WHAT IS CONTROL?

THE application of insecticides is now called control by the vast majority of entomologists, as is that of fungicides by practically all mycologists. Formerly the medical terms, remedy, treatment and preventive, prevailed. The writer has checked over more than a hundred of the most recent Experiment Station bulletins on insects and fungi and finds less than 5 per cent. of the writers using the latter terms in the place of the term control.

The reason for the change was perhaps a reaction against the idea that remedies are, or should be, effective as eradicative measures. It became very evident that what could be accomplished was not a cure of the trouble, but only sufficient mitigation to make it possible to obtain a satisfactory crop, so the term control was introduced and has finally practically displaced the older terms.

In a few of these publications, the term control is made to include the action of parasites and predators, just as in the days of Riley they were spoken of as natural remedies, as contrasted with artificial remedies.

The term control carries the thought of definite conscious action of a rational being, something done by man for his own benefit. It may be indirect through a mechanism he has set up, but it is always something that carries out his will. According to the older thinking, certain actions of nature were also conceived as controlled by an intelligence who ordered everything for the benefit of man and of individual men, and thus we had natural remedies administered by this higher power who used parasites and predators as his agents. Either the retention of this conception of nature, or more likely, the unthinking retention of this form of statement gives us now natural control.

Contrasted with this is the use of the word uncontrolled, which is almost universally expressive of the action of nature where a control by man is not exercised. Natural control is thus a contradiction of terms, because it is equivalent to non-control, and should disappear from the literature of entomology.

C. W. WOODWORTH

OESTRUS FOLLOWING THE REMOVAL OF ONE OVARY

IN a recent number of SCIENCE[1] it was pointed out by Nelson that a pregnant rat had copulated several times during the gestation period and that young were born and suckled. After the lactation period oestrus again occurred but subsequent matings were infertile. These observations are interesting not only from the standpoint of oestrus during pregnancy but also because in this case one ovary had been previously removed. It is well known[2] that the removal of one ovary results in the so-called hypertrophy of the remaining ovary with the formation of many large follicles. These changes may be accompanied by disturbances in the various phases of reproduction.

During the past year the writer has studied more than a hundred rats with respect to oestrus before and after semioophorectomy. It was found that the oestrus cycle was slightly shorter during the first few weeks following the removal of one ovary and that the usual cornified cell stage representing the heat period occurred at quite regular intervals. After two months the remaining ovary had considerably increased in size and the cornified cells in the vaginal smears occurred more frequently. The number of these cells and the frequency of their occurrence were variable. Some animals had normal cycles, while others were in heat most of the time. Indeed, with a few rats one could not tell with certainty when one cycle ended and another began.

TABLE I

FREQUENCY DISTRIBUTION FOR LENGTH OF THE OESTRUS CYCLE OF FIFTY RATS. A, BEFORE OPERATION; B, AFTER REMOVING ONE OVARY

Length in days	No. of cycles		Total days involved	
	A.	B.	A.	B.
2	0	34	0	68
3	6	71	18	213
4	116	256	464	1024
5	314	249	1570	1245
6	117	97	702	582
7	22	23	154	161
8	11	11	88	88
9	3	1	27	9
10	1	1	10	10
11	0	2	0	22
12	0	2	0	24
13	1	2	13	26
14	0	1	0	14
Total	591	750	3046	3486
Mean			5.15	4.65
Probable error			± .0272	± .0344

As shown in Table I the average oestrus cycle of fifty rats after the removal of one ovary was significantly shorter than the normal period. The mean difference in this case was 0.50 days, a figure more than ten times the probable error of the difference, which is ± 0.044. These figures, although indicating

[1] W. O. Nelson, SCIENCE, 70: 453, November 8, 1929.

[2] C. G. Hartman, *Am. Jour. Anat.*, 35: 1, March, 1925.

a shorter oestrus cycle in the rats after operation, are not entirely without fallacy. As mentioned above, it often is difficult to determine the duration of any one cycle because of the large number of scales present daily in the vaginal smears; irregular cycles may also occur in apparently normal animals.

The rats considered in Table I were observed daily during a period of four months before operation and during a similar period after operation. It would seem unlikely, therefore, that these changes are incidental. Other experiments now under way confirm the results shown in Table I.

