

lected hospitals and health agencies in northern Michigan: \$158,455, W. K. Kellogg Foundation; cooperative programs for improvement of patient care and reduction of hospital costs.

New York Univ. medical center: \$373,002, John A. Hartford Foundation; role of lymph system in congestive heart failure; R. H. Clauss and A. E. Dumont, principal investigators.

Ohio State Univ. college of medicine: \$267,000, U.S. Army Medical Research and Development Command; effects of physical conditioning and acclimatization to hypoxia on work tolerance at high altitude; C. E. Billings and D. K. Mathews, project directors.

University of Pennsylvania: \$203,242, Div. of Chronic Diseases, Bureau of State Services, U.S. Public Health Service; graduate training in sociology of health and welfare; O. Pollack, project director.

Princeton Univ.: \$377,238, National Inst. of Child Health and Human Development; American family planning practices; C. F. Westoff and N. B. Ryder, principal investigators.

Rice Univ.: \$3,676,100, estimated, NASA; Explorer satellite for studies of near-earth atmospheric phenomena; B. J. O'Brien, principal investigator.

Wayne State Univ.: \$244,000, NSF; production, with computers, of Russian-English scientific and technical dictionary; H. Josselson and W. Hoffman, project directors.

The following have received support from the National Cancer Institute for research on bovine leukemia:

University of California school of veterinary medicine, Davis: \$472,351; transmission studies; G. H. Theilen, principal investigator;

University of Pennsylvania: \$400,000; experimental and natural transmission; R. R. Marshak, principal investigator;

University of Minnesota school of veterinary medicine: \$98,000, susceptibility of calves to known tumor viruses; D. K. Sorenson, principal investigator;

South Jersey Medical Research Foundation, Camden: \$257,600; etiological studies; R. Dutcher, principal investigator.

#### Construction

Case Inst. of Technology: \$2,226,000, NASA; new facility, Case Laboratory for Space Engineering Research.

University of Georgia: \$412,118, U.S. Office of Education; first year support, center for study of learning potential of children.

University of Rochester: \$1 million, NASA; addition to Space Science Center.

The Division of Research Facilities and Resources, NIH, has awarded matching grants to the following institutions:

Human Resources Center, Albertson, N.Y.: \$185,000; expansion of research facilities.

Massachusetts General Hospital, Boston: \$2,210,900; health research laboratories.

University of Michigan, Ann Arbor: \$2,545,000; six-story addition to the medical science building.

Southwest Foundation for Research and Education, San Antonio, Texas: \$796,500; laboratories and primate holding and isolation facilities.

University of Florida: \$538,150, NSF; biological sciences research building.

Board of Public Instruction of Escambia County, Pensacola, Florida: \$177,768, HEW; activation of ETV station 21.

University of Hawaii: \$138,651, HEW; activation of ETV station 11, Honolulu.

*Erratum:* In the paper "The cosmical constant," by G. C. McVittie (12 Nov., p. 918), the sentence beginning on line 44 of column 2 should have read "... the inverse square of the time for  $(2\pi)^{-1}$  revolutions in the first Bohr orbit is of the order of  $10^{33}$  sec<sup>-2</sup>" instead of "...  $10^{-33}$  sec<sup>-2</sup>."

#### REPORT FROM EUROPE

## E. B. Chain Accused of Contempt of Italian Judiciary

London. In Italy, Ernst Boris Chain, who shared the 1945 Nobel prize in medicine for his work in developing the manufacture of penicillin, is being prosecuted for contempt of the judiciary. In the past 2 years, a number of Italian scientist-administrators, among them Felice Ippolito, the geologist who headed the Italian atomic energy effort, and Domenico Marotta, founder of the Istituto Superiore di Sanità in Rome, have been tried and convicted on charges of malfeasance in office. (The issues involved in these prosecutions, in which private jealousy,

concern for public morality, and political motives are mixed, were discussed in *Science*, 14 August 1964 and 9 April 1965).

