

ASTRONOMY

48 Dwarf Galaxies Found in Virgo Cluster

► DISCOVERY of 48 dwarf galaxies in the huge cluster of star systems found beyond the stars of the constellation of Virgo, the virgin, has been reported by Dr. Gibson Reaves of the University of Southern California.

The cluster of galaxies in which the 48 dwarfs were spotted contains about 1,000 stellar systems, and more dwarf galaxies may be found in Virgo by future surveys.

Science News Letter, June 23, 1956

Learn to Design COMPUTERS

— With Our New Course —
TCI-DESIGN OF
COMPUTER CIRCUITS

For the professional scientist or for the beginner in circuit design this course, complete with kit of parts, texts, manuals and study guide will introduce you to design and construction of computing, problem solving, logical, and game playing equipment.

We supply ALL COMPONENTS AND PARTS FOR MORE THAN 33 MACHINES, four manuals and texts, beginners manual (P. 1), two hundred page text (P. 16), manual of experiments (P. 13), mathematics needed for design (P. 17), and a study guide (P. 18), manual of wiring diagrams (P. 15).

NO SOLDERING NECESSARY, ALL PARTS OPERATE FROM ONE FLASH-LIGHT BATTERY.

TCI Complete Course including kit, manuals, texts and study guide, post paid..... \$19.95

P1 — Beginner's MANUAL — fifteen experiments in elementary circuit design with a brief introduction to the notations of circuit algebra \$1.00

P13 — SIMPLE ELECTRIC BRAIN MACHINES, AND HOW TO MAKE THEM. Thirty-three different electric brain machines from simple components. Includes Burglar Alarms, actuarial machines, syllogism machines, Tit-tat-toe and other game playing circuits \$2.00

P15 — WIRING DIAGRAMS — for P13. Full page schematic drawings that aid practical construction \$1.00

P16 MINDS AND MACHINES, a 200 page paper bound text covering computing and other machines, control and communication, mechanisms and organisms, working of the nervous system, brain and mental functioning, thought processes and cybernetics \$1.00

P17 SYMBOLIC ANALYSIS OF RELAY AND SWITCHING CIRCUITS, reprint of Claude Shannon's original study relating Boolean Algebra to design of electric circuits. Still the best discussion of the subject \$2.00

P18 STUDY GUIDE FOR COURSE TCI — lists questions, methods of attack, supplementary readings \$.50

COUPON

Oliver Garfield Co., Dept. SL 34
126 Lexington Avenue, N. Y. 16, N. Y.

Please send me items circled

TC1 P1 P13 P15 P16 P17 P18

I enclose in full payment.
My name and address are attached.



Summer Songster

► AS LAZY SUMMER DAYS begin, the air of wooded regions is filled with the shrill, "monotonous" song of cicadas. The word "monotonous" is put in quotation marks because to insect ears the song of the cicada is far more complicated than is evident to humans.

Human ears and the ears of most other land-dwelling vertebrates are sensitive to differences of pitch in sounds. Thus, the rise and fall of pitch is what this type of ear is attuned to hear. Insect ears, on the other hand, are not so attuned to pitch as to the "beat," or the pulse pattern of sound.

The human listener, then, only hears a "monotonous" whir, with little interesting variation in pitch, as the cicada sings. How-

ever, the female cicada, listening to the male (only the male sings), hears an elaborate pattern of pulsating sound that the human ear misses.

As a British expert on insect sound, J. W. S. Pringle, has remarked, it is only because of the inability of the human ear to detect the significant features of many insect songs that their great variety has long gone unsuspected.

Most sound-producing land vertebrates use the rush of air over organs like vocal cords to make sound. Insects lack the kind of respiratory airstream necessary for this kind of noise-making. Therefore, their hard external skeleton and the air spaces within their bodies act as "drums" to make a variety of sounds.

Cicadas make their song by the rapid buckling of a specially modified section of their first abdominal segment. The abdominal cavity contains a large air sac that increases the volume of the clicks caused by the buckling, like the cavity of a drum increases the volume of sound produced by beating on the drum head.

To produce the typical song of the cicada, the buckling is carried out at an extremely rapid rate.

To achieve this, the "buckling" muscle is different from all other striated muscle except the indirect wing muscles of flies, bees and a few other insects. Its contraction and expansion are not controlled from the central nervous system, but by stimulation within the muscle itself.

Science News Letter, June 23, 1956

BIOCHEMISTRY

Test for Mental Illness

► A RELATIVELY SIMPLE CHEMICAL test for the serious mental sickness, schizophrenia, has been developed by Drs. Patrick L. McGeer, Edith Graef McGeer and William C. Gibson of the University of British Columbia, Vancouver, and the Crease Clinic of Psychological Medicine, Essondale, British Columbia.

In more than 80% of newly admitted patients, the diagnosis of schizophrenia could be predicted from the test.

The test depends on finding a class of chemicals called diazo-coupling compounds in the urine. The chemicals are detected by characteristic spots of color found by chromatography.

The scientists started their work because of the theory that schizophrenia may involve an error of body chemistry resulting in the body's synthesis of a chemical similar to mescaline and LSD-25.

These two chemicals can produce schizophrenia symptoms temporarily in normal persons.

The known chemicals that produce such symptoms and the tranquilizing drugs that overcome them all have one common and perhaps significant structural characteristic, which chemists call an activated aromatic ring. If the body makes such a chemical,

it might also have this characteristic structural feature.

To test this theory, the Vancouver scientists studied the urine of normal persons and schizophrenia patients for differences in aromatic chemicals excreted. The schizophrenics, they found, excreted more of the diazo-coupling compounds.

Based on a scale of 11, the average for these compounds excreted by the schizophrenics was six, while that for normal persons was 2.8. Of 13 patients who had ratings of three or less, 10 were responding well to treatment, while of 19 with ratings of eight or more, 18 had shown no response to treatments.

This seem to indicate that the test might also be used to show whether treatment was having any effect.

Besides the schizophrenia patients, the scientists tested patients with other mental diseases. These averaged scores about the same as normal persons.

More than 700 persons, including many normal ones and about 400 patients newly admitted to the mental hospital, have been tested. The results are in excellent agreement with those from persons first tested, the scientists report in *Science* (June 8).

Science News Letter, June 23, 1956