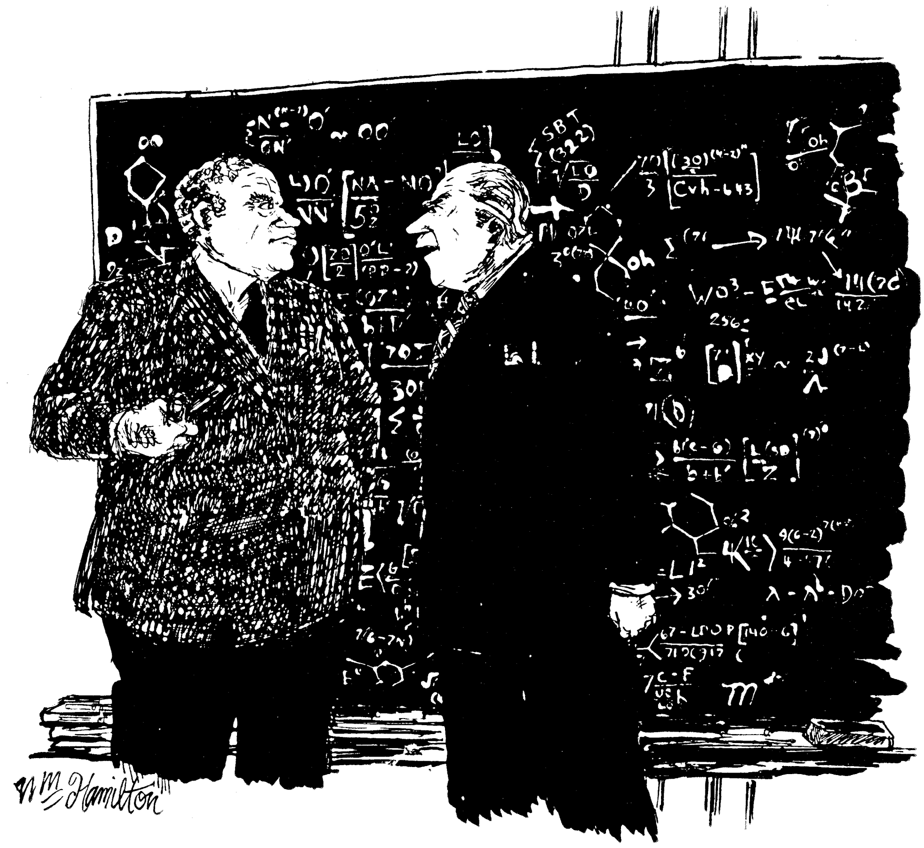
Suing over the antiproton

California litigation touches rarely publicized questions of scientific credit



"We go to Stockholm, we accept our prize, and then I never want to see your ugly mug again!"

A scientist's reputation, and with it his material rewards, depends on what discoveries or theoretical ideas are formally credited to him. So crucial is this question that the history of science knows many disputes over who did what. But judgment of these disputes has seldom been in the hands of public authorities. Scientists have behaved like a closed monastic corporation, and the questions simmered over the refectory tables to be adjudicated and adjusted by the priors and abbotts of the community. The participants behaved like Roman Catholic priests, who are forbidden by canon law to sue their bishops in the civil courts. Now the omertà has been broken by a suit filed June 12 in the Superior Court for Los Angeles County, Calif., which raises serious questions about how scientific credit is apportioned and who does the apportioning.

The plaintiff in the suit is Oreste Piccioni, a physicist and professor at the University of California at San Diego. The defendants are two physicists of the university's Berkeley campus, Emilio Segrè and Owen Chamberlain. The matter at issue is the discovery of the antiproton, an experiment that brought Segrè and Chamberlain the 1959 Nobel prize.

The experiment was done with the Bevatron at what is now the Lawrence Berkeley Laboratory. Protons from the Bevatron were believed to have enough energy to produce antiprotons, and when the machine was designed, an experiment to look for them was contemplated. Piccioni alleges that the design of the actual experiment done by Segrè and Chamberlain was his, and that, in short, they cheated him out of it. This appears to be the first time such a suit has been brought over a scientific matter although they happen now and then in other professions.

Piccioni says he originated an important simplifying idea; that it was not necessary to look for events in which antiprotons met protons and annihilated each other; it sufficed to show that a particle with negative electric charge and a mass equal to the proton's was produced.

Piccioni further claims that he designed an experiment for this purpose and that in December 1954 he revealed that design to Segrè and Chamberlain, believing that the three of them were agreed to do the experiment jointly. Segrè and Chamberlain did the experiment themselves. Piccioni claims that they cut him out of participation and never gave him credit for his idea. He further claims that they prevented him from doing anything about it for 18 years by "threatening" and "cautioning" him that if he did, they would deny him access to the Lawrence laboratory.

Piccioni thus alleges that he has been injured in reputation and finances (especially in that he might have shared the Nobel prize had what he considers proper credit been given) and asks damages of $125,000 and an injunction against Segrè's and Chamberlain's continuing to claim sole credit for the discovery of the antiproton. Among the issues raised in the case by Piccioni's attorney, Stephen Z. Meyers of Beverly Hills, are violation of oral contract, unfair competition, violation of common-law copyright, and slander. As of this week neither Segrè nor Chamberlain had commented on the suit nor had an attorney for both or either of them filed a reply to the complaint.