The charges against Chain arise from his association with Marotta and the Istituto Superiore di Sanità. Chain worked at the institute, at Marotta's invitation, from 1948 until 1964. In 1964, under arrangements which had been in process since 1959, he returned to London to run an enlarged department of biochemistry, whose \$3 million building was opened formally early last month, at the Imperial College of Science and Technology.

Chain has consistently defended the record of Marotta, who headed the institute until he retired in 1963. On 25 July 1965, after a trial that lasted through 75 sessions over more than 8 months, Marotta was found guilty of

misappropriation of funds and sentenced to 6 years, 8 months in prison. It is unlikely that Marotta will serve any sentence, for by the time his appeal is handled, he will have passed his 80th birthday and so, under Italian law, cannot be imprisoned. Nonetheless, he is reported to have burst into tears when the news of the sentence was given to him. (Because of his age and health, he did not have to attend the trial).

Much of the money Marotta was accused of misappropriating was in the form of grants, many of them from the United States, to laboratories attached to his institute. One of these attached laboratories, created by a decree of the president of the Italian Republic, was Chain's laboratory of chemical microbiology.

Thus Chain felt an unusual degree of personal responsibility in the Marotta case. He offered himself as a defense witness at the trial, but the judge, on the advice of the public prosecutor, decided that Chain's testimony was not relevant. (The testimony of Daniel Bovet, the other Nobel prize winner at the institute, whose laboratory had also been created by decree of the head of state, was very brief.)

Nonetheless, there were references at the trial to vague charges that Chain had sold patents based on his

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## Ippolito's Appeal

The appeal of Felice Ippolito, former director of the Italian atomic energy commission, CNEN, will be heard in proceedings which have been scheduled to begin 15 January. Ippolito was convicted of misuse of funds and authority and sentenced to 11 years in prison 29 October 1964. Despite notice of appeal, Ippolito has been in custody since his original arrest in March 1964. In early November, after more than a year in hospitals because of an ear operation and its complications, doctors said Ippolito was well enough to be transferred to the infirmary of Regina Coeli (Queen of Heaven) prison, and could probably be present at the appeal hearings. As a background for these hearings, Ippolito's lawyers filed in September a document of more than 200 pages, arguing among other things that Ippolito's judges had failed to take into account legitimate requirements of technical agencies in a modern state.

Italian work in Italy and abroad. It is not clear what was meant by these references, but they may have resulted from the fact that a British firm, Beecham, picked up an important finding in one of the papers of the Chain group in Rome and then went on to isolate an enzyme which, by cutting off side chains, frees the fundamental unit of all penicillins, 6-amino penicillanic acid, and thus makes penicillin available for many artificial alterations. No Italian patent of Chain's was involved. In fact, Chain asserts, his name appeared on few patents taken out during his work in Rome, and then only in partnership with colleagues and the foundation which administered patents and Bovet's laboratories (Bovet, too, has left). All dealings about patents were carried out by Marotta as president of the foundation.

### Denunciation of Chain

Thus Chain had little reason to expect to be denounced in the final address of the public prosecutor, Renato Ricciardi, on 5 June. But he was. Ricciardi expressed anger at a letter he had found among the papers of the trial, a letter from Chain to the wife of one of the accused, Italo Domenicucci, in which Chain said that the trial had "damaged the prestige of Italy in a manner both grave and irreversible."

Ricciardi said that when he read this letter he had experienced "a shudder of indignation (*un fremito di sdegno*)."

He then said: "Certainly Mr. Chain did not come to Italy out of a special love for our country, nor did he come because he

was attracted by the hot sun of the south. Yet, he passed some years in Italy, because he found here a source of rich personal profits. Mr. Chain, I have said, is a great scientist, but he is even more a good businessman, as is shown by some inventions made with support from the Istituto Superiore di Sanità, which patents then were sold through the Fondazione Emanuele Paternò in Italy and abroad."

Marotta's lawyer intervened at this point to warn Ricciardi that Chain had already sued and won retraction from an Italian newspaper that had made similar assertions.

