France Considers Significance of Nobel Awards

Paris. Nobel prizes in science honor intellectual achievements and assure wider attention to seminal ideas. But they also affect the politics of science, inside and beyond the university. And they may do it in advance.

This has been clear in France, where it has been known for some years that members of the Paris group of fundamental biologists were likely to receive the Nobel prize for their studies of gene regulation. Several of the Paris researchers had been named to professorial chairs, appointments which brought them for the first time into major university posts. Over several years, a special government fund for molecular biology has been used to equip laboratories in Paris itself, in the suburbs of Paris, and in such provincial centers as Strasbourg and Marseilles. This fund supplemented the already considerable effort of the Centre National de la Recherche Scientifique, or CNRS, the French government agency which sets up and supports many basic-research teams.

Then on 14 October it was announced that François Jacob, André Lwoff, and Jacques Monod of the Pasteur Institute would receive the 1965 Nobel prize in medicine. They were the first French scientists since 1935 to receive Nobel prizes in science and the first French winners in medicine since 1928.

There was understandable jubilation in France after the announcement from Stockholm. Some newspapers asserted that the battle against cancer had "taken a leap forward." Others said that France and its present government could take a national pride in the award.

The blaze of publicity was hardly surprising; it has become common after Nobel awards and is mostly an exaggerated form of the pride that people take in great achievements, whether in science or sport or any other field. Like other Nobelists, Jacob, Lwoff, and Monod did not lend themselves to all of this ballyhoo. To the reporters who descended on their laboratories, photographed them at home, or summoned them to the street for better camera light, the three winners took pains to stress that achievements in fundamental biology require cooperation among scientists in many countries and many fields. They were echoing a point made only a few hours earlier in Stockholm by Sven Gard of the Karolinska Institutet, as he announced the award. The three winners also noted their debt to public and private sources of funds in both America and France.

But even in the happy afterglow of the announcement, it was realized that Lwoff, Monod, and Jacob had not had an easy time finding support for their work in nontraditional fields of biology. Press accounts acknowledged that the three prizewinners had often lacked sympathetic backing from university professors and government officials responsible for the support of science.

In their remarks quoted in the press the prizewinners complained less about shortages of space or funds than about the poor welcome given to new research at French universities.

Monod noted that in the 1930's André Lwoff gave him a place to work at the Pasteur Institute when university officials told him—in a kindly way—that his work fell into an academic no-man's-land: "When my thesis was accepted . . . my teachers, who were not at all ill-disposed toward me, gave me to understand that I hadn't any future in the university because what I was doing was at the border between microbiology and biochemistry; it wasn't a discipline that could be labeled; it corresponded neither to a professorial chair nor to a course being given; hence there was nothing for me to do at the university. So I went looking for André Lwoff and said to him: 'Say, could I go to work at your place?' He said, 'Sure.'"

When he joined Monod and Lwoff after World War II, Jacob said in a lecture last spring, the little group at the Pasteur Institute worked in an atmosphere that combined "enthusiasm, intellectual lucidity, nonconformity, and friendship." To be sure the laboratory was "a sort of attic, always overpopulated, on both sides of a corridor bristling with incubators, iceboxes, and centrifuges," but there was also "ardor" and a spirit of teamwork which "always surpasses the individual in industry, ingenuity and the faculty of invention."

Nonetheless, Jacob noted, all was not well. "With the work of André Lwoff and Jacques Monod, our country has had the chance to participate at the highest level in the blossoming of a new discipline. But even though each year the laboratory [was host to] a constellation (*pléiade*) of the most brilliant foreign researchers, for a long time one never encountered there a single student from our own universities. How could our young people have discovered the existence of a field that wasn't taught to them? In the country of Pasteur it took a hundred years for microbiology to receive recognition in our faculties of science." (Lwoff became professor of microbiology at the Sorbonne in 1959.)

All three Nobel winners contrasted the Pasteur Institute with universities and praised it for offering a home to new disciplines even when its income from endowments and the sale of vaccines and serums had declined sharply. Monod told the reporters that all three previous French winners of the Nobel prize in medicine had worked at the Pasteur Institute: Charles Laveran in 1907, Charles Richet in 1913, and Charles Nicolle in 1928. Monod also said that the Pasteur Institute always understood that "the kind of research we are doing in cell biology" required "constant osmosis" between specialists in such fields as genetics, biochemistry, virology, microbiology, and others and so gave room to researchers from these different fields. Jacob praised the institute for opening its doors to "disciplines which, having nothing traditional about them, could find no place in traditional sectors."

