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Some Suggestions for Fall Laboratory Work in Animal Husbandry

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designated by Herbart as Application. The first step takes care of the emotional element now so dominant in all good teaching. In this first step of the scientific method we find the urge for motivation, problem teaching and project teaching. This emotional element is the one so frequently lacking in routine instruction.

Teaching in accordance with the scientific method means the avoidance of slavish adherence to a logical presentation. It means the recognition, first of all, of the reaction and interests of the student with reference to subject matter. In project teaching one frequently considers the application first and then works back and forth to specific facts and principles. Yet the completed structure must finally show a logical organization.

The scientific method is probably the greatest mental achievement of civilized man. No teacher can forego the inspiration it offers in his work. There is no other method, thoroughly mastered, which can make one more productive as a teacher.

L. BEGEMAN

SOME SUGGESTIONS FOR FALL LABORATORY WORK IN AN- IMAL HUSBANDRY

Agriculture

Now that the seed corn is selected for next spring, and the frost has put an end to grasses and other outdoor crops, the agricultural instructor often feels that little outdoor material is available for further study. With this in mind I would like to present a laboratory exercise that will provide for some valuable outdoor work, and can be used as the basis for much classroom study as well.

In almost any community at this time of year there can be found men who have purchased feeder cattle to put on feed for the winter. In addition, there are usually one or more men who have raised their own feeders and are now getting them well started on feed. Here is an opportunity that should not be overlooked.

There are many ways of making use of a carload of cattle in a feed lot. I have tried several myself but have finally adopted the following as

giving the most satisfactory results. When going into the feed lot, the students are instructed to pick out what in their judgment are the best three or four steers in the lot. When all have made their decisions, each is asked to point out his choice of steers, and all steers chosen by the class are separated from the group and driven to one corner of the lot. Then each student is asked to justify his choice of steers. In the ensuing discussion, guided by the instructor, the students will gradually eliminate certain steers and finally the total number will have been reduced to that originally asked for. If the discussion has been wisely directed by the instructor, the students will have formed a rather clear picture of the ideal type feeder steer by the time the final elimination has been made.

With the three or four best steers in the lot still in the ring, you will have an excellent class for comparative judging, and the discussion can be continued until each of the steers in this best group has been given his proper rating.

Now it will be well to start at the other end of the group, with each student choosing the three or four poorest animals from the standpoint of feeder type. The same method of elimination can be used as before except that in this case the better steers are taken out of the ring and the poorer ones retained. The ones remaining can then be used as a class for comparative judging. With the best and the poorest steers selected we have an excellent basis of comparison. It will be well next to introduce the question of grades of feeder cattle. Grades can be assigned to the top and bottom group that have been studied and finally the entire group can be divided into grades if desired. The foregoing is not the work of any one short laboratory period. It is ample for a full half day with the students who are not familiar with feeder cattle type. When completed, the students should not only recognize good type in the feeder but should have a good mental image of every steer in the lot. If such is the case the class can be taken back at intervals to check their judgment as the steers develop.

By employing this method with several groups of steers a compar-

ison could then be made between the various groups to determine which group should finish into the better steers.

With feeder type thoroughly in mind and with definite examples on which to base further discussion, we are now ready to study the various phases of the feeding business in the class room. It is not the purpose of this paper to present the subject matter for such discussion, but merely to suggest a method of procedure. One of the first topics is the method of acquiring feeder cattle. In studying this problem we might discuss the relative advantages of buying or raising them. The opinions of the farmers themselves will be of great value here. Next we would consider the advantages of buying local cattle as compared with western cattle or others on the open market. This would lead to a discussion of feeder markets, their location, size, and methods of operation. In most communities you will find steers of various ages being fed. This should lead to a study of the relative advantages and disadvantages of young steers as compared with older ones, of heavy steers as compared with light steers, etc. The question of necessary margin will also enter here. Next should be considered the methods of feeding and a comparison of the results with those of the experiment station. Since it is convenient to visit the various herds from time to time, or to have individual members of the class make reports on them, a check-up on methods of feeding, housing, and management can easily be obtained. Later on it will be advisable to visit the herds and judge them as fat cattle. By carefully classifying and grading them, we will finally have a definite basis for determining what grade of fat cattle will be produced by the various grades of feeders.

The foregoing is only suggestive. The amount of work may be greatly curtailed or extended as the instructor may see fit. In fact it may be used with profit as a class or individual project, in which the steers are weighed regularly, and costs of gains and profits computed. The exact method is not of great importance, but it is important to have something to which we can definite-

ly tie the class room work and make it realistic and practical.

H. EARL RATH

SOME SUGGESTIONS FOR WINTER STUDY OF BIOLOGY IN HIGH SCHOOLS

Biology

Considerable criticism has recently been directed against the commonly accepted methods of teaching Biology in our secondary school and colleges. John Burroughs once remarked that he had never dissected an animal and was glad of it, implying by this, I take it, that we do not learn Nature by dissecting her children. Recently Wheeler of Harvard, has voiced a similar criticism by saying that our teaching of Biology is suffering from academic dry-rot; that laboratory dissection of a dead animal gives the student a knowledge of the details of structure of that animal without giving any knowledge of, or creating any interest in that animal as a living organism.

Personally, I believe this criticism to be much overdrawn, but it does call attention to the important fact that we may become so absorbed in the individual trees that we cannot see the forest as a whole; and it is undeniably true that nothing so enlivens a course in Biology as does the use of living specimens. In the fall and spring it is not difficult to secure living specimens, but the winter offers a different problem, and it is the purpose of this article to offer some suggestions for the use and care of a few common animals which may easily be kept in the laboratory for winter study. Frogs and toads, garter snakes, turtles, ground-squirrels, and earthworms are all easily obtainable, and will be discussed seriatim.

Frogs and Toads

Both frogs and toads feed readily in captivity, and may be kept alive and active all winter with very little care. A flat box six inches deep and two or three feet square, half-filled with earth and covered with screen, makes an excellent cage for these animals. If the earth is kept moist, the toads will obtain enough water, but it is best to keep a shallow pan