

One of these scientific instruments is a collimating compass for determining magnetic declination or compass variation at sea. In using this instrument one looks through one of four magnifying windows in the wall of the compass bowl and sees the nine degree divisions reflected from the corresponding concave mirror as though these divisions were on the horizon exactly magnetic north, south, east or west, according to the scale used. Just as the navigator measures an altitude of the sun above the horizon with a sextant, so the observer measures with a sextant the angular distance of the sun from the middle division of a scale. If the sun is just rising or just setting the angular distance measured is the magnetic bearing counted from one of the cardinal points of the compass, and this magnetic bearing compared with the astronomic bearing gives the variation of the compass. If the observation is made after sunrise or before sunset the measured angle is reduced to a horizontal angle. At the same instant another observer measures the sun's altitude for this purpose.

Another of the instruments is a deflector for determining magnetic density at sea. This is used to measure the strength of the earth's magnetic field in a horizontal plane—in other words, to determine the force that pulls or holds the compass card in its normal position with the north point towards the magnetic north. This is done by balancing the earth's horizontal field against another magnetic field for which a magnet of known strength is used. The deflector is a compass fitted with standards, or stirrups, to hold the magnet of known strength at different distances above or below the deflector compass card. Suppose the ship is heading due north by compass, the deflector will then read zero. If one of the magnets is placed with its north end east in the uppermost stirrup, then the north end of this magnet repels the north end of the card and attracts the south end, while its south end repels the south end of the card and attracts the north, all operating to turn the card from north, or zero, reading to westward; the card will turn westward until the earth's field prevents further turning. It is then balanced by the earth's field and known field of the magnet, and the angle that it has been turned through away from its natural position is a measure of the earth's horizontal field. The relation of the angular measure thus obtained and the earth's actual field expressed in the usual centimeter—gram—second units is determined on land by comparisons with standard magnetic instruments.

A third of the instruments is the marine earth-inductor for determining inclination at sea. This is used to measure the magnetic inclination or dip. It consists essentially of a coil that may be rotated at a constant speed and will generate an electric current

when connected with a galvanometer in the control house. If the axis of rotation of the coil be set in the magnetic meridian and inclined so as to coincide with the direction of the earth's field, the sensitive galvanometer indicates no current and the vertical circle of the instrument will give the angle of inclination or dip. In actual practice at sea it is not possible to make the axis of rotation coincide with the direction of the earth's field, but by reading first on one side and then on the other the true direction may be computed from the relative magnitudes of the small currents.

GRANTS OF THE GEOLOGICAL SOCIETY OF AMERICA

THE following grants, supporting special research projects, have been approved by the council of the Geological Society of America:

Arthur Keith, Washington, D. C. Grant of \$700 to cover field expenses in study of the folded belt of the Appalachians in the Province of Quebec. This investigation was supported in 1935.

H. R. Wanless, Urbana, Ill. Grant of \$480 to cover field expenses in study of correlations in the Pennsylvanian of the eastern interior and Appalachian coal fields. This investigation was supported in 1935.

J. Brookes Knight, Princeton, N. J. Grant of \$500 for traveling and office expenses in completion of the study of types of general of Paleozoic gastropods begun in Europe in 1934–1935.

M. A. Peacock, Cambridge, Mass. Grant of \$250 for typing and drafting in completion of "Geology and Petrology in Iceland."

Carroll Lane Fenton and Mildred Adams Fenton, West Liberty, Iowa. Grant of \$540 to cover field and laboratory expenses in study of selected calcareous algae and stromatolites.

Francis P. Shepard, Urbana, Ill. Grant of \$500 for traveling expenses in study of submarine canyons.

Evans B. Mayo, Ithaca, N. Y. Grant of \$1,200 for traveling and field expenses in a structural study of parts of the southern Sierra Nevada, California.

Andrew H. McNair, Hanover, N. H. Grant of \$200 for traveling, field and laboratory expenses in study of Upper Devonian Bryozoa.

L. C. Glenn, Nashville, Tenn. Grant of \$350 for traveling and field expenses in an examination of the banks of the Intracoastal Canal between Southport, N. C. and Waccamaw River, S. C.

Ralph W. Imlay, Ann Arbor, Mich. Grant of \$450 for traveling and field expenses in study and collecting at type localities of faunas described from northern Mexico. This investigation was supported in 1933, 1934 and 1935.

R. S. Lull, New Haven, Conn. Grant of \$1,000 to provide an assistant in the completion of a manuscript on the ornithopod dinosaurs.

W. P. Popenoe, Pasadena, Calif. Grant of \$800 for field and laboratory expenses in detailed stratigraphic and

paleontologic investigations of the Upper Cretaceous deposits in the northern part of the Sacramento Valley, California.

Bradford Willard, Harrisburg, Pa. Grant of \$40 for preparation of illustrations for a paper on the fossils of the Tully limestone, Pennsylvania. Cancelled on request of grantee.

A. F. Buddington, Princeton, N. J. Grant of \$400 for analyses of igneous rocks of the northwest Adirondacks. This investigation was supported in 1933.

