

like a firefly or glow-worm; only it goes the firefly one better and carries lights both fore and aft. Its front segment and its five rear segments shine with a weird blue light. Whether this lures other insects into its web, again Dr. Fulton was unprepared to say, although its behavior "suggests such a possibility." The creature's luminosity makes night the best time to hunt it, for its web is quite small—only about two inches across—and is spun in inconspicuous places near springs and among rhododendron roots. It turns its lamps on at sunset and off again at dawn. When Dr. Fulton kept some of them continuously in the dark, in a tin can, they maintained approximately the same lighting schedule for at least six days.

The web is a curious affair, suggesting the flattened-out root system of a small plant, with a few main trunks, each having several lateral branches. The main trunks are ribbon-like runways for the larva and are not sticky; the adhesive that catches the prey is spun on the side branches.

The larva's spider-like behavior was vividly described by Dr. Fulton:

"When an insect is caught in one of the special thick adhesive strands in the outer portion of the web, the fly larva darts out along one of the suspended ribbon-like main strands until it comes to the side branch holding the prey. It follows this out until it comes to the victim. If the prey is small, the larva grasps it with its mouth and pulls it back at once into its den. In dealing with more powerful prey the fly larva quickly attaches more strands of web to prevent its escape and then crawls across its legs to coat them with slime so that they stick together.

"Small spiders dropped into the web were also subdued and devoured. Spiders probably do not constitute an important part of the diet but the observation is of interest because of the reversal of the proverbial roles of the spider and the fly. Certain kinds of flies are known to live in their larval state as internal parasites of spiders but in this case we have a juvenile fly capable of capturing a spider and it can do so by the same system habitually used by the spider in capturing the adult fly."

When this amazing piratical infant grows up and becomes a fully-developed winged adult, it becomes a mild vegetarian, feeding harmlessly on mushrooms. The species, recently discovered, has been named *Platyura fultoni* in honor of Dr. Fulton by Dr. Elizabeth Fisher, a fellow-entomologist.

*Science News Letter, January 4, 1941*

GENERAL SCIENCE

# Air-Raid Shelter in America Proposed to Guard Best Data

## Formation of a Preservation of Science Council To Protect Cream of World's Research Is Urged

**T**HE BUILDING somewhere in America of a great research vault and air-raid shelter in which the cream of the world's scientific research data and equipment would be placed to protect it against destructive bombs of the future was advocated by Dr. K. A. C. Elliott, biochemist of the Philadelphia Hospital.

The formation of a Preservation of Science Council was also urged by Dr. Elliott in a Christmas statement issued by the American Association of Scientific Workers on the eve of the Philadelphia science meetings.

The United States will continue to be the stronghold of the world's scientific and cultural traditions, Dr. Elliott declared.

"The people of Great Britain have grim problems of their own," he asserted. "The main responsibility for the preservation of science now rests on us in America and that responsibility has become so great that I believe it can only be efficiently and comprehensively handled by a special influential representative body."

*Science News Letter, January 4, 1941*

### "Blueprint in Sky"

**W**ITH WHAT he called a "blueprint in the sky," Prof. Anton J. Carlson of the University of Chicago outlined his scientist's ideal of a democratic society.

"To my way of thinking," he said, "a truly democratic society is that social, economic, and political order which favors or permits the maximum freedom and opportunity for the efforts and achievements of the individual, consistent with the common welfare, and gives the individual full or equal share and responsibility in establishing, balancing and sustaining that freedom and opportunity. Again, to my way of thinking, this does not mean equal responsibility from each citizen, for we are not born with equal capacities, mental, moral or physical. If there was now, or ever could be devised, a way to assess individual

social responsibility strictly according to individual capacity, I think we would be on the road to a closer approximation to social and economic justice for all than is the case in any extant democratic society or democratic way of life of which I have ken."

Nowhere, Prof. Carlson hastened to add, is there an actual, factual realization of this blueprint. No democracy is all white—they are all gray. No totalitarian state is all black—they are all a darker shade of gray. However, the leaven of democracy is at work everywhere. Even in Japan, where the Emperor is not merely the supreme ruler but God himself, democracy is astir among the masses.

Failure to realize democracy, despite the many trials that have been made, Prof. Carlson laid to "the eternal cussedness, the dishonesty, the greed, the vanity, and the laziness of man. But although this goal seems as far away as the proverbial rainbow, I would rather chase this rainbow than stay contented in the jungle."