Without producing documents, Ricciardi replied: "I am saying what is proven. They are my words, not those of a newspaper." He repeated his accusations and said that Chain "is the one who knows nothing of the principle of which I have spoken just now and which is at the root of the condition of the law and of the standard by which the prestige and greatness of a people are essentially measured."

Ricciardi went on to summarize his general view of the case and of Marotta's stewardship at the Istituto Superiore di Sanità. Many would feel that Ricciardi's views show a dangerous ignorance of the requirements of a technical agency in a modern state.

The superiority of the law over arbitrary acts of an individual must be asserted, Ricciardi said. Marotta, he continued, had quickly caused the institute to "deviate" from the aims decreed by law: protection of public health and education of health personnel. By "deviation," Ricciardi said, he meant a turning of the institute's

activity toward scientific research which became ever vaster and took more and more different directions. "What was the motive of this deviation?" Ricciardi asked. "There is one answer and only one. Marotta evidently thought that his ambition could not be satisfied" by carrying out the original aims and so decided to develop a center of scientific research "which would satisfy his measureless ambition and which would become a center of personal power."

In London, press representatives immediately told Chain what the prosecutor had said. As he prepared to leave for the University of Chicago to accept an honorary degree, Chain wired Ricciardi privately: "Strongly protest your defamatory, libellous, completely unfounded and grossly insulting allegations concerning my activity (at) Istituto Superiore di Sanità. If not immediately withdrawn, shall initiate all possible legal and diplomatic action."

Ricciardi turned the telegram over to his superiors to see if it constituted an insult to the Italian judiciary. Then little more was heard of the affair. Indeed, the Italian press has been almost completely silent about any issues which go beyond what is said in court about the cases of Ippolito, Marotta, and other high officials accused. For example, when Prof. Emilio Trabucchi of the University of Milan protested Ricciardi's remarks in a letter to the newspaper *La Stampa*, the editor wrote back telling him that publishing the letter would only involve Trabucchi and *La Stampa* in a prosecution for contempt.

Now Chain is being prosecuted on such a charge. Early in November, just as the biochemistry building was being opened in London, it was learned that his trial was being assigned—for reasons that are not clear—to the hill town of Velletri, near Rome.

### The Marotta Case

By itself, the prosecution might be incidental, but it has had the effect of arousing interest in the handling of Marotta's case, and, by extension in the judiciary's whole attitude, whatever the legal niceties, in the prosecutions of officials who administer essential agencies. This interest had not been aroused earlier by a legal battle over the manner of Marotta's arrest, even when the highest Italian court judged the arrest to have been arbitrary.

The periodical *Europeo* has just published a long interview with Chain, in which he ringingly defended Marotta. "It's a cursed thing," Chain told the interviewer. "One day, suddenly, he was led away and thrown into prison. Despite his merits, despite his . . . years, he has been treated like a gangster."

Far from being eager to come to Italy for sun and profit, Chain said, he was reluctant; his reluctance was overcome by Marotta who wanted him to start a research effort allied to a pilot plant to iron out problems in producing penicillin. Chain who had come to Britain in the 1930's as a refugee from his native Germany, had been pleased with the scientific climate at Oxford. His colleagues in Britain advised him against going to Italy, and during a visit to Rome, although he saw well-equipped laboratories at Marotta's institute, he reported seeing "few signs of appreciable scientific activity." Yet, when Chain was almost ready to refuse Marotta's urgings, Marotta sent him a plane ticket, got him to come to Rome for a talk, and finally persuaded him to stay for a trial year.

Marotta showed the same persuasiveness in organizing symposiums and focusing international attention on the institute, the sort of attention that won Bovet a Nobel prize, according to Chain. Marotta's methods were "not orthodox," Chain admitted. He "did as all people do in Italy. But I know that his methods, even if they sometimes did not take account of bureaucratic formality, of the rules, of the extremely complex guidelines which tie up the activity of Italian public agencies, Marotta used these methods only because of the great love he bore to the Institute of Health, only because of a desire to increase the importance in Italy and abroad of the research centers he had created. I can say, and everybody else agrees with me, that not a single penny ended up in his pocket."

