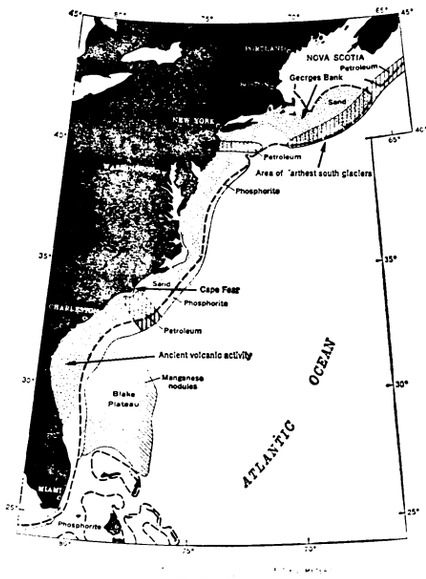
. . . in extent, it's a new continent

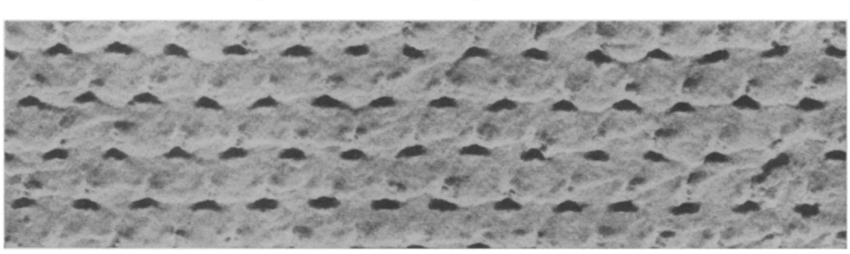
submerged area about 400 miles east of the northern Florida coast. Manganese oxide nodules have been found in abundance on the Blake Plateau. Deposits of petroleum have been found under the sea near Cape Fear, North Carolina, and also just southeast of New York City. A sizable fraction of the oil and gas production of the world already comes from the shallow sea floor off the coasts of the United States and Europe, and in the Persian Gulf, Dr. Emery points out. The Atlantic coastal plain sediments do not have much petroleum, but farther seaward sediments become thicker.

• Clay mineral samples drilled from the shelf off Florida indicate that at one time, some 20 million years ago, volcanoes erupted over an area from what is now northern Florida eastward to the Blake Plateau. Another volcanic area includes the New England seamounts which extend for some hundred miles from Georges Bank toward the southeast.



Riches beneath the Atlantic Ocean.

Nature Note



Australian News Bureau

Electron microscope shows spheres that give fire to opals.

Opal Fires

The mysterious cause of the brilliant blue, green, red and yellow fires of gem opals has at last been uncovered by an Australian scientist using an electron microscope.

The rainbow-flashing gemstones actually are composed of orderly layers of tiny amorphous silica spheres, neatly stacked row upon row, according to Dr. J. V. Sanders, with the Commonwealth Scientific and Industrial Organization of the University of Melbourne, Australia. Spaces or gaps occur between each of these spheres, which are bound together by more silica. It is the size of the spheres and the arrangement of the spaces that determine the colors and fires of the stones.

As ordinary daylight or white light penetrates into the transparent spheres, it is scattered by the latticework of the spaces and deflected back to the surface of the opal in various colors, radiating at angles determined by the wavelength. It is the size of the spheres that determines the spaces and hence wavelengths and colors. Opals with uniform small spheres give off color from violet to blue, while opals with larger spheres give off colors ranging from red through green.

By lightly etching an opal with hydrofluoric acid, the "cement" is eaten away, and the spheres can be seen under the electron microscope in symmetrical array, as shown in photo.

There are two general kinds of opals —the more precious gem opals long sought and admired by kings and queens and gem collectors, and the common opals used as abrasives, insulation, fillers or ceramic ingredients in industry. Opals have been found most abundantly in volcanic rocks, especially in areas of hot springs. Some of the finest opals have come from Queensland and New South Wales in Australia, and other varieties come from Japan, Mexico, India, New Zealand and western United States.