Implications

In this article, one additional question should be answered. If there are a number of environmental and intrinsic factors that contribute to the occurrence of cancer and if ultimately all lead to the same alteration in the most vital machinery of the cell, why has so much emphasis been placed on work with cancer-inducing viruses?

The emphasis has been deliberate for these reasons. First, it is beginning to appear that most tumors of animals will be found to be virus-induced. Second, there seems to be no valid reason to think that human tumors are in any way unique or that they differ from tumors of other animals in any significant manner. Third, if viruses are associated with the inception of cancer in man, it seems possible that several beneficial advances might be developed. Through extension of principles that have evolved from studies of virus-induced cancers in animals it might be feasible to develop reliable procedures for early and specific laboratory diagnosis, so that effective treatment of early lesions could be instituted well before these lesions would ordinarily be detected on physical examination. Finally, it might be possible to develop specific preventive measures and, through appropriate immunization procedures, to prevent virus-induced cancerous changes at the cell level before they occur. The feasibility of such encouraging developments has already been demonstrated in principle through model experiments with cancer-inducing viruses in animals. Whether such possibilities have any real applicability to man depends on answers to two last questions: Are viruses causally related to human cancers? If they are, what is the frequency of the relationship?

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Medical Scientists in a Château

The traditional social structure creates problems for medical research and researchers in Belgium.

Renée C. Fox

On Sunday afternoon, 15 November 1959, a medical scientific colloquium was held in the château at Laeken, which belongs to the royal family of Belgium. This was a meeting officially devoted to accomplishments and problems in the field of cardiac surgery. The conference was held in honor of three foreign medical scientists, A. G. Brom of Leyden University, André Cournand of Columbia, and Robert Gross of Harvard, who, through their trail-blazing experimental work, have made outstanding contributions to this field. The three men had traveled to Belgium in order to personally receive the "doctor *honoris causa*" degree that each was to be awarded in the course of the following week. Along with King Baudoin of Belgium, who was honored with the same diploma, Cournand subsequently received his honorary degree from the Free University of Brussels on the same day that Gross and Brom were awarded their degrees by the Catholic University of Louvain.

According to accounts in Belgian newspapers, among the persons invited to the medical scientific gathering in the royal château were the following: numerous members of the royal family (King Baudoin, ex-King Leopold, Princess Lilliane, Prince Alexandre, Prince Albert, Princess Paola); the ambassadors of France and the United States; various ministers, present and past, of Cultural Affairs, Public Instruction, Social Security, Public Health, and so on; the rectors and deans of each of the four major Belgian universities (Ghent and Liége, as well as Brussels and Louvain); professors of the medical faculties of each of the universities, and numerous other professors; medical specialists from various university-connected centers; certain young Belgian physicians who were members of cardiac teams; mature physicians in private practice, specializing in cardiology; Belgian physicians who had received some training in the United States; the director and various members of the Princess Lilliane Cardiology Foundation; representatives of the Belgian Academy of Medicine and the Royal Flemish Academy of Medicine; the president of the Fund of Medical Scientific Research; the president of the Red Cross; a commissioner from EURATOM; Belgian patients with heart maladies who had undergone cardiac surgery outside of Belgium, chiefly in the United States (there were aproximately 40 of these); Belgian patients who had undergone cardiac surgery in Belgium (there were 400 such individuals at this time—how many of these came to the colloquium was not specified in the newspapers); some candidates for cardiac surgery; and the families of all these patients.

Before the colloquium, a tea was served in the Palm Rotunda of the château. In the midst of the reception a sudden failure in electricity extinguished all the lights of the château. Members of the palace staff had to be summoned to bring candles, and for a while the reception proceeded in the at once eerie and romantic "ambiance" of candlelight.

After the tea (electricity restored), a speech was delivered in French by a professor of medicine of the University of Brussels, who was also Belgium's delegate to the International

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Council of Cardiology. Another professor then gave a complementary speech in Flemish. Prince Alexandre, the son of ex-King Leopold and Princess Lilliane, who had himself undergone cardiac surgery as a patient of Gross, was the next to speak. He delivered an address, thanking modern medical science and the physicians and surgeons who are its agents for what it had done to help patients like himself. The speech was delivered first in Flemish, then in French.

Following this, the colloquium proper took place in the small and elegant theatre of the château, in the presence of the royal family and their invited guests and of many of the assembled medical personages. The guests of the royal family included certain members of the nobility and a number of prominent businessmen, several of whom were believed to be important Free Masons. A professor of medicine from each of the four Belgian universities and several foreign physicians participated in the discussion. This was on a rather elementary scientific level, out of consideration for the persons in the audience who were not medically or surgically trained.

After the colloquium there was a cold supper, to which all who had been present at the meeting in the afternoon seem to have been invited, with the exception of the patients and their families. In addition, the five bishops of the Belgian Catholic Church, some more members of the nobility (counts, countesses, barons, baronesses), and various members of Parliament were cited in the newspapers as having attended the supper.

