and over a thousand or ten thousand times, depending on the number of facets in the compound eye. Scientists are of the opinion, however, that by the time this compound picture has been transmitted to the insect's brain it has somehow been blended into one—just how, it is not certain.

Eyes Nearly Cover the Head

Such, then, is the eye that is turned on your approaching bulk, multiplied myriad-fold by the numbers of small lives that hasten to get out of your way. Perhaps the most magnificently developed insect eyes in the world belong to the dragon-flies: they cover almost all of the creature's head, and enable it to see not only approaching possible enemies, but also to detect, pursue and capture unerringly on the wing the mosquitoes and other small insects that are its food. At the other end of the scale are the small, poorly developed, dull-seeing eyes of earth-dwelling beetles and other primitive insects; some of them, indeed, being quite without eyes, useless in the perpetual dark of their chosen dwelling-places.

In addition to these remarkably developed compound eyes, insects have smaller, simple eyes on top of their heads. These little eyes, or "ocelli," are of supplemental use.

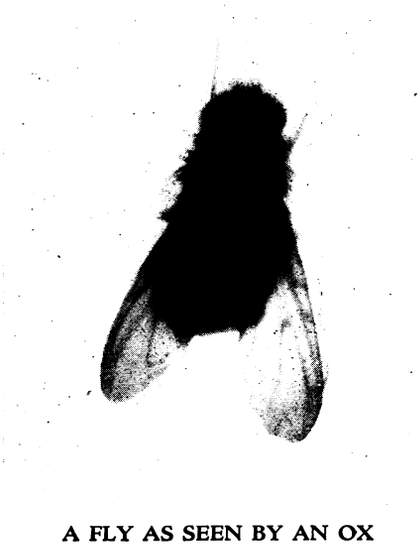
Compound eyes are distributed throughout the great animal group that includes not only insects but spiders, scorpions, lobsters and crabs. Spiders have no less than eight eyes apiece, distributed variously on their fearsome "faces."

Like a Camera

The eye of a mammal is an optical instrument resembling in its plan a photographic camera, the lens being analogous to the camera lens. It is double-convex and focuses the images of the objects upon the sensitive back wall inside the eye, just as the camera lens focuses the images upon the sensitive plate within it.

A consideration of these facts suggested to Prof. Walter E. Flowers of Spokane, Wash., the possibility of removing the crystalline lens from the eye of a recently killed animal, mounting it carefully and using it to make photographs. After a number of rather difficult experiments he made some unusually interesting photographs.

The photograph of an ordinary house-fly, which was made by the crystalline lens taken from the eye of an ox, is shown on this page. The natural lens was simply mounted in the camera in the place of the ordinary camera lens.



A FLY AS SEEN BY AN OX

This experiment was extremely difficult on account of the softness and delicacy of natural lenses. They had to be handled with camel's hair brushes and only a small percentage of those so mounted could be uninjured and capable of producing a perfect photograph. In these experiments Prof. Flowers found a few lenses imperfect because of the growth of cataracts, which made portions of the lenses opaque.

The perfect crystalline lens is a very beautiful object, being entirely colorless and transparent. It refracts light very strongly and is capable of producing exceedingly perfect images upon the photographic plate. As it magnifies considerably, it can be used for a class of work which is intermediate between ordinary photography and that of microscopic photography.

Prof. Flowers believes that further experiments with crystalline lenses from different eyes may more fully demonstrate their usefulness and lead to important practical results, especially if a method of fixation for hardening these lenses could be found which would allow them to retain the exquisite beauty of form and transparency they have in the eye of the living animal.

Into the small space of a water beetle's eye are crowded about 20,000 facets, perfectly hexagonal in shape, each one a perfect lens capable of producing images of an object. If a portion of the cornea is removed and spread flat on a glass slide, it is possible to make a multiple image photograph by the combined use of the microscope and camera. When this photograph is taken, the images are entirely too small to be seen except through a microscope.

The mosaic photograph of George Washington on the cover of this week's SCIENCE NEWS LETTER was made in this way by Prof. Flowers. Exceedingly careful adjustments, delicate lighting and exact focusing were necessary. A special developer was required for the plate and utmost care was needed in its manipulation to bring out details.

Science News Letter, June 30, 1934

ASTRONOMY

First "Gold From Sky" Found in Meteorite

SCIENCE'S first recorded discovery of gold that has fallen from the sky to the earth was reported by Dean Gillespie of Denver, to the American Association for the Advancement of Science.

A stony meteorite found near Melrose, New Mexico, was analyzed by H. G. Hawley of the Nininger Meteorite Laboratory in Denver. Minute amounts of gold were detected. Just to be sure, this unusual result was checked by an American Smelting and Refining Company assay.

There will, however, be no gold rush to the shooting stars, because the quantities of gold are entirely impracticable for commercial recovery.

Science News Letter, June 30, 1934