

BIOCHEMISTRY

'Staff of Life' Is Sturdy

Man can thrive on a basic diet consisting entirely of wheat products, obtaining from them enough protein and other essential nutrients for survival—By Barbara Tufty

► **MAN CAN SURVIVE** and thrive on a basic diet of bread and other wheat foods, scientists are finding.

Contrary to former thinking, bread and wheat products contain enough protein and other essential foods for man to survive, according to research by a graduate student from Iran, Simin Bolourchi, and her nutrition professor, Dr. Olaf Mickelsen, at Michigan State University, East Lansing.

During a 50-day experiment, 12 young men lived like vegetarians on a diet of bread, cooked cereal, noodles and other wheat foods.

They had no milk, meat, cheese, eggs or other sources of protein. Their diet also included vegetables, fruits, butter without whey (which contains protein), jam, water and coffee.

The men thrived on the 1,750 calories—roughly a full day's quota in Iran—of bread.

With this high rate of consumption, a person can get enough amino acids, the essential components of those protein building blocks necessary to human diets.

Nutritionists formerly considered bread not a good all-round diet because it is so low in these amino acids, Dr. Mickelsen pointed out.

Animal products have a much higher content of the acids. That is why nutritionists have advised newly developing countries to raise more animals for their diet, but it takes about seven pounds of wheat

protein to produce one pound of meat protein, Dr. Mickelsen said. It is not only more expensive to raise animals for essential protein, but it also takes longer.

With a grant of \$24,042 from the U.S. Department of Agriculture, Dr. Mickelsen and his assistants set up the nutrition experiment. After a battery of physical examinations and personality tests, 12 volunteer graduates and undergraduates were chosen from 40 applicants. Special dieting began March 30.

For the first three weeks, the men ate a diet low in animal products. For the next seven weeks they have received 90% of their protein and 75% of their calories from bread and other wheat products.

The men report the diet was not unpleasant. A typical evening meal included spaghetti with a sauce made of tomatoes and other vegetables, a cabbage salad and a piece of apple pie. Fresh-baked homemade bread or rolls were served every meal. Each man ate about one pound (roughly a full loaf) every day.

Every morsel the men ate was carefully weighed and analyzed to make sure that each man received 60 grams of protein and 3,000 calories each day, except for three men who received additional calories a day when they began losing weight.

A wide variety of chemical and physiological tests was made regularly on the students.

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PSYCHOLOGY

Giraffe Counts to Four—Brighter Than Porpoises?

► A 17-FOOT GIRAFFE, named Socrates, has been taught by six Colorado College, Colorado Springs, student psychologists to count to four.

The ton-and-a-half animal has been so adept at counting by nudging a wall switch in his Cheyenne Mountain Zoo cage that one of the students, Catherine Grant of Arlington, Va., believes giraffes may be more intelligent than porpoises.

The giraffe gets a cracker every time he counts four. The students performed the research under guidance of Prof. Gilbert Johns.

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ZOOLOGY

Rare European Bison Born at Philadelphia Zoo

► A BOUNCING 40-POUND baby girl with light brown hair boosted the rare European bison population in the United States to the grand total of 15.

Born May 28 at the Philadelphia Zoological Garden, the baby was on its feet and nursing within two hours.

The rare baby came as a surprise to the zoo officials, admitted Frederick Ulmer, curator of mammals.

"We have had the male and female bison for eight years," he said. "Several times the female looked pregnant, but nothing happened. This time she fooled us, and for the first time here, produced a fine baby." Both parents and baby are doing fine, he added.

The Wisent or European bison, *Bison bonasus*, is now considered extinct in the wild state.

The huge, shaggy beasts once roamed through the forests of Asia and Europe, including England, but during the First World War many were wiped out. A few mountain species remained in the Caucasus until about 1925, but these were killed by local poachers.

With careful conservation, breeding and selection, the International Society for the Protection of European Bisons has slowly raised the world population of the animals to about 700. Most of these are in Europe behind the Iron Curtain. Russia and Poland have reestablished many on wild refuge and game farms, and countries such as England, Sweden, Switzerland, Germany and Holland are carefully preserving them in zoos and farms.

Only in the last decade have these animals been allowed to come to the United States, Mr. Ulmer said.

The European bison, chiefly a browser, looks much like its American kin, which was also near extinction 50 years ago, with powerful mane-covered shoulders rising to a hump, and a large neck and head. The European animal has more powerful hind-quarters, and is longer legged.

Constant nibblers of grasses, the captive bisons eat a balanced diet of hay and pelleted grain mixture.

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Zoological Society of Philadelphia

RARE BABY—The baby European bison, one of the world's rarest mammals, stays close to its mother at the Philadelphia Zoological Garden.