in the Galapagos group, or five according to the former finer division of Ridgway (1894). One is peculiar to Chatham Island, while the other exists on nine islands. The isolated Juan Fernandez has a peculiar species (*Spizitornis fernandezianus* Philippi) of a continental genus. The Falkland Islands possess a *Muscisaxicola* (*M. macloviana* Garnot) which is only subspecifically distinct from the mainland representative; and the same sort of thing occurs in the Island of Fernando Noronha, off Brazil, the *Elaenia* (*E. ridleyana* Sharpe) obtained there being only a large insular race of a continental species. The genus *Elaenia* is rich in peculiar insular types in the West Indies, and has one on the Tres Marias Islands, off Mexico. *Myiarchus* is similarly rich in West Indian endemics, while the genus *Tolmarchus* is confined to the West Indies, with special forms in the Bahamas, Cuba, Cayman Islands, Jamaica, Porto Rico and Haiti. The monotypic genus *Hylonax* (*H. validus* Cabanis) is restricted to Jamaica.

T. D. A. COCKERELL

SCIENTIFIC APPARATUS AND LABORATORY METHODS

A SIMPLE DEVICE USEFUL FOR DRAWING SYMMETRICAL OBJECTS

THE method commonly employed in drawing a bilaterally symmetrical object such as an insect is to make a drawing of one half of the object, either freehand or by use of a camera lucida, trace this on semi-transparent paper, and then retrace from the latter to outline the other half of the drawing. For several years I have used the device described below and have found it much more satisfactory than the tracing-paper method. Inquiry among entomologists, to whom it should be especially useful, has yet revealed no one familiar with it.

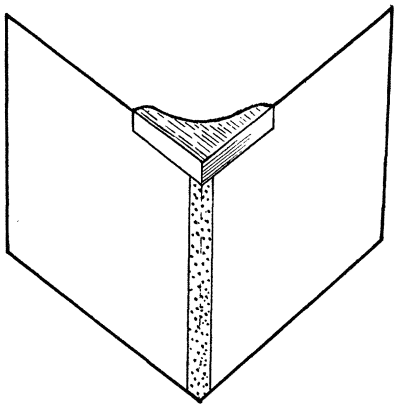

FIG. 1

The device consists essentially of two rectangular pieces of glass. A convenient form may be made by removing the emulsion from two 5″ x 7″ photographic plates and fastening these together in planes at right angles. They can be held rigidly in position by placing a narrow strip of adhesive plaster or binding tape along the angle where the edges meet and gluing across the upper corner a portion of the lid of a small pasteboard box, as shown in the accompanying figure.

Draw one half of the object and make a straight line constituting the median line of the final drawing. Then place one section of the glass upon this line, look diagonally through the glass from above the part drawn and outline the image on the opposite side.

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AN AIR-TIGHT STOPPER FOR BOTTLES CONTAINING VOLATILE LIQUIDS OR FOR LARGE MARIOTTE APPARATUS

THE difficulties involved in securing air-tight seals with rubber stoppers are a matter of common experience to those working in the laboratory. This is particularly true where large Mariotte apparatus are employed or where volatile liquids are enclosed in bottles from which corks may be easily blown out. An expansible stopper is shown in the illustration which overcomes some of the uncertainties frequently accompanying the use of an ordinary stopper. The stopper was improvised for use on a metal Mariotte apparatus supplying a shallow evaporation tank. It was found to be so well adapted to the purpose that it has seemed desirable that some note should be made of it.

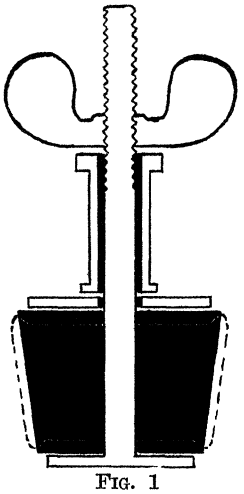

FIG. 1

As shown in the illustration the stem of a bolt with a large flat head is passed through a one-hole rubber stopper. A substantial washer is then placed over the stem of the bolt and above this a cylindrical metal sleeve which serves to carry the wing nut away from the mouth of the bottle affording greater freedom in tightening down on the rubber stopper. After such a stopper has been pushed into place, a few turns of the nut compress the rubber longitudinally and bring about a lateral expansion which holds the stopper in place and gives a sufficiently tight seal for any ordinary purpose.

