readers of Congressional weather.

The agreement is especially welcomed by Representative John D. Dingell (D-Mich.), chairman of the Subcommittee on Fisheries and Wildlife Conservation of the Merchant Marine and Fisheries Committee.

Rep. Dingell has been trying to get a bill to protect estuaries through his subcommittee with, so far, little success. The sticking point has been two sections of the bill that essentially would authorize the Secretary of the Interior to control dredging in estuaries independently of the Engineers.

The sections are vigorously opposed by commercial interests who see in them one more obstacle to profitable construction ventures in estuarine areas. With their elimination—the Interior-Army agreement makes them unnecessary—Rep. Dingell feels that his bill, H. R. 25, should have no trouble winning the approval of a conservation-minded Congress.

Everything, however, will depend on how well the Army and Interior Department honor their agreement. Their memorandum of understanding spells out a six-step procedure for dealing with applications for dredging permits. If agreement cannot be reached at local or regional levels, the last resort is a conference between the Secretaries.

"I can assure you I'm going to be monitoring this agreement," Rep. Dingell says.

His bill, now in its third complete revision, has stirred interest among the members of the Senate Commerce Committee, which last September held a one-day hearing on a similar bill. No action will be taken until Rep. Dingell's bill passes the House, however, according to a spokesman, although Senator Edward M. Kennedy (D-Mass.) has introduced a similar bill.

At stake, according to Dr. Stanley A. Cain, assistant secretary of the Interior for Fish and Wildlife and Parks, is the future of "the highest dollar value seafood we have." Oysters, crabs, clams and shrimp are among the species making their homes for at least part of their lives in estuarine areas.

Rep. Dingell's bill represents the first step of a two-step process to protect estuaries. It would require an inventory of all unspoiled and only partially spoiled estuarine areas would be made immediately and a report, including recommendations for protection of important areas, submitted to Congress.

Congress would then designate National Estuarine Areas to be set aside from development. ◈

PYGMY STARS

A Debate Rages—in a Professionally Low Key

Astronomers argue, in a very low key, whether "pygmy stars" really exist.

Dr. Fritz Zwicky coined the term about a year ago to describe a new class of objects he believes are halfway between ordinary white dwarfs—the last luminous state of a star—and neutron stars—extremely dense, dark bodies thought to be the final stage in stellar evolution.

Now, after exhaustive observations, Drs. Olin J. Eggen and Allan Sandage are convinced that there is no such thing as a pygmy star. Dr. Zwicky, they contend, has misinterpreted the motions and colors of high-velocity white dwarfs.

Photoelectric measurements of the colors by Drs. Eggen and Sandage show that the stars are redder than assumed by Dr. Zwicky. From a previously known calibration of color versus absolute luminosity, the distances of Dr. Zwicky's candidates for pgymy status make them white dwarfs rather than a new class of stellar objects.

Although all three astronomers are connected with Mt. Wilson and Palomar Observatories, Pasadena, Calif., they conduct these arguments not face-to-face, but in the staid pages of the ASTROPHYSICAL JOURNAL.

Dr. Zwicky, in cooperation with other astronomers both at Mt. Wilson and at other observatories, is measuring the parallaxes of the stars in question. He expects these measurements to be completed by the end of the year, definitely settling the distances of the stars and thus their nature.

The fundamental point on which Dr. Zwicky based his announcement of pygmy stars involves the distance of five stars from the solar system. Drs. Sandage and Eggen state unequivocally that their observations of these stars "remove the necessity to postulate the existence of pygmy stars." The astronomers find they are farther away than Dr. Zwicky reports. In sharp contrast to the usually guarded statements scientists use in reporting their results to colleagues, the phrases Drs. Sandage and Eggen use are strongly worded.

White dwarf stars have a mass averaging about half that of the sun, but their diameters are not much larger than earth's. When the star's supply of available fuel is almost exhausted, so that not enough energy is being released in the interior to keep it inflated, the star collapses. It continues to shine however, from the heat previously generated.

Although a white dwarf's matter is very dense, it is nowhere near as tightly packed as that in neutron stars, which have been postulated theoretically but never actually observed. A neutron star would be so dense that a cubic inch of its matter would weigh about 16 billion tons, according to some estimates. Such stars consist of nuclei stripped of their electrons and would not radiate visible light.

Pygmy stars, if they exist, as Dr. Zwicky believes they do, would lie somewhere between white dwarfs and neutron stars, although no such stars have yet been observed according to Drs. Eggen and Sandage. ◈

TAR DERBY

New Dark Horse Entry

Ever since Columbus found the Indians smoking tobacco, its effect on health has been a point of contention. The Indians generally believed it had medicinal properties, and this was the chief reason for its early use following introduction into Europe.

The age of science has torn the leaf apart, and found hydrocarbon compounds, which, isolated from cigarette smoke, cause cancer in experimental animals. But psychologically at least, smoking seems to benefit many people who can't give it up, and the national effort is turning to production of so-called safer cigarettes, while warning smokers about the hazards.

Efforts to find the actual ingredients in tobacco that could cause lung cancer, emphysema and heart disease, go on. Tars in the smoke are a likely but still less-than-certain candidate.

Cigarette manufacturers launched their tar derby in 1957; cigarette companies began competing with claims for "safer" cigarettes. People switched to filter-tip cigarettes in great numbers, and debated the safety of different brands. Filters now dominate the market, though for years, under Federal Trade Commission rulings, manufacturers had been forbidden to advertise tar and nicotine reduction. FTC later reversed itself (SN: 12/10/66) hoping that a reopened tar derby would encourage development of a less hazardous cigarette.

But no official has ever said filters do any good, or that one is better than the other or better than a length of tobacco itself.

And that was the scene when Robert L. Strickman gave Columbia University the rights to a new low-tar filter this month.