

separated by the Nottely Quartzite. He thus added more than 1400 feet of pelitic rocks to Keith's original Andrews, a thin calcareous schist. Fairley, following Hurst, assigned pelitic rocks above the Murphy Marble to the Andrews Formation and added a new unit, the Marble Hill Hornblende Schist, between. Forrest (1969) working in the Murphy, North Carolina quadrangle, proposed that the Andrews Formation of Keith is a valid mappable unit separate and distinct from overlying pelitic schists. The author of this paper agrees.

The Nottely Quartzite does not extend to the Tate area. If we therefore eliminate it from consideration, the following sequence of lithologic types above the Brasstown Formation appears in all authors' descriptions: (1) a very pure marble (the Murphy Marble), (2) a thin calcareous schist (the Andrews of Keith and Forrest and the Marble Hill Hornblende Schist of Fairley), (3) a pelitic schist (the Valletown in thrust contact by Keith, the Andrews of Hurst and Fairley). The author proposes the following names for these units: Murphy Marble, Andrews Schist, Mineral Bluff Formation. This is in agreement with Forrest. The Nottely Quartzite appears to be either a local formation lying between the Andrews and Mineral Bluff or else a lense-like member lying wholly within the Mineral Bluff. Until intervening mapping confirms the correlation, the Marble Hill Hornblende Schist could be considered a local formation in the Tate area possibly correlative with the Andrews.

Large Granitic Exposures in Georgia¹

JAMES W. SMITH* and MARTHA A. GREEN
Georgia Dept. of Mines, Mining and Geology

2:30

Exposures of granitic rocks greater than about one acre in extent have been recognized by a distinctive pattern and tone of gray on aerial photographs of approximately 1:3,960 scale furnished by the U. S. Department of Agriculture. Several hundred such exposures occur in Georgia, and they have been plotted on the most detailed published base maps, and their acreage calculated. The largest single exposure is the Stone Mountain area of 707 acres. There are several other exposures measured in hundreds of acres. There are five areas where many exposures are concentrated:

1. DeKalb, Gwinnett, Newton, Rockdale, Walton Counties (including Stone Mountain)—area with about 5,286 acres of exposed rock.
2. Dawson, Rabun, White Counties—area with about 1,759 acres of exposed rock.
3. Douglas, Heard Counties—area with about 985 acres of exposed rock.
4. Columbia, Greene, Hancock Counties—area with about 671 acres of exposed rock.
5. Meriwether, Pike Counties—area with about 318 acres of exposed rock.

The total outcrop acreage for the State is approximately 9,864 acres.

Exposures are frequently mined because of their lack of overburden; hence, this knowledge of their position and size is important in economic geology. Also the exposures may be related to areas of recent uplift; so they can perhaps be related to geomorphology and/or structural geology. (¹Published with permission of A. S. Furcron, State Geologist. *Present address of J.W.S.: Georgia Southwestern College).

An Eocene Sea Cow Tooth from Twiggs County, Georgia

M. R. VOORHIES
University of Georgia

2:45

A cheek tooth of a primitive sirenian has recently been found by Mr. W. A. Christy in limestone of the Ocala Formation (Upper Eocene) exposed in a kaolin mine east of Huber, Twiggs Co., Georgia, operated by the Huber Corporation. The molariform tooth (probably from the lower right side)

is 23.5 mm. long, 26.8 mm. wide anteriorly and 22.7 mm. posteriorly. It is simple, low-crowned, and has two transverse crests and a well-developed anterior cingulum. The specimen, although considerably worn and generically indeterminate, is of interest in that it is the first Eocene sirenian known from the United States. In its observable features it more nearly resembles other Eocene sea cows (notably *Eotheroides* of Egypt and *Prorastomus* of Jamaica) than other extinct or living forms. It is neither so hypsodont nor so complexly tuberculate as the cheek teeth of characteristic dugongids of the later Tertiary (Halitheriinae, Halianassinae).

Abundant shark and ray teeth, corals, echinoids and bryozoa (many of which are broken and abraded) collected from the same strata suggest that deposition occurred in warm, shallow, clear but agitated marine water. Crocodile teeth and large rounded quartz grains imply that land was nearby. The suggested depositional environment harmonizes with the favored estuarine and littoral habitat of modern Sirenia.

Depositional Structure in the Georgia Coastal Plain

ROBERT C. VORHIS

U. S. Geological Survey, Atlanta

3:00

The Georgia Coastal Plain contains a large structure of depositional origin. Subsurface studies show that the area of Miocene outcrop in Worth, Turner, Crisp, Wilcox, and Ben Hill Counties is a basin filled with upper Eocene, Oligocene and Miocene sediments. The basin is roughly 25 miles broad and has nearly 400 feet of relief on the top of the Ocala Limestone and about 150 feet on the top of the Suwannee Limestone. Although this area lies geomorphically in the Tifton Upland, it geologically is a lowland. The west edge of the basin is formed by limestones that strike north-south. The dip of the limestone is to the east and is about 60 feet per mile on the top of the Ocala Limestone and about 38 feet per mile on the top of the Suwannee Limestone. The basin as such is not shown on structure contour maps of the tops of the middle Eocene, lower Eocene, Paleocene or Cretaceous, thereby suggesting that the basin originated by deposition rather than by tectonic movement.

Report on the Archaeocyathids from near Emerson, Georgia

RALPH H. WILLOUGHBY

West Georgia College

3:15

The occurrence of archaeocyathids from the Early Cambrian (Waucoban) Shady Dolostone near Cartersville and Emerson in Bartow County, Georgia, has been known since 1920, when they were mentioned in J.P.D. Hull's *Report on the Barytes Deposits of Georgia*. In 1938 C. E. Resser examined and reported specimens collected by T. L. Kesler from the localities in Georgia. He tentatively identified four genera and nine species in a faunal list, although neither illustrations nor descriptions accompanied this list in the report.

Fossils for the present study were collected at two localities, both near Emerson, Georgia. Some weathered-out free fossils were collected at both sites, but randomly collected rocks at both localities, when cut and polished, generally yielded views of fossils. The abundance of fossils at these sites supports the conclusion that archaeocyathids here, as elsewhere, were reef-builders. Archaeocyathids at the two localities occur near the base of the Shady, less than 100 feet above an underlying quartzite formation. The main method of preparation for study was by polishing sections of rock cut in preferential orientations. Thin sections, while useful in well-preserved fine-grained carbonates, were judged unwarranted in the coarsely crystalline Shady Dolostone.

The crystalline nature of this formation at these localities, with much replacement by quartz and barite, makes identification of the archaeocyathids to the species level extremely difficult. A number of specimens were identi-