

Agricultural Science Week proves . . .

MISSOURI Has the Method

A COLLEGE OF AGRICULTURE is much like any other organization or company," said Dean Elmer R. Kiehl of Missouri's College of Agriculture. "It must keep pace with changing times or it will operate like a one-cylinder engine in a jet engine age."

If the University's agricultural program can accurately be judged on the basis of its Ag Science Week last month, it may already be in the rocket engine era.

There was, of course, the traditional Ag Barbecue, attended by more than 500 alumni and friends and hosted by members of the department, decked out in white aprons and chef hats. There were the Alumni Citation of Merit Awards given three outstanding alumni for their professional attainments. And three others were chosen for honorary membership in the Agriculture Alumni.

The real highlight, however, was the Ag Science Forecast when four of the many research programs of the college were reviewed:

▲ The Missouri Method—a faster and less costly way to measure protein make-up of plant and animal tissue samples—is playing a part in meeting the world's food requirements.

▲ Geneticists at the college are on the trail of some of life's secrets through research of cell division and growth.

▲ Cows which can keep a cool head will give more milk.

▲ And an associate in the Dairy Husbandry department has devised a way to electronically choose the

fastest milking and highest producing cows.

Dr. Charles W. Gehrke, professor of agricultural chemistry and developer of the Missouri Method, underscored the importance of protein research, saying, "By the year 2,000, more than twice as much protein will be needed to meet increasing population food needs."

Dr. Gehrke explained that there are 20 amino acids, called building blocks, in proteins. Of the 20, eight are a must in the diet of man. Scientists throughout the world, he said, are working to increase the amount of the eight essential amino acids in food plants. Holding back the work has been the absence of a fast, inexpensive way to test biological samples to learn the kind and quantity of the necessary amino acids present.

The Missouri Method uses laboratory equipment called a gas chromatograph. The amino acids are placed in the chromatograph where they are separated. The molecules are then burned by a hydrogen flame. Burning the molecules results in small electrical signals automatically recorded on graph paper.

The method is so refined it can be automated to the point where a substance being tested—such as corn, combined with other materials—is injected into one machine and a typewriter records 20 numbers for the quantity of each of the amino acids present.

Some samples can be tested within 10 to 20 minutes and at a cost of one-tenth of an older method, which could handle only one to three samples daily.

Dr. Gehrke predicted that in three years "rapid amino acid analysis (the Missouri Method) will be



Missouri's senior Senator, Stuart Symington, was made honorary member of ag fraternity, Alpha Zeta. At right is Agriculture College Dean Elmer R. Kiehl.



Receiving Citations of Merit awards were three alumni, Darryl Francis, right, St. Louis; Wendell Holman, center, Columbia; and Estil E. Schnetzler, De Kalb, Ill. Three others were chosen for honorary membership in association: Virgil M. Shirley, Hardin; Wayne Leeman, Webster Groves; and Fred V. Heinkel, Columbia. All were cited for work in agriculture.

Hosted by Ag School faculty, annual barbecue was attended by more than 500 alumni and friends of college.

MISSOURI *Has the Method*



LeRoy Hahn.



Dr. John Sikes.



Dr. Charles Gehrke, left.



This cow keeps cool head, gives more milk.

commonplace throughout the world. Also, human and animal diets will be made up on the basis of amino acid composition."

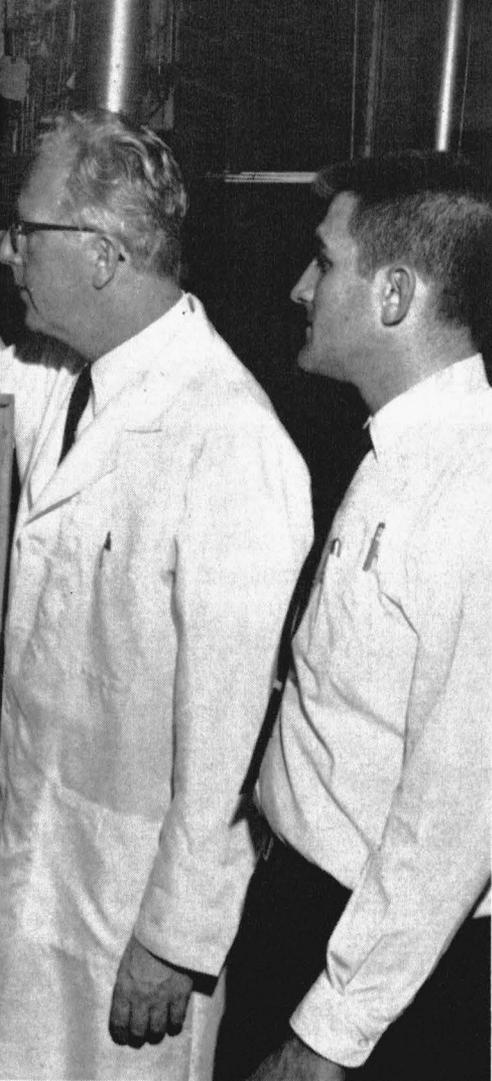
Dr. John Lasley, professor of animal husbandry, noted that cells from some kinds of animals and from some individual animals within species reproduce more rapidly than cells from others. This, he said, suggests that perhaps the rapidity with which cells divide, as shown in laboratory examinations, might be related to growth of the individual.

Dr. Lasley and his graduate students developed a method to measure rate of cell division to compare with growth at various stages in the lives of purebred and crossbred calves.

"We are interested," he said, "in learning what speeds or slows the division rate in white blood cells."

In the laboratory, certain hormones and drugs are added to solutions containing cells. The effect of these hormones on cell division is being observed. Also being studied is the division rate of white blood cells from animals treated with various hormones.

Such studies, he stated, might locate certain chemicals to slow or stop cell division, which could be im-



Dr. John Lasley.

portant in cancer control. Or, they might find something to speed up cell division, desirable in spurring growth of meat animals. Information gained from the studies also might be useful in understanding what takes place in the aging of people.

LeRoy Hahn, a research associate working toward the Ph.D. degree, has learned that cows are better milk producers when their heads and necks are cooled.

To measure the effect on milk production of cooling cows' heads and necks and providing them with cool air to breathe, Hahn determined animals' production levels when they were placed in a room with a temperature of 65 degrees. He found that in the 65-degree environment, test cows averaged 50 pounds of milk daily. He then confined cows with their heads and necks surrounded by an enclosure. During tests, temperature of the room in which cows were kept was 85 degrees.

By regulating the temperature in the enclosures surrounding animals' heads and necks, Hahn learned:

▲ When cows breathed air warmed to 85 degrees—the same temperature as the room—milk production declined to 75 per cent of what it was when cows were in the 65-degree environment.

▲ When cows had heads and necks in enclosures cooled to 60 degrees—room temperature at 85 degrees—production was 91 per cent of normal.

Hahn's work is aimed at increasing production at a time when the number of milk cows in this country is decreasing and the world population is increasing.

He pointed out that it is much less expensive to cool only the cow's head and neck than it would be to air condition the entire building.

Dr. John Sikes, University of Missouri associate professor of dairy husbandry, told of his research which makes it possible to record individual production records and length of time it takes to milk each cow. The recording is done by electronic equipment while cows are being milked.

He explained that cows which are able to be milked quickly cut down on milking time. Not only will labor savings result, but dairymen also will know which cows are top producers. Undesirable animals can be culled from the herds.

Dr. Sikes now is in Reading, England, on six months' leave of absence doing work at the National Institute for Research in Dairying Milking Management. □