*Science News Letter, January 4, 1941*

### Must Serve Individual

**T**O HAVE democracy in its highest form, our mode of life must be rearranged so that the individual under the trusteeship of his chosen executives will be adequately fed, clothed and housed, provided with such services as education, medical attention and recreation, and have the experiences of working with others to enrich personality.

This was the contention of Walter Rautenstrauch, professor of industrial engineering, Columbia University, speaking in Philadelphia before the American Association of Scientific Workers and the American Association for the Advancement of Science.

Maladjustments in our social and economic system result, according to Prof. Rautenstrauch, from three factors destructive of civilization's vital forces:

1. Ownership of the natural resources

of the earth by individuals, groups or nations, causing a struggle between the "have" and "have nots" which is the major cause of war and destruction.

2. Private ownership of the means of production by a small group which imposes its will on mankind, leading to unemployment and want in the midst of abundance of resources, tool power, and human skill and energy.

3. Consequent distribution of increasing portion of the fruits of production so that there is a maladjustment between our capacity to produce and our capacity to consume.

"All attempts at the reorganization of the processes of civilization should be judged in the light of their probable effects at these three focal points of integration," Prof. Rautenstrauch declared.

Dictators operate not so much in consequence of these factors, but by manipulating credit, controlling news and limiting the rights of assembly and freedom of speech, Prof. Rautenstrauch declared.

"Since no civilization can rise to higher levels than those derived from the capacities of the individuals who func-

tion in it, Prof. Rautenstrauch observed, it is perfectly obvious that whatever understandings are gained from our studies and experiences must be transmitted to and generally disseminated among the people."

*Science News Letter, January 4, 1941*

## Useful Things Cheapest

**T**HE GREATER and more immediate the need, the greater the natural provision and the lower the price of the raw material. In other words, the greater the value in use the less the value in exchange."

This dictum was laid before the meeting as a sort of natural law covering the value of raw materials, by Dr. Alfred C. Lane, emeritus professor of geology at Tufts College.

As extreme but familiar examples, Dr. Lane cited air and water. They are both vital necessities, compared with which gold and pearls are as nothing. Yet in themselves they have no market value. We pay for things we do to them, as in air conditioning and city water supplies, but the substances themselves come free.

Less extreme but still familiar is the example of relative usefulness and rela-

tive prices of metals. Iron and copper would be more useful, intrinsically, than gold and platinum even if they were less abundant. But they are (fortunately) quite abundant, and quite cheap.

Yet even necessary things that are quite abundant in normal times may suddenly become scarce when the world is dislocated by war. Dr. Lane pointed out. He set up a list of five questions, for scientific workers and planning boards to ask about any given strategic resource:

(1) Have we a sufficient supply of our own, or in immediately contiguous territory?

(2) Have we reserve supplies, in scrap or other form?

(3) Are there any unnecessary uses that can be curtailed?

(4) Are there possible satisfactory substitutes?

(5) Can new sources be readily developed?

*Science News Letter, January 4, 1941*

A new use for *cotton*—to make cotton-padded waterproofed hoods for beehives in winter.

Libraries report a boom demand for books on *national defense* and books on skills required in strategic industries.



### VOICE TEST

*This measure of the cries of a bat revealed that many are higher in pitch than the limits of human audibility.*

PSYCHOLOGY-ZOOLOGY

# Bats Use Supershrill Cries To Pilot Themselves in Dark

## "Flying the Beam" of Inaudible Sound Waves, Bats Avoid Mishap Guided By Echoes From Obstacles

**B**LIND-FLYING bats use supersonic echoes to pilot themselves through winding, pitch-dark caves without crack-ups, a team of Harvard scientists told the American Association for the Advancement of Science.

One of the most puzzling mysteries of biology has been solved. If airplane pilots could utilize the skill and flying mechanisms of bats, flying would be safer in peace and war. Some of the newest aviation instruments are believed to use a device similar to the one developed so effectively by nature in the bat.

The bats "fly the beam" of inaudible sound waves. This beam is composed of supersonic sound echoes which warn the bats of obstacles in their path and thus enable them to swerve from them. With

this beam bats can execute complicated maneuvers through virtual networks of wires without mishap.

The bats themselves broadcast the sounds composing the beam—they're far too high-pitched for human ears—and then tune in to them as they are bounced back from obstacles. A similar idea is used in ocean navigation when the echo sounding device is used to determine water depths. A sound is bounced on the ocean floor and the time of travel tells the depth.

It is possible that the researches may have defense applications in arming America in the air.

The study of the bats, made by Robert Galambos and Donald R. Griffin of Harvard's biological laboratories, destroyed a few old superstitions. For one