against Egypt and break up the empire, even while writing pharaoh cooing letters of submission."

When the fifth column had bored sufficiently into Egypt, the Hittites marched down, probably armed with a new secret weapon—iron lances and swords—to devastate the still behind-the-times Egyptians, armed merely with bronze. With this force attacking, and with internal troubles of organized rackets, strikes, and plundering bands of roaming soldiers, Egypt collapsed.

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AERONAUTICS

Despite War, the English Discuss Civil Aviation

Possibility of Passengers Crossing Atlantic in an Overnight Hop Is Foreseen By London Expert

POSSIBILITY of passengers crossing the Atlantic, between London and New York or Montreal, in an overnight hop, in planes travelling 300 miles an hour, is foreseen by Dr. H. Roxbee Cox, formerly chief technical officer of the Air Registration Board, in a recent address to the Royal Aeronautical Society in London. (*Flight,* June 6)

"There can be no doubt that when a country is fighting for its life, its primary aim is to win the fight," Dr. Cox said, "but it is generally agreed that we are fighting also for our civilization. It would seem axiomatic then, that we must preserve the means of civilization, of which civil aviation is one."

He suggested that safety requirements might be varied depending on the route of the flight. Over cool flat countries, between sea level airports, planes could carry more passengers than when flying over mountains, between high altitude fields in the tropics, he said. In recent years, the British practice has been to set minimum requirements to suit the worst conditions, but this, he stated, is uneconomical.

He called attention to the present transatlantic schedule of Pan American Airways planes, which operate at a speed of 170 miles per hour, making the trip eastward in 29½ hours and westward in 24 hours, allowing for the time difference in England and the United States, and the prevailing westerly winds.

"After this," he declared, "the obvious big step forward would be to make the journey overnight. That we cannot at present consider this is clear from the calculation which shows that, though a westward speed of 240 miles per hour would be adequate, an eastbound speed of 486 miles per hour would be required.

"An approximation to the overnight ideal is possible at 300 miles per hour. This would allow arrival at Southampton at 10 a.m., if departure had been made from Montreal at 6 p.m. the previous day. I suggest, then, that the next big advance in operational speed will be to 300 miles per hour.

"What degree of comfort should be supplied at this speed? The westbound passengers will be on board only 13, the eastbound only 11 hours, and most of this time may be spent in bed. I suggest that weight and space might be more profitably expended in comfortable beds than in promenade decks and wine cellars."

With a daily service, he stated, it would probably not be necessary for some time to cater for more than 250 passengers and 20,000 pounds of mail per week. This would be about 35 passengers per day, but to deal with fluctuations in load, the aircraft would probably need to have room for 50 passengers. He also suggested that it would probably be necessary to make the direct North Atlantic route, now used only in summer, an all year round one.

"There is, therefore, ahead of the operators a highly interesting and perhaps exciting period," the speaker declared.

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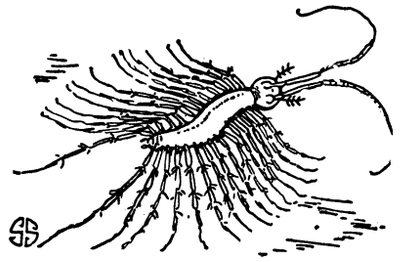
New *plastic tubes* can shoot light around corners.

The first self-hardening tool *steel* was produced in 1868.

Barnum's six and one-half ton elephant, *Jumbo,* had a daily ration of 200 pounds of hay, two bushels of oats, a barrel of potatoes, 15 loaves of bread, and several quarts of onions.

ENTOMOLOGY

NATURE RAMBLINGS by Frank Thone



Unappreciated Arthropod

LATEST contribution to the literature in dispraise of the centipede is a jingle that runs something like this:

I do not like the centipede,
He is a bug we do not need.
He runs from the bathroom through the hall
And up and down the bedroom wall;
You always swat where he is not—
And when you do it leaves a blot.

Just why the poor centipede should be swatted at all, blot or no blot, is not answered. The whole attitude of the average person, and particularly the average housewife, can be summed up in, "Here's a bug. Swat it!"

It matters not that the centipede is not a bug, not even an insect. It matters not that the common house species is completely harmless to man. It crawls and wriggles, and it has too many legs for our mental comfort. So we reach for the swatter.

Actually the centipede does do the householder at least a minor benefit, by preying on flies. Being nocturnal, it does its prowling on the ceiling in the dark hours when flies are suspended by their feet, fast asleep. Stumbling on its victim in the dark, the centipede instantly fangs the fly, sometimes falling to the floor through the vigor of its pounce. But it never lets go of the fly.

Of course, it is a bit disconcerting to find a centipede in your bathtub in the morning, where it has fallen during the night and cannot get out again. For although its clinging feet can easily find upside down footholds on the slight roughness of wallpaper, they are no match for the slippery enamel of plumbing. So all you can do is scoop him out with a piece of paper, usually mangling him beyond recovery in the process.