A Symbolic Gathering

Nothing could more dramatically suggest some of the ways in which various social, cultural, and historical factors affect clinical medical research (*1*) and research careers in Belgium than this medical colloquium that took place in a château. This is not to imply that Belgian medical congresses are usually held in such a setting, or that medical scientific work necessarily proceeds under the direct surveillance of the royal family. [In fact, in certain specific ways the "story of cardiac surgery" in Belgium is atypical, involving as it does the personal medical history of Prince Alexandre and the consequent interest of his immediate family in medical and surgical developments that bear upon his congenital heart condition (*2*).] However, in several respects this medical gathering in a château may be said to be a symbolic expression of the complex social structure and cultural tradition within which a good deal of medical research in Belgium functions, and of the rather special psychological atmosphere that consequently surrounds it (*3*).

To begin with, the extraordinarily long and sociologically encompassing list of guests present at this colloquium is representative of virtually every social institution, organization, and group that affects medical research and researchers in Belgium. The diversity and importance of extramedical influences on research and research careers is suggested by the presence at the colloquium of political and religious personages, nobles, financiers, and patients and their families, in addition to the expected array of physicians. The fact that such a range of persons was invited; that two different Belgian universities had chosen to award honorary degrees at the same time to medical scientists of French, Dutch, and American origin; that each address given by a professor from one of the four Belgian universities was paralleled by an address given by a comparable professor from at least one of the other three; that Prince Alexandre's speech was delivered in both Flemish and French—all these are outward manifestations of the continuous vying for absolute equality that characterizes the many competitive groups involved in Belgian medical research, and of the exponentially complicated attempts that are made to try to meet their rival demands.

In a more abstract and general sense, this medical colloquium held in the royal château may be viewed as symbolic of social conditions under which medical research proceeds in Belgium. Metaphorically speaking, Belgian medical scientists can be said to operate continuously in a "château." The word is used here in much the same way that it was used by Raoul Kourilsky (professor of clinical medicine at the University of Paris)—to symbolize those still-unchanged aspects of traditional social structure which tend to curtail medical scientific creativity and productivity and the possibilities for careers in medical research: "The great sacrifice has been research," Kourilsky said (*4*). "We have conserved the old 'château' and its arrangements that belong to another age. . . . We have watched from afar the triumphant ascent of biology. . . ."

Here Kourilsky was referring to the predicament of medical research in present-day France, rather than to the situation in Belgium. His comments suggest, however, that it is not only in Belgium that certain aspects of the traditional social structure within which medical research is carried out are unsuited to the fullest development, exchange, and application of medical scientific talent, facilities, and knowledge. Throughout a significant part of Europe, with the notable exception of England and the Scandinavian countries, a good deal of medical research is still housed, sociologically as well as architecturally, "in ancient buildings, remnants of a glorious past" (*5*).

Finally, this particular medical colloquium held in a royal château symbolizes to some extent the psychological milieu within which many Belgian medical researchers feel they are forced to operate by the intricate, time-entrenched *système* of which they are a part—a highly elaborate, ceremonial, delay-ridden, often paralyzing, enigmatic kind of atmosphere.

The purpose of this article is to describe and analyze the social structure within which clinical medical research is carried out in Belgium, and to suggest some of the problems that this structure creates for Belgian medical science and scientists. Although, in concrete detail, some of the phenomena discussed may be peculiar to Belgium, I hope that perhaps there is also a more general level on which the descriptive analysis that follows is relevant to problems of medical research in other European settings as well.

Some General Characteristics of Belgian Society

The tiny, densely populated country of Belgium, smaller in area than the state of New Jersey, is a very complex, diverse little society—in the words of one Belgian physician, a "veritable social mosaic." With every few miles one travels in Belgium one finds marked differences in landscape, architecture, language, tradition, and orientation. For, within the 11,779 square miles that comprise Belgium, its more than 9 million inhabitants distribute themselves in countless ways between two

cultures, French and Flemish; two languages (each with numerous dialects); two sharply contrasting philosophical-religious attitudes toward life (traditional Catholicism and anticlerical Masonic "Free Thought"); and four political parties (Social Christian, Liberal, Socialist, and Communist). They are distributed, too, among the nine provinces and the 2633 communes (*6*) that make up the highly autonomous local governments of the constitutional monarchy; within an elaborate hierarchy of social classes that include peasants, factory and mine workers, white-collar workers, industrial and commercial bourgeois, professionals, members of the clergy, and members of the nobility; and among more than 15,000 social organizations—societies, clubs, associations, academies—formed around special interests (which, to take an extreme case, can become so special as to give rise to an "Association of Hammer-Handle Makers of Lower Ixeles") (*7*).

Belgium has been described as "surely one of the most particularistic societies in the world." (*8*). The reference is not only to the great diversity of social and cultural groupings that exist in Belgium but also to the emotionally charged, central role that ethnic, linguistic, philosophical, religious, political, community, class, and special-interest differences play in every aspect of Belgian life. At one and the same time there is a tendency for individuals to deeply identify themselves with what they consider to be "their" groups and a tendency to regard the groups to which they do not belong with apprehension, suspicion, animosity, and competitiveness. As John L. Brown (former American cultural attaché to Belgium) has remarked, given the "rivalries and resentments that smoulder under the surface" of Belgian life, "it is sometimes hard to understand how the country holds together and functions at all" (*7*). These particularistic groups keep a close jealous watch over each other, devoting at least as much energy to trying to prevent opposing groups from outdistancing them as to advancing their own interests through efforts devoted to self-improvement and achievement. A very literal "it-must-be-identical-and-not-simply-equivalent" conception of equality is imposed by one group upon the other. This gives rise to a number of phenomena highly characteristic of Belgian society.

