Parr, dean of applied science and professor of engineering materials at the University of Windsor, is one of the skeptics. Writing in *Science Forum,* a provocative new journal on Canadian science policy, Parr indicated his disappointment at the Council's handling of the ING issue. "The Science Council approved ING without comparing the project to other alternatives," he said. "No feasibility studies of other projects had been funded. The decision was made quickly; perhaps it was even hastily made."

Clearly, the Lamontagne committee, a lay body presumably holding a detached view, can broaden the debate on Canadian science policy by looking over the Science Council's shoulder and by inviting the expression of divergent viewpoints. The new Liberal government, under Prime Minister Trudeau, has promised to give close attention to the committee's views. No sweeping new departures in science policy are expected before next year.

The Trudeau government is pledged to seek, by 1975, a doubling of the $1 billion total (from public and private sources) spending on R&D projected for 1968. With this as a national goal, and with controversial projects such as ING bidding for funds and scarce technical manpower, Canada's science policy machinery faces major tests.—LUTHER J. CARTER

Italian Universities: Reform Indefinitely Delayed

One of the first major incidents of the student revolt in Europe last winter and spring was the occupation of university buildings in Turin by Italian students. Violence soon spread to other university cities, notably Milan, Genoa, Rome, Naples, and Pavia. Italian students express a cosmic discontent, but more than their contemporaries in Germany and France they concentrate on the theme of university reform. Their case, in fact, is more extreme.

Student complaints follow a pattern in Western Europe. The major grievances are overcrowding, absolutist professors, an obsolete curriculum, and an "undemocratic" composition of the student body. But the university problem, like a lot of things in Italy, seems larger than life.

There is a consensus in Italy that university reform is necessary, but no agreement on what should be done. Parliamentary action is required to alter Italy's centralized university system, but, although official proposals for reform were put forward 5 years ago and a reform law was introduced in 1965, the bill has never been voted on. The legislation has languished, not least, perhaps, because so many professors are in politics and are apprehensive about losing positions of privilege.

The power and status of the professors are at the heart of the problem. Professorships are granted by the state and carry extraordinary prestige. In public and private life in Italy the title of professor is more than an adornment. The last four prime ministers of Italy have been professors, and some 76 *professori* sat in the two chambers of the last parliament. Academic salaries are relatively modest, and for many professors outside activities are the main source of income. In law, medicine, and engineering, particularly, "full-time" professors are scarce. It is in these faculties that the "conservatives" on the reform question tend to be concentrated, whereas the humanists and the scientists—especially the physicists and biologists—furnish many of the "progressives." The issue has become so divisive that there are two university teachers' associations.

The Italian university has clung tenaciously to the idea of a single professor supreme in each discipline. The "established" professor controls the appointments of "non-staff professors," lecturers, and assistants under him. The assistants, in fact, are employees of the professor rather than of the university.

Until a decade ago, no academics had tenure except professors. Now the middle-level faculty have permanent jobs, but unless one's boss exerts himself there is little chance for even the most deserving in the maneuvering that surrounds the award of a professorial chair. Professors are chosen on the recommendation of a jury composed of professors, and scholarly virtue frequently is vanquished by nepotism and academic back scratching.

The young scientists may now have tenure, but, as one life scientist observed, his boss "can kill him scientifically" by starving him of research funds.

The mode of distribution, as well as the low level of research funds in Italy, has recently drawn a kind of notice which discomfited government officials. A report on Italian research and science policy by the Organisation for Economic Cooperation and Development was completed by the OECD examiners almost a year ago. It would normally have been discussed at a "confrontation meeting" in Paris late last year and published with official Italian comments incorporated in the final product. The report still had not been disgorged by Italian officialdom as the recent parliamentary elections approached, and critics charged that the delay was deliberate to prevent use of the report, known to be sharply critical, during the campaign.

In early May, bootlegged copies of the report were distributed to journalists at a press conference in Rome by researchers of the National Council of Research (CNR) who had occupied CNR headquarters to protest the state of Italian research.

The three examiners, of whom Harvard dean of engineering and applied physics Harvey Brooks was one, faulted Italy's science policy apparatus, but loosed their sharpest criticism—and it is cutting by the diplomatically bland standard of OECD reports—at the university system.

An interim memorandum produced by the government, which has been added to semipublic literature of the incident, charges that the examiners used old statistics, oversimplified the situation, and did not take into account the high quality of some Italian research. The officials also took umbrage at the tone of the report, which they found unnecessarily harsh.

Even the casual observer, however,

finds it hard to discount the OECD criticism. On the key question of the distribution of research funds, the status quo has few defenders. The CNR, the chief research-funding organization, uses panels of nongovernment advisers to decide on applications for funds, common practice in the United States, Britain, and in most Western nations. On the Italian committees, professors dominate, and the critics say they have few qualms about distributing available money to themselves and their friends. There is no appeal against the judgment of the committees, and observers say that what Italian funding agencies sorely need is scientifically competent staff to counterbalance the self-serving advisers.