Chain did not deny Marotta's formal responsibility for the scholarships, dinner invitations to congress delegates, the sale of the telephone exchange—all matters for which Marotta was tried. But he became excited when the matter of the car placed at Marotta's disposal after retirement was referred to: "It would have been a crime *not* to give a car to man of his merits. . . . It was the least they could do for him."

As for the five autonomous "centers of research" attached to the institute and set up to receive grants free of crippling Italian government regulations, Chain noted that they were founded by decree of the head of state, that their board members were nominated by the minister of health, and that all their actions were reviewed by a legal adviser with the rank of Counselor of State (the last of these advisers had been a chief assistant of Prime Minister Aldo Moro himself).

Not only was Marotta being prosecuted for having transmitted grant funds to grantees, including Chain, but so was his successor Giordano Giacomello, who was sentenced to 3 years, 5 months in prison. "These were not contributions from firms or persons to public agencies, but grants for the execution of particular scientific projects."

Chain noted with regret that the difficulties created in the institute by the recent prosecutions had postponed the carrying out of his proposal that he receive at the Imperial College biochemistry department some 30 Italian students, as one way of continuing the association with Italian colleagues (a number of senior Italian co-workers visit Chain often).

#### Protest and the Lack of It

Even more disquieting, said Chain, was the "inconceivable silence" in Italy at what has been happening. "There are courageous scientists who have protested. Emilio Trabucchi, Edoardo Amaldi, Vincenzo Caglioti and others have loudly made themselves heard [Amaldi, head of the organization for financing basic physics in Italy, and Caglioti, the new president of the research-supporting National Research Council both testified on behalf of Ippolito]. But beyond these exceptions, fear has closed the mouths of all."

In an interview with *Science*, Chain said that this silence is the sort that preceded the advent of Mussolini and later Hitler to power. Silence, he said has been maintained even in the face of an investigation begun by the public prosecutor of the salaries paid over many years to Mrs. Daniel Bovet, collaborator with her husband on many scientific papers and now with Bovet on a sabbatical at the University of California at Los Angeles. The accusation is that Mrs. Bovet did not have the correct academic qualifications when appointed to a post at the institute. The aim of a prosecution, if

it results, would be to recover the back salaries.

Chain noted with approval, however, a front page editorial in *La Stampa* in early November, after the announcement that Chain would be prosecuted, which attacked the declarations of Ricciardi as exceeding the legal powers of a public prosecutor. It should be noted also that Ugo La Malfa, a member of the Italian parliament and a former minister of the budget, has strongly attacked the prosecutions of Ippolito and Marotta.

Chain and two colleagues from the Istituto Superiore di Sanità confirmed that a proposed law to regularize the institute's affairs is still tied up, largely because of quarrels among various unions representing institute staff. It is now almost a year and a half since employees of the institute on "scholarships" had to be laid off until a special law re-employing them could be passed. The position of these employees, whose jobs are guaranteed by the law only until 31 December, is still nebulous.

In such a climate, Chain is understandably pessimistic about any rapid improvement. And, despite the improvement in the situation of the biological laboratory he heads in Naples, so is Adriano Buzzati-Traverso, who noted in *Corriere della Sera* (28 September, p. 11), that the Italian cabinet had decided to hold the National Research Council to a 1966 budget of \$37.6 million (the 1965 figure) instead of granting the projected increase to \$45.9 million. Of course, this action by the cabinet makes no provision for inflation or normal growth.

Buzzati commented: "The politicians of Italy talk and write occasionally about science not because they are conscious of science's determining role in the progress of a nation, but because . . . it is fashionable to talk of it, and politicians certainly do not want to be accused of ignorance or lack of interest. But more, when it is a matter of passing from words to acts, politicians prefer to give money to activities probably more likely to produce returns in terms of votes."

"Italian scientists . . . are a few thousands of persons and even if they were discontent, they surely could not modify the result of elections: so, if economies must be made, we will cut funds from science. This seems to be our reality, bitter not only for scientists but for the whole country."

—VICTOR K. McELHENY