One of the consequences of these rival demands for exact equality in the distribution of material resources, status, and authority is the development of numerous social organizations that replicate each other in all respects except that of the particularistic group from which each draws its membership. Thus, for example, in Belgium there is both a Royal Belgian Academy of Science, Letters and Fine Arts and a Royal Flemish Academy of Science, Letters and Fine Arts; a Royal Belgian Automobile Club and a Royal Flemish Automobile Club; Boy Scout and Girl Scout organizations and a Catholic Scouts organization.

Still other consequences are suggested by the following ironic, but nonetheless telling, description (*9*) of the inner political life of Belgium (the phenomena depicted characterize more than just political groups): "Once in power the [political] parties are equally consecrated to impotence. The necessity to act splinters all their divisions: in the face of this kind of peril, without fail, they put off until tomorrow what they could not settle today. Thus, nothing ever comes to pass in Belgium. . . ."

What is implied here is that the continual vying for equality between groups often leads to a kind of impasse between them. Opposing groups are deliberatively so evenly balanced and so unyielding in their relations with one another that it frequently becomes impossible to initiate any particular course of action. To do so would be construed as honoring and favoring one group's opinion more than another's. Furthermore, under the circumstances, when a particular group is faced with the challenge of trying to make and implement a decision, it often begins to split internally into smaller and smaller particularistic groupings. This, then, makes it unlikely that the original group will be able to maintain enough inner unity to take any kind of definitive and effective stand on behalf of what presumably were the shared interests around which it was organized in the first place. The internal factions that emerge also tend to engage in the same kind of divisive struggle for exact equality. Not infrequently, what results from this is an amoeba-like fission process, through which still other evenly balanced formal organizations, offices, and so on are created; this, in turn, produces another impasse of even greater social complexity.

The King and the Parliament, of course, through the symbolic and operational executive and legislative powers invested in them by the constitutional monarchy, represent and provide a certain overarching national coherence, direction, and unity. The Council of Ministers (presided over by the Prime Minister), formally appointed by the King according to which parties predominate in Parliament, has the most effective voice in introducing and administering legislation. Each minister has a permanent official (the secretary-general) at the head of his staff and, in addition, appoints his own bureau of advisers, who retire with him. But here again the characteristic particularism of Belgian society and the continuing pressures to achieve and maintain a literal kind of equality between all vying groups manifest themselves, creating impasses and the proliferation and still further decentralization of ministries, ministers, and ministerial advisers. Thus, in the 20th century most Belgian ministries have been formed by coalition, since the electoral system has rarely returned a party with a working parliamentary majority. And new kinds of ministries and ministerial posts have again and again been created in the face of impasse, conflict, and crisis; they have simply been added on to those already existing (*10*).

It is partly because of the proliferation of officials, agencies, and so on, as well as because of the particularistic rivalry among them, that the formal processes by which decisions are made and actions are taken in many areas of Belgian life are typically slow-moving, often delay-ridden, and sometimes indefinitely blocked. This leads, in turn, to still another characteristic Belgian phenomenon—a widespread tendency to try to find ways around the cumbersome formal structure ("*petits chemins*"), chiefly through the use of personal, often covert, influence, in order to get things more efficiently, speedily, and assuredly done.

Intricately connected with this "mosaic" of particularistic groups that make up Belgian society, and sharing many of its characteristics, is the complex of social organizations, within which most of the clinical medical research in Belgium takes place.

Social Structure of Clinical Medical Research in Belgium

Most clinical medical research in Belgium is carried out in a department, hospital, or institute affiliated with one of the four major universities (*11*). Each of these universities represents a

different combination of some of the social and cultural distinctions that dominate so many sectors of Belgian life. To be more explicit: Brussels is a Free Thought (largely anticlerical, Free Mason), non-state university. Originally, all its classes were taught in French, but since World War II, various parts of the university have doubled their faculties, adding professors who give in Flemish the same courses that are given in French. Ghent is a state university, officially neither Catholic nor Free Thought, but with a great many practicing Catholics in the student body and on the faculty. Since the early 1930's all classes have been taught in Flemish. Liège is a state university, neither Catholic nor Free Thought, but with the greater number of its students and faculty nonpracticing Catholics or non-Catholics. All classes at Liège are taught in French. Louvain is a Catholic, non-state university with a double, completely replicated faculty and student body, the one section of the university being Flemish, the other French.

Because each of the universities represents a particular constellation of some of the social and cultural differentials that truncate Belgian life, each tends to seal itself off from the others. As some Belgians put it, the universities are "veritable cloisters," with a very limited interchange of ideas and information and an even more restricted exchange of personnel. The faculty of each of the universities is drawn almost exclusively from its alumni.

The creation of a new, fifth university, in Antwerp, is presently being considered. This would be a non-state, Free Thought, Flemish-speaking university, differing from the Flemish section of the University of Brussels in that it would be located on what is considered part of the mother soil of Flanders. Given the mounting fervor of Walloon as well as Flemish nationalism during the past few years, it is predicted by many that not only will a "Flemish" university be built in Antwerp but that its Walloon equivalent will immediately be founded either in Mons or in Charleroi. This anticipated sixth university would be non-state, Free Thought, French-speaking, and located on the soil of Wallonie.

