"Bootlegging": It Holds a Firm Place in Conduct of Research

One of the most interesting, revered, but little-discussed institutions in scientific research is the practice of "bootlegging"—a catchall term that covers much territory but that generally means you're doing one thing and calling it something else.

Bootlegging has yet to be the subject of any published study or conference, but of late its value for the progress of science has been receiving some open recognition. For example, a few weeks ago, when Senator Fred R. Harris (D–Okla.) met with some dozen leaders of the scientific community to discuss the administration of federal research programs (*Science*, 5 August) several of them pointed out that one virtue of the present system is that it accommodates a certain amount of "bootlegging." And, though the issue was a very minor one in the general context of Harris's inquiry, they argued that bootlegging is a simple device for reconciling big government and little science.

In general, it can be said of bootlegging that, within certain boundaries, it is considered to be an honorable practice that is better left undiscussed —or, as one veteran of government science administration put it, "It means that you're doing a research job that the boss doesn't know about." To which he added, "The critical thing, of course, is that in the end it turns out to have been smart."

With Congress now breathing down the neck of the scientific community, it is difficult to come by any acknowledged case histories of bootlegging. But among federal program directors and federal grantees, there is a good deal of agreement that bootlegging is in part a natural response to political pressures affecting research support. "The scientists know what they want to do and what's important to research," explained one former program director. "So, there's a tendency to hang out whatever label will keep Washington happy while they go about doing what they think ought to be done."

As far as the granting agencies are concerned, the practice is officially unacceptable but tacitly winked at. "First of all," one administrator pointed out, "there probably isn't very much of it going on. Then, I think you have to recognize that it's pretty hard to do research according to the rule book. Grants for basic research are usually pretty broadly written, but if a guy is really enterprising and creative, he's going to carry out his research the way he thinks it should be done, regardless of the rules." He pointed out that there is "no close coverage of grantees by program directors. A director can have hundreds of people in his program, and it's pretty hard to tell from annual reports just what they're doing. The best yardstick is the end result, in the form of published research, and that's what counts."

Perhaps the most publicized case of successful bootlegging involves the development of the Sidewinder air-to-air missile, which was quietly carried out at the Naval Ordnance Test Station, China Lake, California. The Defense Department, which of all federal agencies has the freest hand in writing its research guidelines, likes to point to the Sidewinder as a case for allowing its

Scientific Exchange: Case of a French Visitor

While the Johnson administration seeks to promote scientific and scholarly exchanges with Communist China, it might profitably examine the manner in which it is conducting such exchanges with some of our friends in the Western world. In point is the case of a young and distinguished French biochemist who, after a brief visit, left here last week with some rather bitter feelings about the treatment accorded her by the United States Government.

The woman, who prefers to remain anonymous, applied to the American embassy in Paris for a visa after having received an invitation to participate in a scientific conference in New England.

In accordance with the McCarran-Walter Act, she had to certify, among other things, that she was neither a prostitute nor a Communist. Since she admitted that, until 1956, she had been a member of the French Communist Party (no rarity among French scientists), it was necessary for her to obtain a waiver to the requirement that alien Communists and former Communists not be admitted to the United States. This was routinely issued by the embassy but, she says, only after an embassy official lectured her that all Communists are paid agents of the Soviet Union. The visa specified that her port of entry was to be Boston. When she landed in New York with, she reported, the intention of making a connecting flight to Boston, an immigration official told her that she would have to leave the country immediately. The intervention of an Air France official brought a reversal of this dictate, and she proceeded directly to the meeting.

Upon learning of her experience, the 75 or so participants at the meeting adopted a strong statement of protest to be sent to the President. They subsequently agreed, moreover, that one of their number, John T. Edsall of Harvard, would bring the matter to the attention of the President's science adviser. The woman insists that she does not want to make a fuss. She also says that she feels so humiliated by the experience that she has no desire ever to return to this country.

The incident, of course, can be written off to bureaucratic stupidity and a restrictive immigration act adopted during McCarthy days. But if the administration desires to use science as a bridge between East and West, it might first clean up the mess on the bridge between West and West.—D.S.G.

in-house laboratories a certain amount of local control over research operations. Accordingly, each of the laboratories is given about 5 percent of annual operating funds to support locally initiated research. As one official put it, "That's sort of institutionalizing bootlegging." Another pointed out that bootlegging can be so valuable that "in one major private industrial laboratory, they get worried if 10 to 20 percent of their research isn't in unconventional, locally generated research that takes place without looking for the approval of the higher-ups."

