

experiments have a more definite application both to civil and service flying, where the question of the proper balance between quantity of fuel carried—to the exclusion of useful load—and the necessity for landing for further supplies, is essentially a practical one, peculiar to the geographical conditions in different parts of the world. These experiments should also further the development of the compression-ignition heavy-oil engine, the smaller specific fuel consumption of which makes it particularly applicable in this case.

#### Future of Lighter-than-Air Craft

THE announcement that the Secretary for the U.S. Navy will oppose any further construction of airships to replace the wrecked *Macon* presages the end of large rigid airship activities in that country. Germany is now the only country, so far as is known, to continue experiments with these craft in increasing sizes, the new larger Zeppelin, to be called the *Hindenburg*, being now near completion. It is significant that Dr. Eckener of the Zeppelin Company has succeeded where others have failed, probably because with faith and perseverance he has acquired that kind of knowledge and experience in design, and assembled a staff skilled in the technique of construction, maintenance and handling, which can only result from practical experience. Germany has now been building large airships continuously since 1910, and even up to 1914 claimed to have flown 80,000 miles and carried more than 37,000 passengers. The present *Graf Zeppelin*, launched in 1928, has crossed the Atlantic 62 times without serious mishap. The only large airship in the United States that is still in an airworthy condition, the *Los Angeles*, is a Zeppelin type built at Friedrichshafen.

It is claimed nowadays that for long-distance commercial flying the airship is threatened by the large flying boat, which unquestionably has superior speed, but has not yet attained a comparable range. The latest projected flying boats only claim to be able to fly the Atlantic non-stop with a favourable wind. As a naval scout, if it can be protected from attack, the airship is still unrivalled. It can patrol trade routes far outside the range of aeroplanes, and its vision must be greater than any surface cruisers. It is also reasonably independent for action of the movements of its own surface vessels, a decided drawback of aeroplanes carried by the fleet.

#### Fundamentalism Undefeated

A CABLE message dated February 20 from New York which has appeared in *The Times* states that on the previous day the House of Representatives of Tennessee defeated a motion to repeal the State law which prohibits the teaching of any theory that man is descended from a lower order of animals. The vote against repeal was 67 to 20, and the opposition to the repeal was led appropriately by the oldest member of the House, who opened his case by reading the first chapter of Genesis. It will be remembered that about ten years ago a young teacher of biology, J. T. Scopes, was convicted and fined at Dayton

under this law. The case aroused great controversy in the United States, and was outstanding because of the eminence and the oratory of the counsel employed on each side. Perhaps it was outstanding also as a picture of the simple faith which holds that truth can be decided by lawyer's arguments, and that scientific fact can be settled by majorities. Fundamentalism is by no means dead in Great Britain, but with the growth of knowledge it is dying.

#### Musk-Rats in Scotland

SINCE the musk-rat campaign was commenced by the Department of Agriculture for Scotland, in October 1927, the official trappers have killed 945 individuals. To this must be added 60 killed by private persons, a total of 1,085, the progeny of five females and four males which escaped from an enclosure in Perthshire in 1927. Even the artificial pond on Gleneagles Golf Course has yielded five since the beginning of November 1934 (*Scottish Naturalist*, 1934, p. 11). As a rule, the traps were laid at the mouth of a burrow, and a remarkable fact is that they did much more damage to other wild creatures than to the musk-rats themselves. Mr. T. Munro, who supervised the work, records the death in traps set for musk-rats of 1,745 brown rats, 2,305 water-voles, 57 weasels, 36 stoats, 2,178 moorhens, 101 ducks, and a miscellaneous collection of birds, including amongst others 23 seagulls, 13 redshanks, 28 snipe, 15 blackbirds and a solitary kingfisher—a list of misadventures which runs to 6,587 items. It is possible that this very considerable slaughter cannot be avoided, but apart from the brown rats the majority of the wild creatures slain are harmless, if not even useful from the human point of view, so that every effort should be made to confine the work of the traps to the pests they are meant to capture.

#### Moving Biological Diagrams

MANY of the living processes of organisms can be illustrated most effectively by cinema films taken through the microscope, and with Mr. Walt Disney's technique, diagrams could be shown in the same way for educational purposes. The American Genetic Association has applied this principle in publishing "Biological Movie Booklets" to illustrate cell division, fertilisation and meiosis, and it proposes to deal later with the more intricate processes of heredity in *Drosophila*, crossing-over and so forth (Biological Movie Booklets. Vol. 1: Normal Cell Division. By Clyde E. Keeler. Pp. 46. Vol. 2: Maturation of Sperm. By Clyde E. Keeler. Pp. 94. Vol. 6: Fertilization. By Clyde E. Keeler. Pp. 65. Washington, D.C.: American Genetic Association, 1929. 3 vols., 1.50 dollars). Successively releasing the leaves of the booklets brings these dead diagrams to life, and for those who have not learnt to make the mental translation of diagrams into movement the effect should be improving. For those who have passed this stage the effect is still amusing, provided that the leaves are turned over quickly. Taken separately, however, the figures seem to be drawn, not from life but from an early or popular textbook. The