The structure of the staffs of the university departments, hospitals, and institutes where medical research is carried out is, in the words of a young research physician, "like a building in which the ground and top floors have been constructed, but in which they haven't gotten around yet to putting in the floors in between." Research units are typically headed by one full professor, with all of the authority and responsibility of a "*patron*." Generally, the other members of the research staff are junior to him and greatly subordinate in status. A few such junior research workers may have university positions—for example, that of *chargé de cours* or *assistant*—but usually these are not positions with tenure. The greater number of researchers hold no formal university appointment. Rather, their positions (often title-less) exist only by virtue of the fact that the *patron* has been able to raise a sufficient sum of money temporarily to pay them a salary and support their research. Usually there is no formal assurance of funds for continuing their research from one year to the next. It is only in the course of the past year that a law has been passed (*12*) officially creating two kinds of tenure positions in the structure of Belgian universities, in addition to that of full professor. These new positions are those of *chargé de cours associé* and *professeur associé*. In effect, they represent some of the "floors in between" the ground floor and the top floor which hitherto have been completely missing in the formal status system of Belgian university faculties (*13*).

An integral relationship between medical research and research careers in Belgian universities and the national government is already suggested by the fact that legislation was required to create these positions. The determining influence of the government in the progress of Belgian medical research stems primarily from its important role as financier. To begin with, chiefly through the Ministry of Public Instruction, the government has the major responsibility for the support of the two state universities, Ghent and Liège, and the subsidies it has given to the "free" universities of Brussels and Louvain in the past few years have been almost as great. Above and beyond this, it is not an exaggeration to say that practically all the government ministries have some control over medical research in Belgium, through their authority to pass judgment on requests relevant to research that are submitted to them (for personnel, equipment, buildings, and so on), and, of course, ultimately through their willingness or refusal to grant the funds to meet these requests. Some of the ministries which affect medical research in Belgium are the ministries of public health and family, public works, finance, economic affairs, cultural affairs, interior, national defense, and agriculture. Perhaps more striking than the mere number of governmental bodies involved in the control and support of medical research is the fact that no one ministry or council of ministers is responsible for the overall coordination of the many agencies involved and for the development of medical scientific research as a whole. The closest approximation to such a committee is the Conseil National de la Politique Scientifique, created only 2 years ago, by a legislative act. This National Council of Scientific Policy is made up of 28 regular members drawn primarily from the four universities and from various sectors of the worlds of industry and finance. The council also has two consultant members: the secretary-generals of the ministries of public instruction and of economic affairs. The council has no executive power. Its function is purely an advisory one —that of helping to integrate and advance scientific research in Belgium through formal and informal interchange with the ministers who make up the Ministerial Committee and the Interministerial Commission of Scientific Policy, created under the legislative act that created the council. It is as yet too early to predict whether this strictly advisory council will carry enough moral weight and will remain sufficiently free of political pressures and particularistic loyalties to fulfill its hoped-for goals.

It is not only the national government that affects the execution and development of clinical medical research in Belgium. The governments of local communes in the cities of Brussels, Ghent, Liège, and Louvain also have a considerable influence. This is because, in each of these four cities in which a university is located, at least one major hospital, used by the Faculty of Medicine to carry out research (as well as to teach and to help care for patients), is owned, partly financed, and administered by the local Commission de l'Assistance Publique. The commissions of public assistance in Ghent and Liège, cities which have state universities, are required by law to put their hospitals at the disposition of the faculties of medicine of those universities; the commissions of public assistance of Brussels and Louvain, al-

though not legally obligated, have voluntarily done the same. The commissions of public assistance, which exist in every commune of Belgium, date from the era of the French Revolution. They were originally charged with two missions: to prevent poverty and to organize hospital services. Their primary obligation was to give free care to the indigent sick of their communes in the civil hospitals that they had created, but from the very beginning they also cared for patients from the local community who were capable of paying (*14*). Direction of the hospitals of the commissions of public assistance rests in the hands of a special commission, made up of five to 12 members according to the size and population of the commune. These members of the commission, elected by the communal council, hold office for 6 years and may have their terms renewed. Any resident of the local community who is a Belgian citizen, is 25 years of age or older, and has never committed a serious legal offense is eligible to be nominated for this office. Nothing else is required. The commissions of public assistance function under the "protectorship" of the government of the commune, the government of the province in which the commune is located, and the national government. They must obtain formal authorization for many of their decisions and actions from each of these governing bodies.

In addition to the various local and national governmental agencies, a number of *oeuvres nationales* (against cancer, poliomyelitis, tuberculosis, and so on) and foundations of a private or semiprivate nature (the National Fund of Scientific Research, the National Fund of Medical Scientific Research, the University Foundation, the Francqui Foundation, the Queen Elisabeth Medical Foundation, the Inter-University Institute for Nuclear Sciences, and so on) are involved in the conduct and support of Belgian medical research.

Perhaps the most important of these agencies is the Fonds National de la Recherche Scientifique (FNRS), or National Fund of Scientific Research, founded in 1928 in response to a speech made by King Albert in which he declared that a "state of crisis [existed] in the scientific institutions and laboratories of Belgium" and that something must be done to "arouse, encourage and sustain" scientists and their work. A large-scale public drive for funds resulted from this speech, and within a relatively short time enough money was raised (chiefly from banks, industry, commerce, and contributions by private individuals) to launch the FNRS. Such a drive was unprecedented in Belgium, and nothing comparable has occurred since.

