THOSE of us who have had the major responsibility for teaching the beginning course in Agronomy at the University of Wisconsin during the past 15 years have been motivated in large part by two major objectives. These have been stated by Corey (1) as follows:

1. To recognize and analyze basic problems in field crop production and to apply principles to their solution.
2. To teach well a few important understandings rather than a confusing welter of seemingly unrelated facts.

Must Correlate Teaching Efforts

I wish to make it perfectly clear at the outset that no matter what the approach, there is real danger in assuming that beginning students are capable of applying either fundamental principles or facts as such to the solution of unfamiliar agronomic problems. Thus, it is necessary to distinguish between a student’s ability to recall information from memory and his capacity to apply such information to new situations. In this connection Corey (2) has called attention to a study conducted by Tyler a number of years ago. In 16 university courses, he constructed two quite different types of examinations. The first measured the ability to recall information and the second the ability to recall and apply to new situations this same information. His investigations involved over 3000 students and the correlation coefficient between the two abilities was only +.37. These results show conclusively that no matter what our objectives or approach may be, we err seriously when we assume that all students who can repeat much information can also use this information effectively to solve new problems.

Most New Students Have Not Developed an Understanding of Fundamental Principles

The great majority of the students enrolled in the beginning course in Agronomy at the University of Wisconsin are freshmen. Since 1940 an average of one-fourth to one-third of them have had no previous farm experience. Whether farm or city reared these students have little or no understanding of relationships between fundamental principles and plant behavior. Some, particularly those who have had vocational agriculture courses in high schools, are fairly well posted on such widely different agronomic facts as:

1. Winter grains replace spring grains as one goes southward.
2. Small grains frequently lodge when they are grown on corn belt soils.
3. Corn is fertilized in the spring in Wisconsin regardless of the fertility of the soil.
4. Sweet clover cannot survive close cutting or pasturing when grown in dense stands.
5. Cool nights favor good yields of potatoes.

In other words these students are in possession of considerable information of a factual nature which they have acquired by experience and study. They have ready answers to many questions which begin with the words “where”, “when”, “what”, and “how”. However, they are almost completely lacking in an understanding of the fundamental principles that will provide answers to questions that begin with the word “why”. The rigid disciplines involving the application of fundamental principles in solving problems in physics, chemistry, and mathematics have not been expanded to include the biological sciences in the secondary schools. Thus, students are likely to flounder from one meaningless statement to another when called upon to discuss the significance of certain problems associated with the growth and behavior of plants.

The traditional beginning course in agronomy as well as the traditional beginning agronomy reference textbook is in general filled with factual information. Here the student is brought into contact with infor-