But these comments were mild com-

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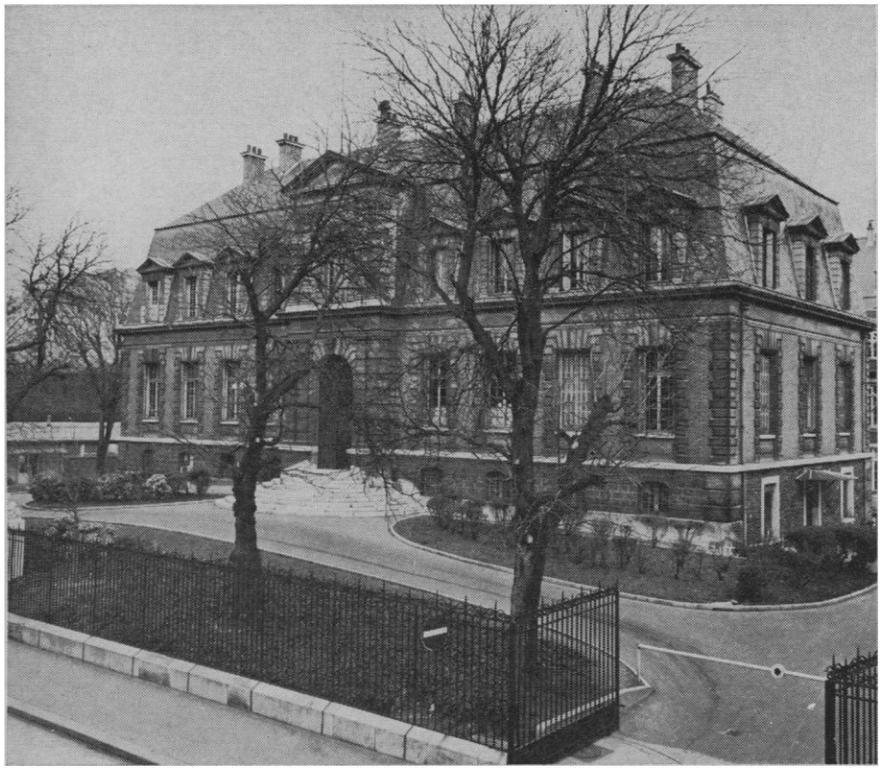

(Top) Pasteur Institute. (Bottom) Virology Laboratory, Pasteur Institute. [*Pasteur Institute*]

pared with what was to follow. Monod surprised many observers and electrified others by giving a startling interview to the left-wing journal of opinion, *Le Nouvel Observateur*. The interview in the 20 October issue of *Le Nouvel Observateur* must rank as an event in French intellectual history. In words of bitterness and hope, Monod cut through the usual congratulatory haze and used his newly enhanced authority as a Nobel winner to denounce a scientific complacency in France, which he said dated back at least to Napoleon's time and was lifting only now. Monod scornfully compared the attitude toward scientific research of France's present prime minister, Georges Pompidou, with that of his predecessor, Michel Debré. He discussed the passionate anxiety and devotion necessary to all fundamental research; he eloquently reaffirmed the non-national nature of science, while denouncing in advance any attempt to make political capital out of the award during the present French presidential-election campaign.

At the end of an exhausting day, Monod spoke into a tape recorder brought by his old friend Jean Daniel, editor of *Le Nouvel Observateur*, with unusual frankness. He began by outlining his debt to the United States:

"I can tell you—and I emphasize this particularly to a journal of the left—that if we have a debt it is above all to the United States. . . . This isn't a matter of Americanism or anti-Americanism or Atlantism or adhesion to NATO or whatever. It is simply a matter of recognizing things as they are, of knowing that French research has benefited enormously from the American contribution. . . .

"In [American scientific] circles, the universalist conception is spontaneous and natural. In France it is not natural to help, for example, Italian researchers. In the United States it is a reflex action. . . . Scientific chauvinism, so strong in France and, by the way, in Britain and Germany, does not exist in the United States."

Monod noted that scientists live in "a homeland without frontiers, a universe beyond nationalism." Such universalist feelings have freer play in the United States, he asserted, because

many American scientists were born in Europe or had European parents and because American scientists had acquired considerable influence over their conditions of work.