The 30-member board of directors of the FNRS is composed of nine representatives of the institutions of higher education and research of Belgium (the rector of each of the four universities and the rectors of five other institutions); the permanent secretaries of the four major academies of Belgium (the Royal Academy of Sciences, Letters and Fine Arts; the Royal Academy of Medicine; the Royal Flemish Academy of Sciences, Letters and Fine Arts; and the Royal Flemish Academy of Medicine); 14 members nominated by the University Foundation (eight professors, evenly distributed between the four universities; one of Belgium's most important businessmen, who is president of the FNRS board of directors; the director general of the Ministry of Public Instruction, and four other persons); the secretary-general, of the FNRS; and finally, its director and first vice president.

Decisions about the granting of funds to the various research groups who apply to the FNRS for subsidies are made by its 25 scientific commissions. Each of these commissions, organized around a different subgroup of sciences, is comprised of four professors (one from each of the four universities) and a president (20 of the presidents are university professors—five from each university—and the other five are professors at several nonuniversity institutions of higher education). All told, then, 125 different professors are members of the scientific commissions of the FNRS—virtually every university professor of science in Belgium. Since, as we have already seen, most research in Belgium is carried out in the universities in a group headed by a full professor, most of the research projects reviewed by the commissions of the FNRS are being conducted under the aegis of one or another of the commission members.

Although originally the major part of the funds distributed by the FNRS came from private sources, the organization now receives more than two-thirds of its annual income from grants made to it by the state (chiefly via the Ministry of Public Instruction). In addition, during the past few years (by virtue, first, of custom and now of royal decree), the FNRS has become the direct recipient of funds allocated by the national government to some of the other foundations. The FNRS passes those funds on, in turn, to the designated foundations. For example, the FNRS receives the subsidy granted to the National Foundation of Medical Scientific Research by the Ministry of Public Health. It then turns this money over to the president of that foundation (who is also secretary-general of the Ministry of Public Health).

The FNRS, the National Fund of Medical Scientific Research, the University Foundation, the Francqui Foundation, and the Inter-University Institute of Nuclear Sciences (as well as several other foundations with somewhat different functions) are all housed in the same building, the Club of the University Foundation, 11, rue d'Egmont, Brussels. The director and first vice president of the FNRS has his office there. He is the effective director, first vice president, and cashier of *all* the foundations at 11, rue d'Egmont and is on the boards of directors of a number of other foundations. The secretary-general of the FNRS also has his office in this building. He is secretary of each of the 25 scientific commissions of the FNRS and of every one of the rue d'Egmont foundations. A close examination of the membership of the board of directors of each of these legally independent foundations reveals a considerable amount of further overlapping.

These are the outlines of the formal structure of medical research in Belgium—the empirically built, time-encrusted "château," with all its separate-but-identical "rooms" and its maze of winding, interconnecting "corridors," within which Belgian medical science and scientists function. It is a paradoxical structure characterized in some respects by extreme decentralization; in others, by what appears to be an extraordinary concentration of authority and power in the hands of a few agencies and persons. And this dualism is being perpetuated by recent, slowly implemented efforts to modify the existing structure.

Some Problematic Consequences

What are some of the observable consequences of the structure of clinical medical research in Belgium—with its particularism, its pluralism, its centralization and decentralization—for the

advancement of medical investigation and for the careers of researchers?

Although in the various institutes and departments of the four universities there are well-trained medical investigators of ability carrying out competent research, often this work is being done under adverse social and psychological conditions, or in spite of them.

The salaries of men engaged in research are generally so low that they cannot support themselves, much less their families, unless they supplement their incomes by doing some work in addition to research. (Typically, most medical researchers who are physicians see a number of private patients.) Everywhere researchers lack the funds, equipment, and personnel that would help them carry out their work. At the same time, one finds very expensive equipment duplicated in the four universities, rather than some sort of cooperative arrangement worked out between departments, institutes, and universities for the joint use of such equipment. (At last count there were 16 artificial heart machines, four artificial kidney machines, four betatrons and four cobalt bombs in Belgium—a country, it must be remembered, smaller than the state of New Jersey.)

Most of the hospitals of Belgium were built in a much earlier historical era—several of them even date back to the Middle Ages—and thus are not appropriate for medical research (or, for that matter, ideal for modern medical care). New hospitals, institutes, and laboratory buildings are obviously urgently needed, yet one university hospital which was started 25 years ago is still not completed and has only several departments functioning within it; another university hospital stood completely ready but unaccountably closed and unused for almost 2 years, until its doors were virtually forced open in the spring of 1961 by a threatened strike of medical students and "assistants"; and a crated betatron delivered more than a year ago can still be seen in the corridor of a third university-affiliated hospital building, which is too old and fragile to withstand the operation of such a powerful machine.

