, the Indian fishery experts reported, its properties are such that it could be used in the plastics, paint, leather and rayon-fiber industries.

Using the flesh from fish that has long been considered waste, and the lower cost of producing hydrolyzed protein from this source make production cheaper than many similar products made by other means.

"After testing the product on only a few patients," the scientists stated, "the demand has become very great. The investment for establishing a small plant would be moderate. And there is no doubt that the establishment of such a plant would certainly help millions of children and adults dying of malnutrition."

To derive the hydrolyzed fish protein from the flesh of a fish, the product is minced, washed, then boiled in dilute acid and washed repeatedly. The product is then dried and treated to eliminate the fat. Finally, the product is hydrolyzed. The yield is nearly ten percent.

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ENGINEERING

Auto Exhausts and Sun Held Cause of Smog

► AUTOMOBILE EXHAUST fumes plus sunlight equal smog, or at least one very noxious component of smog, ozone. This was the theory advanced at a meeting of the Society of Automotive Engineers in Detroit.

Auto exhausts contain nitrogen dioxide and hydrocarbons, which in themselves are not very dangerous smog sources. But in the presence of sunlight they react to form ozone, a highly reactive, pungent gas, A. J. Haagen-Smit of the California Institute of Technology and Margaret M. Fox of the Los Angeles County Air Pollution Control District reported.

Tests show, they said, that eye-tearing smog, typified by that of Los Angeles, contains strong oxidizing agents, a substantial part of which is ozone. This form of oxygen gas contains three atoms to a molecule, instead of the usual two, and is a much more powerful oxidizing agent.

Their experiments indicate that a much greater amount of ozone is formed from an ideal mixture of nitrogen oxide and hydrocarbons than had been expected.

The scientists bottled exhaust gases from cars with motors running at different speeds, exposed the fumes to sunlight and tested for ozone. They found that an idling car produces a poor mixture for ozone formation, but that the combination of different exhausts poured into the air in stop-and-go driving is just ripe for the reaction.

As further proof of their contention that "automobile exhaust gases . . . are to be considered a definite source of smog," the scientists pointed out that the experimental concentrations of gases turned out to be very close to actual measured conditions in Los Angeles.

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BIOLOGY

Listen to Nature, Biologist Recommends

► IF YOU really want to enjoy nature, use your ears as well as your eyes, Dr. Loye Miller, professor emeritus of biology of the University of California at Los Angeles, has recommended.

"Listening has several advantages over sight," according to Dr. Miller. "Things do not catch your eye except as they come within a narrow visual angle. You can hear, however, through the whole 360 degrees of your horizon, through darkness, underbrush and walls."

You can learn many things by listening to insects, he said. For example, certain crickets give clues to the time of night and temperature changes. They chirp at a quicker, throbbing tempo in the warmer hours of early evening, but slow down very definitely as the temperature drops during the night.

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