FRANK M. EATON

BUREAU OF PLANT INDUSTRY

THE FINDING OF PLEISTOCENE MATERIAL IN AN ASPHALT PIT AT CARPINTERIA, CALIFORNIA

IN February, 1927, on the Lucien Higgins ranch in Carpinteria in southern Santa Barbara County, California, a steam-shovel which was taking out road material over a deposit of asphalt disclosed some bones. These were brought to the attention of Mr. Norton Stuart, curator of the Santa Barbara Museum of Natural History. Mr. Stuart at once began an investigation of the field and after several unsuccessful attempts to locate the source of the earlier finds, at last discovered a mass of material which extends to a depth that has not yet been measured. Here Mr. Stuart found a great number of bones of birds, mammals and rodents, together with pine cones, leaves and other plant material.

Mr. Stuart was able to identify some of the bones as those of *Teratornis*, others as those of a horse, close to *Equus occidentalis*, and the cones as those of the Monterey Pine, *Pinus radiata*.

The Santa Barbara Museum of Natural History then invited Mr. Chester Stock and Mr. Ralph Chaney to examine the material which had been discovered, and has arranged with the Carnegie Institution to continue the excavation and the study of the material disclosed.

The discovery of this interesting material exemplifies the value of a local natural history museum on whose staff are men who can grasp the significance of such local discoveries.

RALPH HOFFMANN,
Director

SANTA BARBARA MUSEUM
OF NATURAL HISTORY

PLEISTOCENE FAUNA AND FLORA

ALTHOUGH bituminous deposits along the coast of southern California, between Santa Barbara and Ventura, have been known for a number of years, the early mining operations for asphalt in this region apparently never brought to light the presence of fossil remains in these accumulations. Recently the discovery of vertebrate and plant materials of Pleistocene age in an asphalt bed south and east of Carpinteria, made as a result of excavations for road materials, has directed the attention of the Santa Barbara Museum of Natural History to this locality.

The deposit in which the fossil organisms are found has been described and referred to by several authors. It was considered in some detail by Eldridge[1] in his extensive report on the asphalt and bituminous rock deposits of the United States. In 1907 Arnold[2] showed the extent of this deposit on the geological map of the Summerland Oil District, Santa Barbara County, California, and discussed its occurrence in the report on the geology and oil resources of the Summerland region.

Through the kindness and cordiality of Mr. Ralph Hoffmann, director of the Santa Barbara Museum and Mr. Norton Stuart, curator, the Carnegie Institution of Washington and the California Institute of Technology have been invited to explore the locality and to cooperate with the Santa Barbara Museum.

The geological section is well exposed in the sea-cliff one half to three quarters of a mile southeast of Carpinteria and is essentially that described by Eldridge. The Pleistocene deposits containing the vertebrates and plants lie unconformably above highly inclined Tertiary (Miocene) shales and sandstones, resting upon a surface apparently developed as a result of marine planation of the older rocks. The Pleistocene formation is practically in horizontal position and reaches a thickness in cliff-section of 10 to 12 feet. It consists of sharp sand and some gravel and has been thoroughly impregnated by petroleum. The sand is sometimes cross-bedded. Eldridge records the finding of an occasional shell in this stratum.

Overlying the bituminous sand and gravel is a white or brownish sand which is at least two and one half feet thick and may be somewhat thicker. This sand has not been penetrated extensively by petroleum and, as compared with the underlying formation, may be regarded as practically free of such penetration. That the unimpregnated sand accumulated after a second period of erosion during which a part of the bituminous sand was removed and the bed containing the remains of land organisms

[1] Eldridge, G. H., 22nd Ann. Rpt. U. S. Geol. Surv., Pt. I, pp. 444–445, pl. 58, 1901.

[2] Arnold, Ralph, U. S. Geol. Surv. Bull., pp. 33–35, pls. 1 and 3, 1907.