The suit opens, in a rather scarifying way, the whole question of how scientific credit is apportioned when several people have, or say they have, contributed to the same piece of work. This is especially important in this time of big science when an experiment in high-energy physics or an observation in radio astronomy can have a dozen or more names attached. It is beyond credulity that 20 or 30 persons each reached in a hand to turn the same knob like a group of bishops consecrating another, and no one supposes that anyone will believe such an absurdity. Therefore what the insiders always want to know is who did what part of the work or who really didn't do very much but had his name included for courtesy. A famous example of this was the

Alpher, Bethe and Gamow paper on cosmology, to which Hans Bethe was persuaded to lend his name to make a pun on the Greek alphabet. (He had actually been responsible for some of the ideas involved, however.)

The question of who was actually at the switch becomes important when a scientist wishes to change jobs and cites these multitudinous publications in support of his resume. Laboratory administrators have said that it is not difficult to find out: One calls up the senior men involved in the experiment in question and they tell. That is all well and good, but if Piccioni's suit goes in his favor, how much are such opinions likely to be worth in the future?

That in some cases they are not entirely trusted now is exemplified by stories of the difficult diplomacy involved in deciding the order of names on a paper. There are people who claim more than is their due, and there are also those who are willing to give up their own credit in favor of someone whose reputation is less established. The negotiations can be painful, and have led in some cases to the custom of listing names alphabetically. But this has its own drawbacks. Samuel A. Goudsmit, editor in chief of the American Physical Society, once complained that it could happen that an experiment which one remembered by the names of the chief participants was forever indexed under the name of an obscure graduate student who happened to be called Aaron Aardvark.

In cases where people have worked separately and perhaps competitively the problem of just credit is even more difficult. Recent cases in which some discussion has arisen include the invention of the maser and the invention of holography. A famous historical case was the development of integral calculus independently by Newton and Leibniz.

In the calculus case both men get credit; in some others the traditional decider is priority of publication. But in fact the where of publication can be as important as the when: Obscure publication is often less prior than publication in a main-line journal. For years Gregor Mendel did not get credit for his work in genetics because it appeared in a journal published at Brno, which was read by few outside Moravia.

The Piccioni suit also touches the award of Nobel prizes. Piccioni is not asking for a share in the prize, nor is any accusation made against the prize committee. As Meyers puts it, the committee could act only on the public evidence. Nevertheless, the committee is supposed to be a group of people in the know, and as those in the know know, these things get gossiped about. A decision in favor of Piccioni could only further tarnish the reputation of a committee already under fire in some quarters for the quality of its choices.

Finally, the question arises: Now that the wall of custom has been breached, how many scientific plaintiffs will follow suit? It will be interesting to see. □

Getting down to earth in environmental education

In predominantly rural areas of America, environmental education comes naturally for many children. The children gain an esthetic appreciation for the relatively untrammeled environments of such areas. They also absorb ecological concepts almost automatically. Living constantly with natural environments, they cannot help but learn something about the interrelationships among life forms. Thus in many such areas today, environmentalist and conservationist movements are strong and growing stronger.

It is a different matter for children in an urban ghetto. Natural environments there have long since been destroyed (although not completely) and children grow up thinking that exhaust fumes, rat-infested garbage heaps and paved surfaces are the natural order of things. The Anacostia district of Washington, D.C., is an example of such an area. Most Anacostia residents have low incomes, and the area has a huge auto junkyard and a waste disposal plant. One writer has called it a place "forgotten except when the city was looking for someplace to put the things it didn't want in other neighborhoods."

So National Capital Parks, the Washington, D.C., division of the National Park Service, decided Anacostia might be the ideal place to start a pilot program for environmental education in urban elementary schools. After a yearlong experiment in several Anacostia elementary schools, the program looks so good that it will be expanded to other Washington area schools next year. And, say members of the NPS team that put the program together, the concepts are applicable nationwide —even in middle-class neighborhoods or even in places where most people live close to nature.

The prime emphasis in the program is to stay away from the teaching of abstractions and to get down to earth. "Because there is often no nearby source of living wilderness for urbanites except by busing children to a remote refuge," says NPS biologist John Hoke, "the things of the natural world must be brought to the children." Of particular importance is to add the dimension of time, so children can get some notion of ecological succession and of the gradual changes that occur in life forms as their interactions with each other and with physical factors change. Thus the concept of "mini-environments."

A typical mini-environment, and the one used most frequently in the Anacostia program, is a forest floor ecosystem. The basic materials are simple and cheap (a key consideration with the program's limited budget): an airline plastic plate, or a lazy Suzan, as a base, plus a plastic dome to cover it and to hold in moisture to duplicate humid forest floor conditions. The kids can then sometimes be taken to a forest to collect living materials, plus rocks, to put under the domes. If this is impossible, there are other expedients; mosses, for instance, can be found between the cracks of even ghetto sidewalks. The best time to collect is in the early spring; that way kids get more than they expected, because the soils collected contain plant seeds and insect eggs which later sprout and hatch. The rest is mostly left up to the kids, and Hoke says learning is spontaneous. Watching the ecosystems grow, the children soon learn about relationships and (in the case of animals) territoriality; they also learn about physical parameters, such as the amount of watering

Wm. Spradley/Nat'l Capital Parks

National Parks' Millie Richmond shows ghetto kids how to build mini-forests.