George M. Stanley, Ann Arbor, Mich. Grant of \$275 for traveling and field expenses in study of the lower Algonquin beaches. This investigation was supported in 1934.

Glenn L. Jepson, Princeton, N. J. Grant of \$900 for field and laboratory assistance in study of the geology of the Fort Union formation of northwestern Wyoming.

R. Lee Collins, Baltimore, Md. Grant of \$1,000 for traveling, field and laboratory expenses in stratigraphic study of vertebrate remains from the Middle Miocene marine deposits in Maryland and Virginia.

Alfred S. Romer, Cambridge, Mass. Grant of \$350 for preparation of illustrations for a monograph on the American Permo-Carboniferous Pelycosauria.

Charles C. Mook, New York, N. Y. Grant of \$2,000 for traveling expenses to European museums; illustrations, and assistance to complete a monograph on the fossil crocodilia of the world.

Siemon W. Muller, Stanford University, Calif. Grant of \$2,000 for traveling expenses to make a comparative study in European universities and museums of Early Mesozoic fossils from Nevada.

Applications for grants should be filed with the secretary in abundant time for consideration by the Committee on Projects before the April, October and December meetings of the council. At least one month ought to be allowed and more time if possible.

THE KING OF ENGLAND'S BIRTHDAY HONORS

IN addition to the knights on the King of England's honor list reported in a recent issue of SCIENCE, the following more extended list of honors conferred on scientific men and those associated with scientific work is given in *Nature* as follows: *Viscount*: The Right Hon. Lord Dawson of Penn; *Barons*: Sir Herbert Austin, chairman of the Austin Motor Company, for public services; Sir Malcom Hailey, lately Governor of the United Provinces of Agra and Oudh; *K.C.B.*: Dr. A. S. MacNalty, chief medical officer, Ministry of Health and Board of Education; *Knights*: Professor F. Anderson, emeritus professor of philosophy in the University of Sydney; Dr. H. N. Gresley, chief mechanical engineer, London and North Eastern Railway; Captain H. A. S. Newton, member of Council and censor-in-chief, Royal Australasian College of Surgeons; Dr. E. O. Teale, mining consultant to the Government of Tanganyika Territory; F. J. West, for public services to Manchester.

C.B.: Dr. H. I. Bell, keeper of the department of manuscripts, British Museum; Dr. G. Rotter, director, Explosives Research Branch, Research Department, Royal Arsenal, Woolwich; *C.M.G.*: Dr. H. H. Scott, director of the Bureau of Hygiene and Tropical Diseases, London; *C.I.E.*: Professor J. J. Harper-Nelson, formerly principal and professor of medicine, King Edward Medical College, Lahore; Dr. F. J. F. Shaw, director, Imperial Institute of Agricultural Research and Imperial economic botanist, India; *C.B.E.*: R. W. Thornton, agricultural adviser to the High Commissioner for Basutoland, the Bechuanaland Protectorate and Swaziland, and director of agriculture, Basutoland; G. S. Whitham, assistant director of ordnance factories, War Office; *I.S.O.*: E. T. McPhee, Commonwealth statistician, Australia; M. P. Payne, chief constructor, Royal Corps of Naval Constructors, superintendent of Admiralty Experiment Works, Haslar; R. F. Taylor, statistical officer, Mines Department; *O.B.E.*: G. F. Clay, Colonial Agricultural Service, deputy director of agriculture, Uganda Protectorate; E. H. E. Havelock, secretary, Development Commission, and administrative secretary, Agricultural Research Council; J. R. Hill, resident secretary in Scotland of the Pharmaceutical Society of Great Britain; J. Paley Yorke, principal of the London County Council School of Engineering and Navigation, Poplar; *M.B.E.*: M. R. Ry. Achariyar, executive engineer, Electricity Department, Madras; G. E. Bailey, accountant, National Physical Laboratory; F. H. Butcher, Madras Agricultural Service, lately curator, Government Gardens, Ootacamund, The Nilgiris, Madras; H. R. Edmunds, superintendent of agriculture, Kalimpong, Bengal; P. G. Lloyd, chemist and manager, Borough Sewage Works Department, Kingston-upon-Thames; M. R. Nayudu, acting chemical examiner, Madras; F. H. Newington, assistant analyst, Admiralty Chemist's Department, Portsmouth; E. W. Swanton, curator of the Haslemere Educational Museum, Surrey.

GRANTS OF THE ROCKEFELLER FOUNDATION FOR PUBLIC HEALTH AND MEDICAL SERVICE

THE International Health Division of the Rockefeller Foundation in 1935 operated on a budget of \$2,200,000. Grants were made for yellow fever studies in Brazil; for research on yellow fever, malaria and other diseases at the laboratories of the International Health Division at the Rockefeller Institute; for field research on malaria in Cuba, Puerto Rico, Albania, Bulgaria, Greece, Italy, Portugal, Spain and India and for laboratory studies of this disease at the University of Chicago; for demonstrations in the control of malaria in Colombia, Nicaragua, Salvador and Albania; for investigations and control of hookworm dis-