nomena are reliable indications of probable magnetic disturbances to be expected before or after transit; although they do not provide a measure of the probable intensity. They are therefore easily observed phenomena accessible to students who may lack elaborate accessory equipment, and are especially suitable to demonstration in small schools or colleges where the astronomical equipment may be limited to direct vision instruments.

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ELECTRONICS AS A POSSIBLE AID IN THE STUDY OF BIRD FLIGHT AND MIGRATION

SINCE the veil of secrecy which so long surrounded electronics, and particularly the functioning of radar equipment, has been partially lifted, I am at liberty to tell of certain observations made by an ornithologist friend who is a naval officer on duty in the Pacific. He states that on numerous occasions the radar equipment in use on his vessel has detected the presence of good-sized birds, albatrosses, man-o'-war birds, etc., at distances as great as five or six thousand yards. When distances as shown by instrument were checked against ocular estimates of distances of approaching birds from the vessel it was found that the two figures were in close agreement.

In the light of these observations I wish to record that we have discussed, and expect to carry out, experimental work on the study of bird flight and bird migration by means of radar equipment, when such equipment is made available for private use. We have tentatively selected a West Virginia mountain-top as a site for the work. Here there is an absence of obstructions, coupled with a good movement of migrating birds, particularly raptors.

We plan to attempt the use of this equipment in determining the speed of flight of birds large enough to produce a signal on our equipment, the height of flying birds, and the detection, and speed and height of flight, of night migrants. In some cases (wild geese, for example) it may be possible to make reasonably accurate identifications of passing night migrants. It seems likely that electronics holds the key to much more detailed information regarding bird flight than any which we now have.

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A TERTIARY RIVER

WITHIN recent years, considerable work has been done by geologists, in tracing the course of a large pre-glacial stream, called by W. G. Tight, the Teays River. This stream had its source near the eastern escarpment of the Blue Ridge, at the edge of the Piedmont Plateau in North Carolina and Virginia. In addition to the waters of the New-Kanawha system, the Teays River received the major portion of the drainage from an area including one half to two thirds of Ohio, a large part of Indiana, Illinois and northern Kentucky. The Teays River, after passing through the abandoned valley of that name, extended from a point near St. Albans to Huntington, W. Va., passing across Ohio in a northwesterly direction; its valley, buried beneath the glacial drift, extends from Chillicothe, Ohio, to the border of Indiana, not far from the St. Marys Reservoir, in Ohio. From there its course is westward across northern Indiana, to the eastern border of Illinois, where it continues in a westerly direction across the state into the bedrock valley of Illinois River. From Chillicothe, Ohio, westward, the course of the buried Teays has been determined by the study of well records by Ver Steeg in Ohio, Fidlar in Indiana and Horberg in Illinois. These studies indicate that the Teays River had many large tributaries. All the indications point to the fact that this stream was in the mature stage and drained a maturely dissected region in the Appalachian area. Well records, in Ohio, indicate that this stream occupied a broad, deep valley, with rather steep sides, similar to the valley from St. Albans, W. Va., to Chillicothe, Ohio. Farther west, in Illinois, the buried Teays valley becomes shallower and broader; according to Leland Horberg, it has a width of five miles in central Piatt County, about fifteen miles in De Witt County, Illinois, and an average depth of about 200 feet. This great stream, rising in the Piedmont, flowing across the entire Appalachian area, through the steep-walled Kanawha Valley and across the states of Ohio, Indiana and Illinois, is estimated to have been at least 800 miles long, and to have rivaled some of the larger streams on the continent.

During the Pleistocene ice-age, it is believed that the Teays River in Ohio was dammed by the Kansan or pre-Kansan ice-sheet and great ponded stretches of slack-water flooded large areas of southeastern Ohio. Thick deposits of slack-water silts, now at elevations of 860 feet, were laid down. It may be that the large glacial erratics found on the hills in Kentucky, at altitudes as high as 1,000 feet, were rafted to their present position by icebergs which floated on the deep waters of the ponded expanse.

The Teays River valley is believed by E. A. Transeau, the botanist, to have been a highway along which the Tertiary flora migrated from the Piedmont and southern Appalachians into southeastern Ohio.

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