Monod linked the self-satisfaction of French scientists in universities to the "authoritarian centralism" which Napoleon imposed on the universities in order to bring original inquiry under control: "In science, self-satisfaction is death. Personal self-satisfaction is the death of a scientist. Collective self-satisfaction is the death of research. A man of science who is content with what he is doing and who finds that all is going well—that's a sterile man. Unquietness, anxiety, dissatisfaction, and torment, those are what nourish science. Without fundamental anxiety there is no fundamental research; that's obvious. . . . Men who do pure research are intellectuals who call everything into question. Napoleon distrusted that, and from his point of view he was right. By definition society doesn't like it when people put things into question." And so, "Napoleon destroyed the university. Since Napoleon there has been no university in France in the proper sense of the term." The university was split up into faculties, rigidly controlled by the ministry of education. The main job of the faculties was to turn out instructors for French secondary schools.

Thus hampered, Monod asserted, the universities have played "a retarding role of great importance. For a long time, our universities have lived off a kind of self-satisfaction, the sort of self-satisfaction which disarms. They had Pasteur, Ampère, Berthelot, Joliot; everything was going along just fine. One heard people at the universities sneer at the spending by foreigners who claimed to have something to teach us. Did these foreigners have in their past somebody to equal Pasteur? What need could France have of them?"

Although Monod said he was not advocating a university system like Britain's, which has "multiple inconveniences," he had praise for some aspects of its university life which contrast with those under French conditions: "It wasn't just chance that Newton could live his whole life at Cambridge and that he did well in the bosom of his university. . . . At Cambridge, one can create a chair, a course, a diploma. No French faculty can do it. They don't have the right. It must be the ministry. . . . At least in Great Britain, decentralization gives great power to fundamental research. This doesn't exist with us and it costs us very dear."

Only in the past 20 years has the situation for French research "thawed," Monod asserted. One cause of this was the foundation in 1936 of the CNRS by Jean Perrin when he was secretary for scientific research in the Popular Front government of Léon Blum. A second cause, Monod acknowledged after the interview, was the formation under de Gaulle of the General Delegation for Scientific and Technical Research, through which special funds for molecular biology and other fields were administered. A third was the explosion of university enrollments after World War II: "Suddenly there was a flood of young people who forced the university to create a great number (still insufficient to be sure) of new chairs and teachers' posts."

But during the Fourth Republic "ministerial instability prevented any of the ephemeral governments . . . from having a fundamental research policy." And the stability under the Fifth Republic has not brought the results that were expected, "especially after the solemn promises which have been repeated everywhere."

In fairness to former prime minister Debré, Monod credited him with support for the CNRS. By contrast, Pompidou has made statements unfriendly to science and made several decisions against the CNRS.

He spoke bitterly of the misunderstanding of basic science which can be found in French governments even today. Some years ago, he said, intermediaries suggested that he and his co-workers at the Pasteur Institute assure themselves of plenty of money by pointing to the potential impact of their work on a final cure for cancer. Monod and his colleagues refused. "These people didn't know what research is."

Monod's criticism fell on the Pasteur Institute itself. He accused its council of administration of shortsightedness on two counts: (i) refusing, probably because of conservative political views, to elect a French social security official to the council in return for a steady and substantial grant from social security funds; and (ii) refusing, while carefully putting nothing down on paper, to accept a grant for a laboratory of molecular biology on Pasteur Institute land.

It is possible that the French government will listen with some sympathy—however limited by the sharpness of Monod's tone—to some of these views. The first indication of this came 25 October, when three high officials of the government attended a special ceremony at the Pasteur Institute to congratulate Lwoff, Monod, and Jacob. One of the officials, education minister Christian Fouchet, apologized that the current reforms of the French educational system have not yet reached the point of changing conditions for university research. A bit wryly, Fouchet remarked: "Nothing is more contrary to the spirit of discovery than the spirit of administration; yet one must administer discovery." Nonetheless, Fouchet promised his utmost efforts to concentrate money on fundamental research, to leave freedom to adventurous intellects, and to improve scientific communication within France and internationally.

These incidents show that the three French Nobel prize winners of 1965 are determined that the glow of pride will not obscure the reasons for the underdevelopment of science in their country. The French government is at least listening.—VICTOR K. MCELHENY