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Food Researchers Explore Nutritional Problems

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Right here in our own college of home economics missionaries in white are uncovering facts which may eventually change our everyday eating habits. These researchers in the foods and nutrition department are busily sifting through stacks of data dealing with our nutritional problems.

These studies in human nutrition were first started twenty-five years ago with college girls as the subjects. During the last ten years nutritional problems of children, adolescents, young adults, and the old have been studied.

Surveys of the food intakes of Iowa women over 30 and of children from six to 18 years have been taken to determine exactly what they eat.

These surveys have shown that the calorie allowance may be too high for the amount of physical activity in which women of today engage. The facts show that even though the type of activity may change the caloric intake may not change accordingly. These women have the same eating habits they had when they were younger and more active. Researchers are trying to find out if this is the secret to the obesity which plagues so much of our population.

These observations have led to a special study of the energy requirements of women today. A laboratory on the ground floor of MacKay Hall houses a treadmill which can be set for different speeds or inclines. The amount of energy needed by subjects walking on this treadmill is registered on an apparatus which the women carry on their backs. This apparatus measures the amount of oxygen used while walking. Women of different ages, body structures, and body weights are being tested.

About sixty women are participating in another study in which their state of nutrition, the way they utilize nutrients in their diet, and their nutrient requirements are measured through metabolism tests. Some of these women are being studied at five-year intervals to see how their nutritional needs change as they grow older. Facts regarding body composition—the amounts of fat and lean the body contains—are also being noted.

Studies of the nutrition of children and their diets have been carried on by surveys in the same manner as with the older women. Studies with teenage girls show that they have poor diets and that their diets are less adequate as they grow older. This presents a question in the minds of the nutritionists: Will these young women be able to meet the physiological stresses of pregnancy and lactation in later life and will their babies show the influence of poor adolescent nutrition?

Another study to find out why teenage girls eat the food they do has just been started. Researchers hope to be able to guide these girls toward better eating habits by finding out why the girls eat the kind of food they do.

Researchers are also trying to learn more about the underlying processes of nutrition which must be made clear to determine nutritional needs. In these studies, the white rat and the guinea pig are the test subjects. For example, a recent study has been made on the guinea pig to find its need for the vitamin, biotin. Another test deals with nutrient needs in reproduction. Vitamin E may be related to some abnormalities observed during pregnancy in certain experiments.

That the amount of one nutri-
ent needed may influence the amount required of another nutrient has been shown in many nutrition experiments in this country. At Iowa State the relationship between fat and protein and between carotene and protein are being studied.

One of the big contributions of Iowa State's foods and nutrition department is the research being carried out regarding methods to improve the measurement of food quality.

The food characteristic, palatability, is a composite of those facts which affect the senses. Any measure of it tends to be subjective. A study of what constitutes good flavor and texture encompasses a consideration of many things such as factors influencing the reaction of individual judges in a food panel and the effect of environmental conditions under which the tests are conducted.

Information gained from studies of the influence of factors like these has been used as a basis for the improvement of palatability tests with taste panels and to establish principles in the field of palatability testing so that food quality may be judged more reliably than is possible at present.

The way methods of storing and marketing foods affects their "functional properties" is also being studied.

In any food mixture each ingredient plays a special role and contributes to the quality of the final product. An example is the egg which may serve as a binder, a leavening agent, or emulsifying agent. If an egg has not been handled properly before it reaches the homemaker's kitchen, one or more of these properties may be affected. The angle cake for instance, may be a "flog" because the egg white has lost some of its foaming or leavening characteristics.

At the present time a study is being made on beef with the objective of finding out just what makes it tough. Chemical studies of the muscle tissue are being performed to find whether toughness is associated with differences in components of the tissue and whether they are associated with age of the animal, the condition of the animal, the manner of fattening the animal before slaughter, the breed and sex, and the processing and the cooking.

A study is also being made with pork. The objective of the research is to find out whether the various cuts of pork from the meat type hog differ in quality from the cuts from fat-type hogs. Taste panels are making comparisons. A breed of hogs has been developed which has less fat and more meat than the fat-type hog usually sold in food markets. Also the composition of the cuts from the two types of pork will be determined to find out what the differences in nutritional value may be. The results of this study of nutrient composition will show the amount of protein, fat, and water present in cuts from the two types of pork.

This is only a summary of some of the research projects being carried out by members of Iowa State's own college of home economics—projects that may someday affect the lives of each of us.

Pilar Garcia, assistant professor of foods and nutrition, checks the apparatus that has measured the amount of oxygen used by technician Lois Burt on the treadmill.

Accurate measurements, timing and mixing speeds are essential to the final product. Miss Prell studies the effect of varying these components in egg white mixtures.