The significance, extent, and future of bootlegging defy any precise assessment. But that it is a well-established, durable, and useful mechanism seems certain, as witness an anecdote written in the *Bulletin of the Atomic Scientists* in 1947 by the late Louis Ridenour: "I have a friend who is a band spectroscopist on the faculty of a large state university. He has been particularly interested in the band spectrum of the element nitrogen. He once said to me: 'When the representatives of the state legislature visit me, I always tell them I am trying to make better fertilizer.' There is to be sure, nitrogen in fertilizer and knowledge is power. It is just conceivable that my friend's investigations of the band spectrum of nitrogen may some day affect the fertilizer industry in some unexpected way. But it is undeniable that his interest is in spectroscopy, in and of itself."

—D. S. GREENBERG

Announcements

A facility for reporting earthquakes to news services and to government agencies responsible for public safety was announced on 15 August by the Environmental Science Services Administration (ESSA). The National **Earthquake Information** Center will report the occurrence of earthquakes of medium magnitude (6.5 on the Richter scale) or larger as soon as it receives notifications, and will release precise information on location, size, time, and the effects of the disturbances when the scientific data are analyzed. The center, at the Coast and Geodetic Survey headquarters in Rockville, Maryland, will also be the focal point for ESSA's Earthquake Emergency Plan, a program designed to provide both emergency and longer range technical aid to areas of the United States badly damaged by quakes and tsunamis (seismic sea waves). The office of seismology and geomagnetism, in the Coast and Geodetic Survey, will supervise the scientific and technical operations of the center, and will have primary responsibility for the emergency plan.

The Botanical Society of America has published a book listing more than 100 departments of botany, biology, and plant pathology that offer the Ph.D. degree for botanical projects. The **Guide to Graduate Study in Botany** includes information on current enrollments, degrees that each department offers, and how many Ph.D.'s each has granted during the past 5 or 6 years, and the fields of specialization represented in each department. The book also names the botanists on each faculty, gives their academic ranks and specialties, and provides pertinent background data on them. Copies of the guide may be obtained from the Society, Department of Botany, Indiana University, Bloomington 47401, for $3 postpaid.

A program aimed at giving laymen greater insight into the nature and the social importance of modern science will begin next month at the New School for Social Research, New York. It will consist of introductory courses on the natural and life sciences and on the history and philosophy of science; special lectures; and monthly seminars on such topics as air pollution, population control, peaceful uses of nuclear energy, and the biological and social aspects of race. The program, called "**science for the citizen**," was designed in cooperation with the Scientists' Institute for Public Information and the New York Scientists' Committee for Public Information. The coordinator is Curtis A. Williams, associate professor in biochemical genetics at Rockefeller. Additional information and current catalogs are available from the registrar's office, The New School, 66 West 12 Street, New York.

Contracts and grants for research on **kidney disease** are being offered by the National Institute of Arthritis and Metabolic Diseases (NIAMD) at NIH. The Institute's R&D program in chronic uremia, dialysis, and artificial kidney development is aimed at lowering the cost and improving the clinical efficiency of current methods of dialysis. The program includes making contracts for applied research and grants, under NIAMD's regular extramural grant system, for basic and clinical studies. Nonprofit institutions and profit-making organizations are eligible for funds, the latter only for contracts. Details of the program's objectives and instructions for applying for funds are given in a brochure released last month, entitled "Opportunities for Participation in the Artificial Kidney-Chronic Uremia Research and Development Program of the National Institute of Arthritis and Metabolic Diseases." Single copies are available on request from NIAMD, Bethesda, Maryland 20014.

Required 6 months' notice is given on the possible use of plenary powers by the International Commission on Zoological Nomenclature in connection with the following names, listed by case number [see *Bull. Zool. Nomencl.* **23**, pl. 2/3 (29 July 1966)]:

1642. Suppression of *Bryaxis schneideri* Kugelann, 1794; Type-species for *Bryaxis* Kugelann, 1794 (Insecta, Coleoptera).
1690. Neotype for *Megalichthys hibberti* Agassiz, 1835; Validation of *Rhizodus hibberti* Owen, 1840; Validation of *Holoptychius* Agassiz, 1839 (Pisces).
1732. Neotypes for *Anthocoris nigrellus* Zetterstedt, 1838; *Anthocoris nigricornis* Zetterstedt, 1838; *Lygaeus pygmaeus* Fallen, 1807 (Insecta, Hemiptera).
1741. Type species for *Phlaeothrips* Haliday, 1836 (Insecta, Thysanoptera).

Comments should be sent in duplicate, citing case number, to the Secretary, International Commission on Zoological Nomenclature, British Museum (Natural History), Cromwell Road, London, S.W.7, England. Those received early enough will be published in the *Bulletin of Zoological Nomenclature*.

Publications

An analysis of trends in the employment of **research and development personnel in the pharmaceutical industry** has been published by the Resources Analysis Branch in the NIH Office of Program Planning. The 27-page report presents a fairly comprehensive assortment of statistical information in terms of level of training, discipline, type of work, employment of women, and sources of new employees; it also compares the pharmaceutical industry's R&D expenditures with those of other segments of industry and of government. Data for the report was obtained from a survey which the pharmaceuti-