FREDERICK E. EMERY
UNIVERSITY OF BUFFALO

A NEW RECORD OF CASTOROIDES OHIOENSIS FROM ILLINOIS

A PERFECT skull of the giant beaver, *Castoroides ohioensis* Forster, has been sent to the Museum of Natural History of the University of Illinois for identification. It was found in a gravel pit on the farm of Mr. W. A. Paullin, near Bellflower, McLean County. While the details of the find are not very clear as regards stratigraphic relationships, it is evident from the perfect condition of the skull and also from the presence of clay in the brain cavity and in other parts of the skull, containing fresh-water mollusk shells, that the skull lay at the base of the gravel which was outwash from the Champaign moraine, covering the Shelbyville till sheet which underlies the Champaign till sheet in this region. That the specimen was originally buried in a lake or other body of water is clearly evidenced by the diverse character of the molluscan fauna found in the clay, which included the following species.

Sphaerium sulcatum	*Pomatiopsis scalaris*
Pisidium species	*Helisoma antrosa striata*
Valvata tricarinata	*Gyraulus altissimus*
Amnicola leightoni, var.	*Gyraulus urbanensis*
Cincinnatia cincinnatiensis	*Ferrissia paralella*
Pyrgulopsis species	

The stratigraphic horizon of the deposit in which the skull was found is Early Wisconsin, substage 1 of Leverett, or the earliest division of the Wisconsin stage of the Pleistocene. *Castoroides ohioensis* has been reported from all interglacial intervals of the Pleistocene, from Aftonian to post-Wisconsin, and is known to have lived in pre-Glacial time. Five records[1] are known from Illinois previous to the present specimen; these are: Shawneetown, Gallatin County, teeth fragments, Le Conte, 1852; Charlestown, Cowles County, skull, Leidy, 1869; Naperville, DuPage County, Bannister, 1870; Quincy, Adams County, Worthen, 1870; Alton, Madison County, Worthen, 1890. The animal was evidently wide-spread over Illinois, the records covering the length and breadth of the state.

The Bellflower specimen is being studied by Dr. A. R. Cahn, of the University of Illinois, who will make a detailed report of the specimen.

FRANK COLLINS BAKER
UNIVERSITY OF ILLINOIS

[1] Baker, "Life of the Pleistocene."

PROFESSIONAL ETHICS AND THE ARTIST

DR. STILES' article "Absent-mindedness as a Factor in Professional Ethics"[1] brings up a point which scientists may well consider. There is, however, a prologue to the same story which I believe is an even worse ethical abuse than that to which Dr. Stiles calls attention. This is the practice, frequent among scientists of standing, who employ an artist or illustrator to do their illustrations, of denying this artist the right to sign these drawings or illustrations, and in no way making any acknowledgment of the true authorship of these drawings.

The defense is often raised that the artist deserves no credit because he or she is paid to do this work. However, so are scientists usually paid for their work, by government, university or private agency, and yet they invariably claim full credit for all their work (sometimes some of it questionably theirs) by affixing their own signatures. Again it is sometimes advanced that illustrations are very incidental, only a minor feature of a paper—something akin to the services of the stenographer in typing the manuscript. That this theory is also false is clearly shown by the incidents described by Dr. Stiles where illustrations are repeatedly copied by other authors, often without the slightest change. Dr. Stiles objects that in this copying acknowledgment should be made to the original author, the supposed source of the illustration. Why then should not the original author also acknowledge the *real* source of the illustration where it is the work of an artist, and not his own?

It is usually emphasized that these drawings are "made under supervision," as though the artist were merely a machine for mechanically recording the inspiration of the scientist. It is true, of course, that such drawings are made under direction, but the amount of it is in some cases so trivial as to be negligible. Furthermore, many illustrators, after a short novitiate in a particular line, understand what is wanted with only the barest suggestions from the superior, and proceed to solve all the smaller difficulties (and sometimes the larger) by themselves, in the execution of the work. I have personally known of several cases in which the careful, intelligent study of a specimen by the artist revealed details that the

[1] SCIENCE, 71: 100–101.