the ocean that it has blocked out as much as 15 percent of the solar energy reaching the surface of the tropical Atlantic.

The heaviest concentrations come in summer, usually from late May through September or October, says Joseph M. Prospero of the University of Miami. He has been monitoring the dust from a station on Barbados, and collecting data from ships and aircraft. The summer dust is characteristically reddish brown, apparently from an area encompassing southern Algeria, Mali, Mauritania, Senegal, Spanish Sahara and Niger. The much smaller winter load is ash grey or black, probably from the more verdant lands south of the Sahara.

The dust layer seems to have a pronounced effect on clouds. Because it is heated so much while it is still over the African continent, once at sea the base of the layer forms a warm inversion with the cool, moist trade winds closer to the ocean surface. This inhibits the development of cumulus clouds, and, says Carlson, may affect the growth of tropical disturbances into hurricanes.

Both Carlson and Prospero will be studying how the Saharan dust layer interacts with tropical weather systems this year as part of the Tropical Experiment of GARP—the long-running Global Atmospheric Research Program. There are other dust transport systems over the world's oceans, but if the killing African drought continues, the Saharan layer could lead the list. □

On the track of Pacific whales

Though the enormous size of the whale makes it an easy animal to spot in water, and thus an easy prey for the hunter's harpoon, scientists have great difficulty mapping their migratory patterns and gathering general behavioral data. The animals roam great distances; some can travel more than 4,000 miles in a year. In the past, stomach content and skin parasites, as well as tagging, provided clues to the whale's wanderings. But these are only moderately successful methods. Only about 7 tags in every 100 are ever returned.

Now scientists from the University of California in Santa Cruz have devised a new system of tracking the whale's every move. This month, they will go to Magdalena Bay in Baja California to test their ideas.

The experimenters hope first to lure a young Grey Whale away from its mother and bring it to shallow waters. There, they will fit the whale (by harness) with a data package containing a tape recorder, a radio transmitter and sensors which will record heartbeat, temperatures (of the water and skin) and pressure on their bodies during dives. The harness is made to expand with the growth of the whale. (A Grey Whale grows about 60 percent of its full length in its first year.) At some point, the harness will fall off and be retrieved by scientists. During the first experiment, the whale will be tracked for two or three weeks by boat. Eventually, the signals will be recorded by satellite.

Future tracking experiments will include such sophisticated techniques as having the whale swallow a biomedical device—a radio transmitter pill that can record the temperature in a whale's stomach and thus tell researchers when it has eaten. □

Orbis Scientiae: a scientific Macedonian salad

The ancient Romans had a monitory proverb: *Ne sutor ultra crepidam.* It comes down to us in English as "Cobbler stick to thy last." It might have formed a motto on the coat of arms of the conscientious scientist. He was supposed to stick closely to his specialty and declaim in public only on topics in which he was expert. There have always been exceptions to the principle, but they were often treated as people who didn't know what they were talking about.

Now attitudes are changing. "Interdisciplinary" is the word that may mean the day of the polymath is about to dawn again. As different scientific specialities drive toward more and more fundamental causes of their phenomena, their edges rub together. The transport of matter across membranes is a question that unites biology, chemistry and physics. As the sciences come closer to fundamentals they begin to discover a unity in diversity. Physicists invented quantum mechanics. It is already a long time since chemists adopted it gleefully because it explains so many things they used to have to consider empirical. Soon, it seems, molecular biology will have to adopt quantum mechanics. Already the question of the absorption of oxygen in the blood has come to depend on the physics of the hemoglobin molecule. When biologists see the handwriting on the wall, it traces out mathematical symbols.

The traditional type of scientific meeting is rather ill equipped to handle these cross connections. Experts give their latest results in a form that only people working on the same topic are likely to understand fully. Outsiders get lost. So how about a meeting designed for cross-cultural communication, to fill outsiders in on research trends in interdisciplinary questions? Such was the resolve of the Center for Theoretical Studies of the University of Miami when they planned the *Orbis Scientiae* or World of Knowledge meeting that was held on the university's campus in Coral Gables, Fla., last week.

It was a success with certain qualifications. A disappointment was the smallness of the group. Some of those who had been invited declined to come. Whether they were home sticking to their *crepidae* or whether they had other reasons is not clear.

Among those who did come there was a good deal of interdisciplinary interest. An electrical engineer present was seeking connections between engineering and biology. Two physicists-turned-biologists were heard at breakfast discussing the statistical problems of economists. An economist, Nicholas Georgescu-Roegen of Vanderbilt University, pointed out that economists will now have to take some attention from psychological matters such as supply and demand or the tendency to spend money versus the tendency to hoard it and consider the physical and chemical limitations on energy and resources that are beginning to affect the economy.

There was interdisciplinary communication: Physical scientists discussing the energy crisis prefaced their remarks with economic background and appealed to economists in the audience for help in answering questions. P. A. M. Dirac gave a talk on unified field theory and cosmology that drew from a nonphysicist the comment: "You can really learn from this guy. He makes it clear."

And there was interdisciplinary criticism. A chemist commenting on an economist's attempt to make a mathematical model of an economic situation said it was like applying quantum mechanics to the distillation of gasoline—too fine a model for the grossness of the fact.

Edward Teller of the Lawrence Livermore Laboratory performed one of the neatest tricks of the week in reducing one of the pressing technological problems of the energy crisis, the production of fuel-saving cars, into a question of vertebrate behavior by invoking a mythical dog of his student days, the *Salathund*. A *Salathund* is a dog that won't eat salad until it sees another dog eating salad. Then it goes and eats. Where economical cars are concerned, says Teller, Detroit is a *Salathund*. The problem is providing the first dog.

Might it not also be that where interdisciplinary communication is concerned, most scientists are *Salathunde*? Perhaps meetings like *Orbis Scientiae* may provide the first dog. □