

March 20, 1936

Mr. Aldo Leopold,
1532 University Ave.,
Madison, Wis.

Dear Aldo;

I have just received your letter of the 16th, enclosing your copy of a needed project on "Food Selectivity", and asking for comment. I will just comment on the different questions brought up, and send copies of my answer to Errington and McAtee. If they both do the same, we should bring out some interesting thoughts on the subject.

In the first place, I agree fully that we need a great deal of study on the points brought out, and I hope that you can get something along this line going at the University. We have been working on this line ever since I returned to Georgia, and have come to the conclusion that the field is full of pitfalls, where attacked from the experimental viewpoint with what we have had in the way of ability and facilities for the attack. In other words, it is going to be a long, hard road, and I doubt that any man living will make very fast progress in travelling it; a combination of practical men in many fields may do a lot better.

After trying about everything we can think of to learn something by experimental methods regarding food preferences, we have about come back to the starting point as the most practical method of procedure. That is, the examination of crops of quail (for sake of illustration) taken under conditions where the available food supply is known, as an index of relative values and preferences. Offering captive birds the various seeds, either wet or dry, has from the first given misleading results, as compared to what we find in the stomachs of shot wild birds. For instance, Cowpeas, Fla. Beggarweed and certain Lespedezas may be selected by our wild birds from the great abundance and variety of foods known to be equally available in our habitat. Yet when we offer these feeds to captive birds in "preference" tests, we repeatedly find them rejected, or ranking very low in the best experimental tests we have yet devised. We have about come to the conclusion that seeds exposed to the sunlight and weather undergo changes which make them relished by quail; so far we have dismaly failed to get the seeds into a comparable condition of "palatability" (or whatever name would cover it) by soaking, partial germination, etc. in our experimental work.

Recently we have been trying to determine the value to quail of the seed of Lespedeza sericea. An expert experimenter with quail in Virginia has come to the conclusion by exhaustive feeding tests with captive birds that the seeds are of slight value as compared to many others of known values.

We had about accepted this conclusion, as it agreed with our own results. Then on my last trip to South Carolina I went over a large number of crops of quail, and found many well filled with this Lespedeza. Apparently they are acquiring a taste for it. We often find that it takes the birds of a natural area about three years to acquire a taste for a new feed, even though the feeds offered may rank at the top in some other district only a few miles distant. Examples, Fla. Beggarweed, Sesbania, Buckwheat, Rice and a great many others. Now in our practical work we plant these feeds very well distributed over a preserve, but in very small quantity at first, gradually increasing the quantity as the birds learn to eat the new offering. If natural feeds are very scarce we may get quick results with the new offering; if a wide variety of natural feeds are very abundant, we may make very slow progress with anything new which we may offer.

This past year Komarek tested, by the best and most "fool proof" technique we could think of, a wide variety of seeds suspected of being toxic. We used force feeding of the suspected seeds on a bird, and force fed a control with seeds known to be of outstanding value. Certain of the tested seeds appeared to be toxic by this method. Yet we find the same seeds occasionally eaten by wild quail in perfect health and condition. We have come to lack confidence in this experimental procedure and will not publish the results, though this was the object of the research in the first place.

All of our practical work points to the fact that the great majority of quail foods are strictly seasonal. Gallberries seem to be eaten in quantity by quail (and many other birds?) only in February, though they have been on the bushes for weeks. Many legumes are not eaten in quantity till they have been on the ground and exposed to the elements for weeks or months. Many grass seeds are eaten largely in the "milky" stage and for a few weeks thereafter, and largely ignored for the remainder of the year, though they remain wholesome and fully available for months following their period of use (as is proven by wholesale volunteering later). Seeds ignored for weeks become first in importance for the birds at other periods. And so it goes. So we plant and observe, kill birds under known conditions and examine them, observe their actions afield, and gradually get leads for the large scale and practical plantings. There may be short cuts, but we fail to find them.

As to Sumac. Why call sumac of "low-palatability"? The fruits of Dwarf Sumac (*Schmalzia copallina*) are the only food we have found in Bobwhite for each and every month of the year; the item occurred in 569 birds of 1,659 examined during the Cooperative Quail Investigation, and I have personally found crops half filled. Does it serve as a condiment? How about the deer browsing on over browsed spots? Maybe the animal Industry fellows are giving the answer through their chemical analysis of forage periodically cut and renewed, as against the same plants when allowed to develop normally and going to seed. Apparently they are finding very different food values. I guess the real explanation must be made by the chemist. But as a guide to practical quail management we have been forced right back where we started; a study of the bird in relation to its environment, checked constantly by laboratory work on crops gathered under known conditions. I am beginning to despair of the experimental approach with captive birds, man stored seeds, and so forth. I just go into this to such great length because we have "been through the mill", or are in the mill, and anyone taking up this work might go all over the same ground again thinking it might give the answer, which I am convinced it won't. And maybe the chemist will have to be associated with the practical man of long experience to keep his feet on the ground; it looks so in related fields.

Now just a suggestion. If one must experiment in this field, he had better

grow all of his feed in very large enclosures and his quail in the enclosures with them, to see that they eat and what they reject, and when. Then maybe the chemist will be able to tell why. The birds may require foods of different food values at the various seasons to take care of varying bodily requirements; maybe the chemist can tell why. But they have a long way to go with man and his domestic animals, in spite of the vast expenditures in this field. The poultry people are making progress, and furnish us with a multitude of "leads" to follow in figuring out the questions that confront us with our game birds. They have the money for the basic research in that field, and we should scrutinize their work closely for hints to apply in our field. Maybe a competent student could be kept very busy checking this poultry work, as applied to the game field with modifications.

I will be very much interested in the McAtee and Errington reactions to your suggestions. With kindest regards, I am,

Sincerely yours,

Herbert L. Stoddard.