It has been difficult for the science minister to assert himself effectively. He is a minister without portfolio—that is without a department to administer—and his role until now has been ill defined.

The pending reform bill would drastically reduce the professors' powers and prerogatives. Professors would be prohibited from serving in Parliament while they occupied their chairs. To control the absentees, requirements would be imposed on their presence for lectures, labs, clinics, and seminars. (It is not uncommon for professors not to live in the cities where they hold chairs. Some cram their year's lectures into 2 or 3 weeks.) No changes in courses would be allowed without permission of the president of the faculty. Perhaps most important, academic departments would be created.

The traditional degree of *laurea,* which confers the misleading title of doctor on the recipient, would be replaced by three degrees, a technical diploma after 2 years, a revamped *laurea,* requiring a thesis, after 4 years, and a research doctorate after about 6 years of work. Italian graduate study, particularly research training in the sciences, has suffered gravely in Italy because there was no equivalent of the Ph.D. program and the research training it involves.

Prospects of Reform

Prospects for passage of an effective reform bill remain uncertain. The parliamentary elections of last May made little difference in the balance of party forces in Parliament, but the crucial and still unanswered question is whether the Christian Democratic and Socialist parties will revive the coalition that governed Italy from 1963 until last spring.

As in Germany, the Socialists have suffered disaffections among workers and youth because they were unable to make good on promised reforms, including university reform. The Socialists left the coalition, and the question is whether they would agree to reform the coalition on terms which could include the acceptance of broad university reforms.

University reform is not simply a partisan political issue. It is recognized that the Italian universities are failing to produce the trained manpower needed for sound economic and social development. Italy has achieved a remarkable industrial breakthrough, but the evolution to a modern industrial society is proving difficult and painful.

Behind the Italian economic miracle are whole congeries of unresolved conflicts between cities and rural areas, North and South, agriculture and industry, and social classes.

Within the universities, resistance to change is strong and rooted in university history and traditions. In the nationalist 19th century Italian universities, professors could be removed for teaching or writing anything that "threatened the religious or moral order" or weakened the constitutional authority of the state. A liberal movement dedicated to the ideals of free inquiry gained much ground early in this century, but in 1923 the Fascists placed the universities again under the discretionary power of the government.

After World War II the Republic restored university freedoms, but many of the laws that govern the university date from Fascist days and this gives rise to anomalous situations.

For a century the professors have ruled within the university as an academic oligarchy. Many of them come from bourgeois or landholding families which regarded the professorships as theirs by a kind of social right of eminent domain. Some conservatives genuinely fear that there is real danger to the quality and integrity of the university, if too much heed is paid to the economic and technological demands of society. But for others, academic freedom means the right to maintain a privileged position.

Certainly not all take these views. Progressive professors are numerous and their number is increasing. But perhaps not fast enough. The pressures are mounting very rapidly. Observers feel that already students and young faculty find the proposed reforms inadequate, and that their demands for representation in university government and increased autonomy for the universities are only a beginning.

Like other Western democracies Italy is groping for the political means to accomplish the things that need to be done in a time of headlong technological and social change. The strains are considerable and Italy's institutions are, in some cases, young and fragile. The universities have a particularly important role to play in the transformation of Italian society, and some serious observers see the early success of a strong university reform program as offering a way between stagnation and chaos.—JOHN WALSH

RECENT DEATHS

Hattie E. Alexander, 67; emeritus professor of pediatrics, College of Physicians and Surgeons at Columbia University; 24 June.

Alexander J. Allen, 68; professor of physics, University of Pittsburgh; 7 June.

James T. Babb, 68; former Yale University librarian; 21 July.

John J. Blasko, 56; former director of the Veterans Administration's psychiatry, neurology, and psychology divisions; 2 July.

Edwin G. Boring, 81; professor of psychology, Harvard University; 1 July.

Carle H. Dane, 67; staff geologist with the U.S. Geological Survey; 24 June.

Samuel E. Duncan, 64; president of Livingstone College and a member of the North Carolina Board of Higher Education; 10 July.

Hermon E. Hasseltine, 86; former medical director of the U.S. Public Health Service; 8 June.

Leslie G. Jenness, 69; a former vice president of Kennecott Copper Corporation; 2 July.

N. Whitney Matthews, 52; chief of the spacecraft technology division of Goddard Space Flight Center; 2 July.

Zdenko Stary, 69; head of the department of biochemical research, Warren State Hospital; 15 May.

Louis L. Tureen, 63; chairman of the neurology section at St. Louis University School of Medicine; 18 June.

Merrill B. Wallenstein, 48; manager of data programs for the National Bureau of Standards; 1 July.

Vive H. Young, 80; emeritus professor of plant pathology, University of Arkansas; 2 June.