In the various university settings one finds medical researchers with only the most provisional of positions, and in private practice, any number of physicians who were forced to give up the idea of a research and teaching career because of the lack of reasonably well insured positions. At the same time, in departments of several medical schools there are professorial chairs, long vacant, for which occupants have still not been definitely chosen. Furthermore, especially in certain university milieus, such particularistic considerations as the political, ethnic, linguistic, philosophical, religious, class, and family affiliations of candidates play as important a role as their scientific competence in determining whether or not they will be named to an available university position. Indeed, this state of affairs is quasi-institutionalized in that each university represents a distinct political, ethnic, linguistic, and religious-philosophical cluster and that almost all faculty appointees are chosen from among the graduates of the university in question.

Despite the good relations that exist in a number of settings between professors of medicine who head a research unit and the younger medical investigators who work under their jurisdiction, a great gap in attitudes as well as in status often characterizes the outlook and interchanges of these two groups. Young research physicians speak of their "*patrons*" and professors of their "*jeunes*" with a degree of incomprehension that suggests a far greater lack of certain kinds of communication than generally would characterize, for example, the relations between an American professor of medicine who heads a research group and individuals of junior status who work under his supervision.

The professors of medicine who are the chiefs of research units—the *patrons*—spend a good deal of their potentially creative time and energy simply in coping with the burdensome administrative responsibilities that running a department or an institute entails, given the complicated network of university, governmental, and private agencies of which it is necessarily a part in Belgium. Above all, these professors are engaged in what they refer to as the "*chasse aux subsides*" (the "hunt for subsidies"). This "hunt" involves them in a complicated, time-consuming, never-ending process of writing eloquent, inquiring, imploring, demanding, grateful letters; of making formal and informal visits to strategic officials; and of sitting on numerous commissions. For, in the words of a recent report by the Conseil National de la Politique Scientifique, since "the universities insure their Faculties of Medicine with [funds] that one would hesitate to call a 'decent standard for research,' " money must be sought largely outside the universities. The funds for any particular department or institute must be procured from a great many different agencies; it is altogether unlikely that large enough grants could be obtained from only one or from several extrauniversity sources. This is because, as we have already seen, a great deal of the money given for medical research in Belgium, even when it comes from funds and foundations, is supplied by the national government. In particularistic Belgium these agencies are under political pressure to try to allocate their resources equally between the different university groups that apply for aid. Since the research-designated funds of any ministry, foundation, or fund must be evenly distributed among a large number of the hundreds of medical research groups that exist in Belgium, the absolute amount that any one group receives will be very small. And so, the professors who are chiefs of research units must apply to many different agencies in order to amass enough funds for salaries and needed equipment. Grants are usually given only on an annual basis; this makes it necessary to repeat the "hunt" for subsidies each year. In view of the limited money available for research from universities and formal extrauniversity agencies, the typical professor who heads a research unit must also spend a great deal of time skillfully cultivating and elaborately tending personal social relationships with individuals who, if astutely handled, may be willing to donate substantial private sums of money for research.

Whatever the specific nature of the problems of medical research and researchers in the various university milieus of Belgium—problems of procuring funds and equipment; of modifying, building, and opening hospitals; of utilizing facilities; of creating and establishing research positions and appointing competent, committed investigators to fill them—there is usually a long delay in trying to deal with them, and sometimes utter paralysis. It is these delays and impasses above all that erode the morale of junior and senior researchers alike—that encourage them as one research physician put it, "to seek [their] own ways, . . . licit if possible, illicit if not, . . . independent and outside of the system" to speed matters on in what might otherwise be hopelessly deadlocked or infinitely delayed situations. It is only by circumventing the formal structure and engaging, if need be, in "*sous la table*" tactics that, to quote another research-

er, you can "work your way out . . . put your situation on more firm grounds . . . insure your happy survival . . . and hope for the development and expansion of the research group with which you work. . . ."

Perhaps more striking than any of these concrete problems faced by Belgian medical researchers is what might be termed the psychological atmosphere or climate in which they work. In discussing their problems with us, many researchers talked of the "absurd," "ridiculous," "arbitrary," "irrational," "undecipherable," and ultimately "absolute" ways in which, it seems to them, things come to pass or are blocked in the milieus in which they work. They frequently expressed apprehension and frustration over the "capricious, all-or-nothing, arbitrary game" of which they feel themselves a part, and which gives them the sense (as one Flemish researcher put it) that they are "tussling with phantom windmills." Even researchers relatively satisfied with their professional situations voiced a considerable amount of disquietude over the reasons for their "exceptional good luck" in having a fairly well insured position, an adequate salary, needed equipment, and a *patron* who understands, supports, and facilitates their research (*15*).

The seemingly absurd, enigmatic, arbitrary qualities of the milieus in which these medical investigators conduct their work are partly a consequence of some of the characteristics of the social structure of medical research in Belgium already discussed. To begin with (as a group of young research physicians put it, in a document of grievances they drafted) in a Belgian research institute or department "one finds one's self confronted with such a maze of entwined organizations that it is remarkably difficult to know who determines policy. . . ." Formal authority to make and implement decisions is divided between so many different groups that it is especially hard for younger medical researchers to identify all the agencies and officials involved, and to trace out the long sequence of steps by which decisions are supposed to be made. For, unlike their *patrons*, these young investigators have not been directly involved with these agencies and officials year after year in the "hunt for subsidies."

