beyond Gondwanaland. Their fossils are also found in the island of Spitzbergen in the Arctic north of Norway. This, he says, raises interesting questions of past distribution of continents and climate.

The next useful step, Dr. Colbert feels would be to send another expedition to the site to look specifically for fossils.

OIL POLLUTION

Penalties and research

If all the crude oil and its products that traveled the globe by sea last year were spilled, it could have blanketed all the world's waters, with enough left to do the land twice over. A little oil thus goes a long way, as the relatively tiny tanker Ocean Eagle proved when it blackened 11 miles of Puerto Rican beach this month, followed by a Greek transport which ran aground in the Bahamas leaving its sticky sludge on verdant Eleuthera Island.

The obvious seriousness of the problem prompted President Johnson to devote an entire section of his conservation message to Congress to an attack on oil pollution. But while England was considering the scientific approach (p. 290), the President came up with a scheme that would impose much stiffer penalties on oil companies, but would, in line with current budget restrictions, cost the Government nothing.

At present, tanker operators or owners are liable for oil spilled within the three-mile limit, if the accident is due to "gross or willful negligence." The new Act would stretch the limit out to 12 miles, and hold the companies to blame whether the spillage occurred through negligence or not.

Elsewhere, the research needs were under consideration. Five days after the President's message, the Interior and Transportation Departments issued a joint recommendation for an elaborate research program into all aspects of the problem, though they admitted that it would have to be expensive to be meaningful.

STUDENT DRAFT

Study forecasts effects

Graduate physics programs will lose 70 percent of their male enrollment next year under the new draft regulations (SN: 2/24, p. 184) eliminating deferment for all but medicine-related graduate study, according to a comprehensive survey by the Scientific Manpower Commission.

Engineering enrollment would drop 64 percent; so would chemistry. Mathematics study would drop 60 percent, biology 61, and social science 52 percent.

The statistics were compiled from questionnaires filled out by 122 graduate schools, including seven Ivy League schools, 42 state universities and 11 technical institutes. The survey includes more than a third of the graduates involved in the draft rule.

The Commission report says 171,000 graduate students are potential draftees, out of a manpower pool of 1.2 million. Since under the draft rules so far the oldest eligible draftees would be picked first, the report assumes that all male graduates classified 1-A would be picked up.

Under the new rules, graduate schools would draw more than half their students from women for the first time since World War II. The rest of the students would be physically disqualified, veterans, overage, fathers, and aliens.

All-male schools could lose 75 percent of their graduate students, the report said.

In a speech last week, Selective Service Director Gen. Lewis B. Hershey said the nation's graduate schools would survive the impact of the draft, he believes.

NEUTRON STAR

Optical link to strange signals

British scientists have refined position readings on the rapidly pulsating candidate for the first detected neutron star (SN: 3/16 p. 255), and believe they have associated it with a dim and distant blue star. Sir Martin Ryle and Judy A. Bailey of the Cavendish Laboratory's Mullard Radio Observatory propose intensified observations of the 18th magnitude star to see if optical fluctuations match the remarkably regular changes in radio emissions.

It was the regularity of the emission —varying every 1.337 seconds—that led to early speculation that the emission might be a deliberate signal; neither Ryle and Bailey, however, nor Dr. F. G. Smith and four co-workers at the University of Manchester's Jodrell Bank radio observatory, all of whom report refined fixes on the source in the March 9 NATURE, take any notice of that possibility.

IN A NAMELESS CLOUD

A star is, perhaps, born

Will a biography that doesn't contain baby pictures of its subject satisfy the reviewers? Not if it's the biography of a star, and the reviewers are critical astronomers.

For years they have sought to assemble an album of pictures of stars at various stages in their lives as predicted by current theories of stellar evolution. They have found plenty of old, middle-aged, and even young stars, but the infants—protostars—have eluded them. Now, in a gas cloud 35 million billion miles—6,000 light years—out in space, some astronomers think they may be seeing a star being born.

Theorists agree that the birth of stars should take place in the clouds of gas and dust that are scattered around the universe. Some sort of disturbance (no one is sure what) causes portions of these clouds to begin to condense. Gravitational attraction of the gas atoms for one another causes the atoms to draw ever closer together once the condensation starts. As more and more matter concentrates into less and less volume, it gets hotter and hotter until finally the nuclear burning that illuminates stars begins to take place.

In the beginning, however, protostars are cold—the temperature of the clouds out of which they are supposed to condense is nearly 300 degrees below zero F. Therefore, when they first betray their presence by sending out radiation, it will be at the cool, radio end of the spectrum. As they warm, their emanations shift through the infrared and finally enter the visible spectrum.

Radio searches, therefore, should reveal stars at an early stage of evolution. A most convenient way of searching would be to look for a substance that should be in the protostars and that has an easily identifiable pattern of radio emission. Such a substance exists: a bound combination of one hydrogen and one oxygen atom known as a hydroxyl radical. (On earth, hydroxyls form components of many important chemical compounds—including water —but in interstellar space they appear free of any further chemical combination.)

Interstellar gas clouds are mainly hydrogen, but a small amount of oxygen is also there. Normally the clouds are so thin that the chance that a hydrogen and an oxygen will get close enough to combine is too slim to be important, but in parts of the cloud where a protostar is condensing, the density should become great enough to form hydroxyls. Thus an interstellar cloud in which protostars are forming should appear as a large mass of hydrogen peppered with small clumps of hydroxyl.

Hydroxyls in interstellar space were found in 1963, and they do appear in association with hydrogen clouds. The next step was to determine whether the hydroxyls form clumps of stellar size. Here astronomers ran into difficulties involving the resolving power of telescopes.

To distinguish star-sized objects at the distances of the gas clouds would