Centipedes are almost unbelievably

fragile. Their many jointed legs break off at the slightest provocation, and even their slender bodies snap in two on very little handling. It is a good thing (for the centipede) that these legs can be regrown, like the lost legs of spiders, crabs and similar creatures. Incidentally, there are not a hundred legs, as the centipede's name implies. Less than half that number is the more usual quota.

Probably the popular tendency to classify centipedes, along with spiders and scorpions, as insects or "bugs" is beyond correction. Actually, insects, spiders, scorpions, centipedes, millipedes and a few less well known creatures hold equal rank as classes in a great natural group comprising all animals that have jointed legs. This joint-leggedness is reflected in the Greek-derived name that covers the whole lot of them: Arthropoda.

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ICHTHYOLOGY

Fish Carry Own Lights In Under-Ocean Blackout

Down in Oceanic Abysses Where No Sunlight Penetrates Are Dimmed Lights Like Those of European Cities

LIFE in a world of perpetual blackout is not necessarily completely lightless and blind, says Prof. E. Newton Harvey of Princeton University. Creatures of the oceanic abysses, where no glimmer of sunlight ever penetrates, carry dim, greenish lights that give their little patches of illumination, very much after the fashion of the carefully shuttered and dimmed lights carried in European cities now that the Dark Age is again upon the earth.

Not only in the ocean's depths but also in our own upper world of air and earth are there nocturnal creatures that light their own dark ways. Almost all the major groups of animals, and two great classes of plants, have representatives in the glimmering ranks reviewed by the Princeton biologist. Bacteria, fungi, protozoa, jellyfish, up to insects, mollusks and fish, all have their lantern-bearers.

Some, like the bacteria, have no way of turning their light on or off and so shine with a constant glow. Most, however, either flash at more or less determinable intervals, like the familiar fireflies, or burst into phosphorescence when disturbed, like the one-celled animals that swarm in the sea during periods when the water "burns" at night.

There are certain forms without "power-plants" of their own that exploit the light-producing powers of smaller creatures, notably bacteria. One remarkable case which Prof. Harvey describes in a new book, *Living Light* (Princeton University Press), is the special bacteria-harboring organ carried by two related genera of tropical fish. Below each eye is an organ apparently especially designed for growing masses of luminous bacteria. It has a rich blood supply, opaque screens for protecting other tissues of the fish from the light, and a mechanism for shuttering the illumination at will.

Not always, however, is the presence of luminous bacteria beneficial to the animal in which they live. There are a number of species of insects and smaller crustacea that become populated with these shining germs, and in most instances such infection is fatal. Luminous wounds in human beings have even been recorded, in days before modern aseptic surgery.

Less serious in its consequences, and with even a humorous touch, was an instance of "borrowed fire" which Prof. Harvey observed in Cuba. He found what at first appeared to be a luminescent frog. Upon closer examination it turned out that the animal had just made a hearty meal of fireflies, which were still shining so strongly that their light came through the skin on the frog's bulging abdomen.

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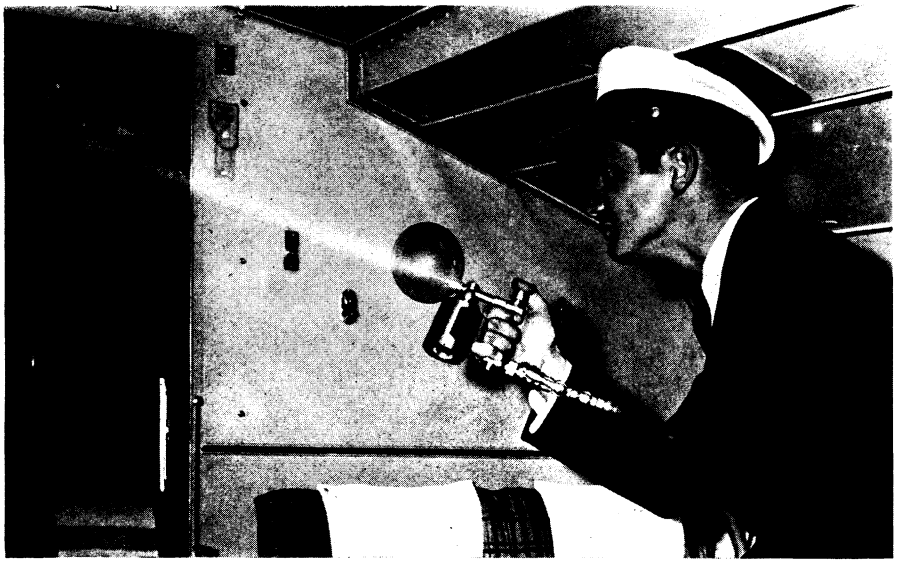

FIGHTS AERIAL INVASION

Aerial invasion of the United States by possible disease-bearing mosquitoes is fought by this new sprayer, developed for the U. S. Public Health Service. The spray is so fine that it is practically dry, that is, it does not deposit on walls and fabrics. It is used on planes in flight to Miami, Florida, from Caribbean and Mexican ports, and very few live mosquitoes have been found since its employment. On the Pacific Coast it is used before departure on planes bound for Hawaii and has proven effective in keeping mosquitoes out of these islands.

Plywood is being made into wall panels as large as 8 by 20 feet.