The lack of interchange of information, ideas, and opinions between departments, institutes, and universities and, in general, between persons who belong to different particularistic groups and live in different local communities also contributes to the sense of mystery about "who determines policy" and "who really has the power of decision" that is expressed by many researchers. For this insulation of one group from another means that one cannot easily develop a view of the forces larger and more general than those originating and immediately perceivable in a given research institute or department which might be affecting its progress (*16*).

The fact that so many of the decisions that affect medical researchers and the institutes and departments in which they work are made in ways that circumvent the complex, delay-ridden means that are formally prescribed also accounts for what many researchers find incomprehensible, unpredictable, and arbitrary in their professional situations. For such informal, ex officio negotiations are less "visible," less subject to control by surveillance, and more likely to be influenced by particularistic factors (as opposed to medical scientific considerations) than negotiations conducted in the formally designated ways.

Finally, many of the feelings of apprehension and indignation expressed by researchers about the apparently inscrutable or capricious forces that affect their professional activities and destinies seem to focus around certain persons in strategic positions, who, it is assumed, determine, often covertly and prejudicially, what does and does not happen in the various worlds of Belgian medical research. Sometimes these "*messieurs les responsables*" are cited by position and name; sometimes they are referred to half jokingly, half fearfully as "*Esprits Directeurs*" or "*éminences grises.*" As we have seen, there is some realistic basis for attributing a great deal of authority and power to certain individuals who simultaneously hold many different offices in various of the organizations which are part of the intricate social structure of medical research in Belgium. However, the extraordinary amount of power and the nature of the power ascribed to such persons by medical researchers who discuss them; the vague and sinister allusions to still other influential, and invisible, "*messieurs*"; the remarkable lack of agreement even within a particular department or institute as to who these persons with "special powers of decision" actually are—all point to their somewhat legendary character. In part, what Belgian medical researchers seem to be doing is projecting some of their uncertainty, bewilderment, frustration, and anxiety about the social structure of which they are a part and the problems to which it subjects them onto these presumably all-powerful "*messieurs les responsables*" (*17*).

References and Notes

1. I use the term *clinical medical research* in a relatively loose, descriptive sense to refer to medical research which has some ostensible, intended relationship to an understanding of the etiology, diagnosis, treatment, or prognosis of disease, or of the maintenance of health, in human beings. In the particular case of Belgium, almost all such research is conducted under the aegis of the medical school faculty of a university, most frequently by investigators who are graduate physicians.
2. A potential new link between medicine in Belgium and the royal family was forged in the fall of 1961 when Prince Alexandre enrolled as a first-year student in the Faculty of Medicine at the University of Louvain.
3. The medical colloquium seemed symbolic not only to me but also to a number of physicians with whom I had occasion to discuss it in each of the four Belgian universities. Several of the physicians with whom I talked had been present at the colloquium; others had merely read accounts of it in the newspapers or had spoken with colleagues who had been invited to attend.
4. R. Kourilsky, "Leçon inaugurale" [reprint from "L'Expansion scientifique française" (1958), pp. 27–28].
5. D. M. Gates, *Science* **128**, 227 (1958).
6. Of these communes, 1733 have a population of less than 2000 inhabitants. The smallest Belgian commune, Zoutenaaie, has 25 citizens, who belong to five families. It has been necessary for Zoutenaaie to "borrow" two inhabitants from a neighboring commune to sit on its council, since there is a law forbidding two members of the same family to be members of the council at the same time. Symbolic of the proud, traditional insistence on local autonomy in Belgium are, on the one hand, the red, yellow, and black national flag, which represents the heraldic *émaux* (enameled colors) of the provinces of Brabant, Flanders, and Hainaut in the Middle Ages, and, on the other hand, the fact that the official title of the King is the "King of the Belgians" rather than the "King of Belgium."
7. J. L. Brown, in *Discovering Belgium* (Lumière, Brussels, 1960), preface.
8. The adjective *particularistic* (or *particularist*) was frequently and spontaneously used by many of the Belgian physicians with whom I talked. Interestingly enough, they used the term in almost the same way that it is used by Talcott Parsons, the well-known American sociologist, though few of these physicians have had work in formal sociology, and none of them has any knowledge of Parsons' writings.
9. R. Micha and A. de Waelhens, *Les Temps Moderne* **4**, 432 (1949).
10. This was illustrated in recent Belgian history (September 1960), when, as a result of the Belgian public's reaction to the uprisings in the Belgian Congo, Gaston Eyskens, the (Social-Christian) Prime Minister, was obliged to reorganize his cabinet. The new cabinet with which Eyskens emerged on 3 September typified some of the processes I have been describing. The preceding government had consisted of 20 ministers, of whom 13 were members of the Social-Christian Party and seven belonged to the Liberal Party. The new cabinet was made up of 24 ministers, 15 of them Social-Christians, nine of them Liberals. Thus, two ministers from each of these political parties were added to the original number. Furthermore, four new ministerial

posts were created—so-called Under-Secretaries of State; two of these posts were filled by Social-Christians and two by Liberals. Commenting on this reconstitution of the cabinet, the French newspaper *Le Monde* expressed the opinion (4–5 Sept. 1960) that there was essentially nothing "new" about it, and that "the Prime Minister will more than ever be paralyzed." The nation-wide, violence-accompanied strikes which occurred in Belgium little more than 3 months later dramatically bore out this prediction. For now a "whole nation" seemed to be "revolting against itself" as, for 27 days, "nearly everything that keeps a modern nation going—trains, busses, trams, gas and light works, garbage and mail deliveries, schools, shops, ports, steel mills, coal mines, even football teams—stopped still" [C. Sterling, *The Reporter* (16 Feb. 1961)]. The origins of these strikes, of course, were very complex. But from one point of view they may be regarded as extreme outward manifestations of some of the contending, recalcitrant forces that continually threaten the progress of Belgian society.

