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Biological Science

CASE-BUILDING HABITS OF SOME MINNESOTA TRICHOPTERA

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ABSTRACT

All caddis fly larvae, at sometime or other, build cases around themselves. With the exception of only a few other insects this case building characteristic is restricted to the *Trichoptera*. The function of the case is three-fold: 1, protective; 2, increasing the availability of respiratory water; 3, aid in locomotion.

Cases built by larvae may be divided into two general groups: cases composed of sand or pebbles and cases composed of vegetative matter. The type of the case and the choice of material is usually characteristic of the species, and sometimes of the genus and family. There is a marked correlation between the type of the case and the swiftness of the water. The case composed of sticks or other material is usually found in relatively slow moving water, while a case composed of sand is usually found in swiftly flowing streams.

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A COCONUT FUNGUS

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ABSTRACT

A high percentage of the common coconuts, *Cocos nucifera*, sold on our markets are infected with a fungus. It is one of the ascomycetes, is not harmful if eaten and most consumers are not aware of its presence. However, by draining the liquid from the fruit into a glass container one can easily note the fungus floating in the liquid. The endosperm of infected fruits also feels slippery to the touch. A slight infection may impair the palatability very little. However, advanced stages will impart a musty flavor to the endosperm and cause it to become soft.

The fungus may be grown on agar media to which ground coconut endosperm has been added. Although a profuse vegetative growth was obtained, fruiting bodies were not observed. Coconuts, cracked and drained, showed a very profuse fungus growth in two days at room temperature.

The source of infection was not determined but apparently it is

either through the blossom or the stem before the fruit has matured. The fungus enters the fruit through the soft eye which contains the embryo.

From observations made during the past three years this fungus is on the increase. It will, without question, result in serious loss to the growers and retailers as the consumer becomes aware of the existence of this fungus.

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THE IDENTIFICATION OF SCALES FROM MINNESOTA FISHES

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ABSTRACT

In the analysis of the stomach contents of mammals, amphibians, reptiles, and birds, fish remains are frequently found. If scales are included in the remains, it is possible to identify the fish, at least as far as family and usually to species. A key based on scale characteristics is presented for use in identifying the various Minnesota fishes.

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THE EFFECT OF COLCHICINE ON THE LABORATORY RAT

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ABSTRACT

Although the possibilities of the use of colchicine in the production of polyploidy were first realized as the result of experiments on animal tissue, because of the difficulties encountered with animal material, most of the later experiments have been carried out on plants. While several investigators have reported doubling of chromosome number in animal cells as a result of colchicine treatment, these cells have never survived for any length of time. With the possible exception of the work of Higbee on the chick, we might say that, as yet, experiments with animal tissues have met with little or no success, as far as developing polyploid individuals or tissues are concerned.

Injections of the drug into day-old rats result in the production of polyploid tissue in these animals. The genital organs particularly are affected. A triploid number of chromosomes occurs in some of the mature ova. The testes show a greater number of mitotic figures than is normal, most of them being in the metaphase. The amount of interstitial tissue in the testes is considerably reduced. The semi-

nal vesicles, rete testes and epididimus are greatly enlarged. All affected animals are sterile.

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THE IN VITRO EFFECT OF SULFONAMIDE DRUGS ON THE GROWTH OF MICRO-ORGANISMS

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ABSTRACT

Five different sulfonamide drugs (sulfanilamide, sulfathiazole, sulfaguanidine, sulfapyradine, and sodium sulfapyradine) were tested for their static effects on the growth rate of several different species of micro-organisms, namely, *Tetrahymena geleii* (ciliate protozoan), a typical animal cell; two flagellates, *Khawkinea halli*, a colorless form and *Euglena gracilis*, a chlorophyll-bearing cell; and two bacteria, *Sarcina lutea* and *Escherchia coli*. The ciliate was inhibited most by sulfathiazole and least by sulfaguanidine; the two flagellates were most drastically affected by sulfapyradine and least by sulfaguanidine; the bacteria were least inhibited by sulfapyradine and most affected by sulfathiazole. The work indicated that the various organisms tested were affected specifically by different drugs.

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THE ORIGIN OF CASTES IN ANTS, WITH SPECIAL REFERENCE TO *PHEIDOLE MORRISI* FOREL

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ABSTRACT

Experiments were designed to test the influence of the adult castes of *Pheidole morrissi* on the development of the brood. Ants were reared from egg to adult in certain colonies composed only of workers, some only of soldiers and others containing both workers and soldiers served as controls. The food of all colonies was similar in quantity and quality. The results show a significantly greater proportion of soldiers developed in the worker colonies than in either the soldier or control colonies. Virtual inhibition of this caste was obtained in soldier colonies, but workers appeared to develop about equally well in all three colony types. The inhibition of the development of soldiers is correlated with the presence of adults of that caste, and an exudate of the soldier body containing a special inhibitory substance is thought to be distributed to the larvae by the grooming habits of the nurse ants. Soldiers appear to be extrinsically determined, probably after the hatching of the

eggs, but the experiments provide no new evidence on the determination of the worker caste. The results are in accord with a preponderance of the observational and experimental data of numerous investigators.

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THE LAND SNAILS OF WINONA COUNTY

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ABSTRACT

The paper presents a brief account of the species of land snails most common to Winona County, together with a description of some of the environmental conditions in which the various species are most frequently found. *Hendersonia occulta*, fossils of which are abundant in glacial deposits of the last geological period but of which there are few living specimens this far north, has been found occasionally in this area.

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A GENETIC STUDY OF CONGENITALLY MISSING TEETH

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The hereditary lack of teeth in man may not be a detrimental trait, but it is important to many people, particularly those whose features are altered by the defect. A study on dental anomalies has been made possible by aid given by the Committee on Human Heredity of the National Research Council and by the Dight Institute of the University. This is a report on the first one hundred cases of "congenitally missing teeth" which have been collected from approximately 5,000 patients at the University of Minnesota Oral Diagnosis Clinic. Sixty-two of the hundred cases involve only a few teeth, from one to four. Some cases were extreme, lacking from sixteen to thirty teeth, and with one exception are not included in the genetic study.

The incidence of missing teeth varies for the different types of teeth, with the upper lateral incisors (2's), the second bicuspids (5's), and the third molars (8's) being most often missing or peg-shaped. In this study, 1.2% of the people were deficient for the upper 2's, and 0.8% for the 5's. The data on 8's include only those cases which also had other teeth lacking; and 0.8% of the people had that condition. Except in the extreme cases, no individual was found who lacked upper central incisor or lower cuspid teeth. The other teeth were missing with relatively low frequencies.

Missing or peg-shaped upper lateral incisor teeth are usually easily detected. Several genetic studies on the defect have been re-