11. It is informally estimated that there are at least 1200 separate university research institutes in Belgium. This number includes institutes in fields other than medicine, of course. Nevertheless, it suggests the wide dispersion and the duplication of research facilities and efforts characteristic of this tiny country, in which cooperation and collaboration between different groups is so difficult to effect in any domain.
12. This law came into being on 14 December 1960, when it was signed by the King, the Minister of Public Education, and the Minister of Justice.
13. Thus far, the creation of these posts has had only a token effect in increasing the number of stable, prestigious, adequately remunerated positions in Belgian society from which one can do research. For only 30 such positions have been created in each of the four universities, and these 30 must be distributed between all the departments of the university. What is more, the problem of where the funds for financing these positions will come from has not been fully resolved.
14. In 1958 a new law was passed, giving these hospitals two additional formal obligations: those of caring for patients with prepaid health insurance and of caring for all emergency cases which occur within the confines of the commune in question.
15. These descriptions of what many Belgian researchers find absurd, inscrutable, and arbitrary about the atmosphere in which they work forcibly reminds one of the novels of Franz Kafka—especially *The Castle* and *The Trial*. In this connection it is interesting to consider that Kafka, a Czech, was also a citizen of a small country of Continental Europe. Perhaps that accounts in part for the striking pertinence of his writings to Belgium.
16. As a sociologist from a foreign society I was accorded a privilege that no Belgian enjoys: I was permitted to move freely from one university to another and between departments and institutes within each university. As a result, I was able to directly observe and discuss many things about which Belgians themselves can only conjecture. Most striking of all was the opportunity I had to see that, irrespective of the particular university settings in which medical research groups were located, they were all faced with many of the same problems. That this is only guessed, not really known, by Belgian researchers is suggested by the fact that many of them asked me whether, without being indiscreet, I could tell them if I had observed difficulties similar to their own in other groups that I had visited.
17. The materials on which this article is based were gathered during the summers of 1959, 1960, and 1961. The research was made possible by special grants from Columbia University's Council for Research in the Social Sciences and from the Belgian-American Education Foundation, and by a fellowship from the Guggenheim Foundation. I wish to thank Dr. Norman Kaplan for the opportunity of reading a first draft of a chapter he has written on "The organization of research in Belgium" and Dr. Francis X. Sutton and Carol A. Feist for critical readings of the manuscript of this article.

Prospect for Psychology

A vision of the future, as reconstructed after one encounter with the hallucinogenic drug psilocybin.

Henry A. Murray

I shall skip the first, startling 30 minutes of my trance—the stabbing cortical sensations; the hailstorm of brightly colored particles, filaments, and figures; the kaleidoscope of celestial mosaics at the antipodes of mind; the rush of archetypes—and simply say that, after witnessing the birth in the Near East of the religions that shaped the souls of Western men and women, and after passing down the centuries to the agitations and enigmas of our own day, I found myself on the edge of a dark wood overlooking an existential waste of desolate absurdities with the straight way lost. Then, to my astonishment, I saw, floating down in my direction, an angel clothed in a cloud as white as wool. His countenance was as the sun in his zenith, beaming with encouragement to every benign form of life. In these features he reminded me so strongly of my cherished friend Edgar Tranekjaer-Rasmussen (*1*) that, out of my lonely state, I would have hugged him if it had not been for the inhibiting awareness of his far-superior, winged status in the hierarchy of being.

"This evening I am to be your Virgil," the angel said, "your appointed guide for the night hours of your journey into future time. Come with me. Over there is the forest path by which we must descend into the abyss of pain and woe and retributive justice."

As we proceeded in the semidarkness the angel informed me that the year was 1985 and that the long-dreaded Great Enormity had been perpetrated as predicted. Barely 6 months before, a biological, chemical, and nuclear war between the U.S.S.R. and the United States had been started inadvertently—by the push of a button during a small group's momentary panic caused by a slight misunderstanding—and concluded within a fortnight, leaving the essential structures of both countries leveled to the ground, their vital centers obliterated or paralyzed, their atmospheres polluted. Demoralized, isolated remnants of both populations, reduced to a molelike existence underground, were now preparing amid the wreckage to defend themselves with gas against invading forces, from China in the one case, from South America in the other.

"We are approaching the subterranean courthouse of posterity," announced the angel, "where those accused of responsibility for the Great Enormity—or of irresponsibility—are being tried before the gods, of whom there is a multiplicity, I should say, in case you have not heard the news. On trial this evening is a host of academic psychologists of all breeds and nationalities."

In a minute the two of us were entering a crowded underground cavern, constructed like the Colosseum, all parts of which were preternaturally illuminated. The tiers of seats that constituted the sides of the amphitheater were arranged in sections, each of which, the angel pointed out, was occupied by a different denomination of psychologists. At the opposite end of the oval arena, on a raised platform, was a long judges' bench behind which sat a row of unmis-

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