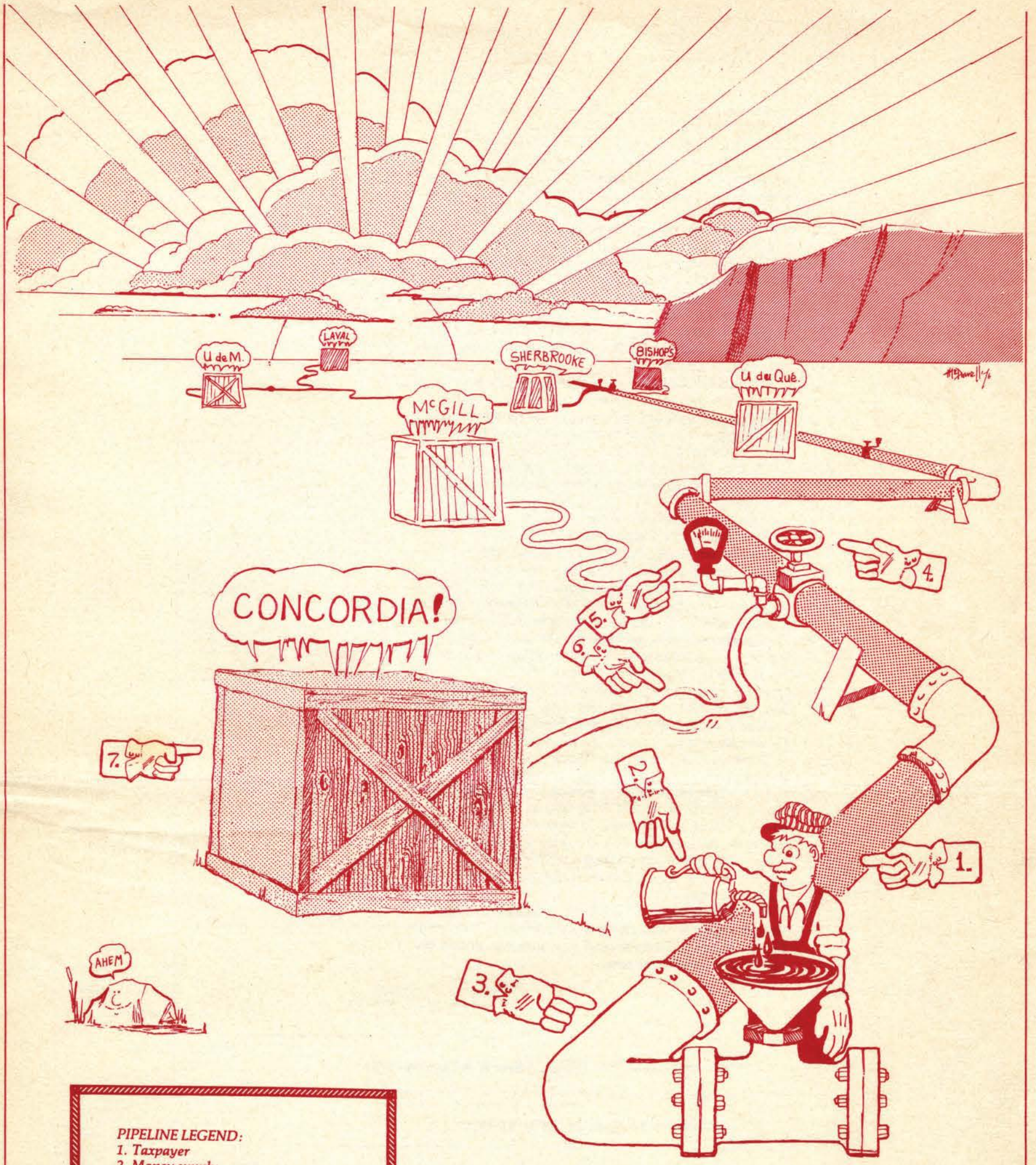


PIPELINE LEGEND:
1. Taxpayer
2. Money supply
3. Government pipeline
4. Education Minister's control valve
5. Council of Universities' pressure checker
6. Triennial budget pouch
7. The big apple

The Times Ahead

The Government and the University
Concordia's Role in the University System
The Future of Science at Concordia

A special supplement to FYI: Volume 3, Number 2, September 16, 1976.

Foreword

In Parts 1 and 2 of this supplement, material concerns the aims of the Quebec university system and Concordia's own particular role in it. The general thrust of the government's thinking is that resources be sensibly allocated across the entire system and that any wastage of resources accruing from the duplication of academic activity among universities (when one university's activity would adequately serve the purpose) be eliminated.

Parts 3 and 4 of this supplement deal with resource allocation and duplication at the local level, namely at Concordia University itself: How can we bring together science resources at Concordia's two campuses into a single unit, not only to end duplication of science faculty departments, but to enhance scientific activity in the years to come?

Material for the first two parts of the supplement is drawn from the report of the Council of Universities, with Part 1 serving as a summary of the report's findings and Part 2, a translation dealing with Concordia's activities in particular.

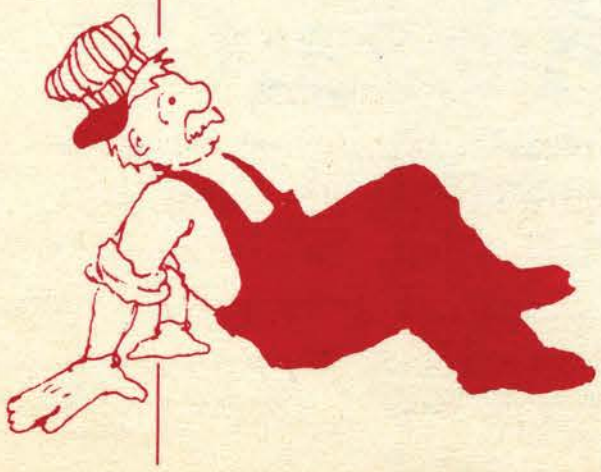
The Council is an advisory group, independent of the government, established to advise the Ministry of Education.

Material for Part 3 is drawn from science studies undertaken by DGES (Direction générale de l'enseignement supérieur), the sub-group within the education ministry responsible for universities.

Part 4 comprises an edited version of Vice Rector Academic Jack Bordan's report "The Future of Science at Concordia" which explores avenues through which Concordia resources can best be merged into a single faculty. The Bordan study was undertaken last term at the request of Rector John O'Brien.

The Bordan report and the Rector's comments on it were distributed to senior administrators, deans, science faculty, members of Senate, and the Board of Governors and student leaders during the summer. Anyone who has not read the Bordan report or the Rector's comments in the original is invited to pick up copies at the Information Office: Bishop Court, Block B, room 214 at the Sir George campus; room AD-233 at the Loyola campus. Copies of the report of the Council of Universities and the reports of Opération Sciences Fundamentales (OSF) and Opération Sciences Appliquées (OSA) are available at the Rector's office.

An edited version of the Rector's comments on the Bordan report is reprinted in this week's FYI (Vol. 3, no. 2). The Rector answers several questions concerning his remarks, following the text.



The Evolution of the Quebec University System

General Goals of the System: Cahier IV

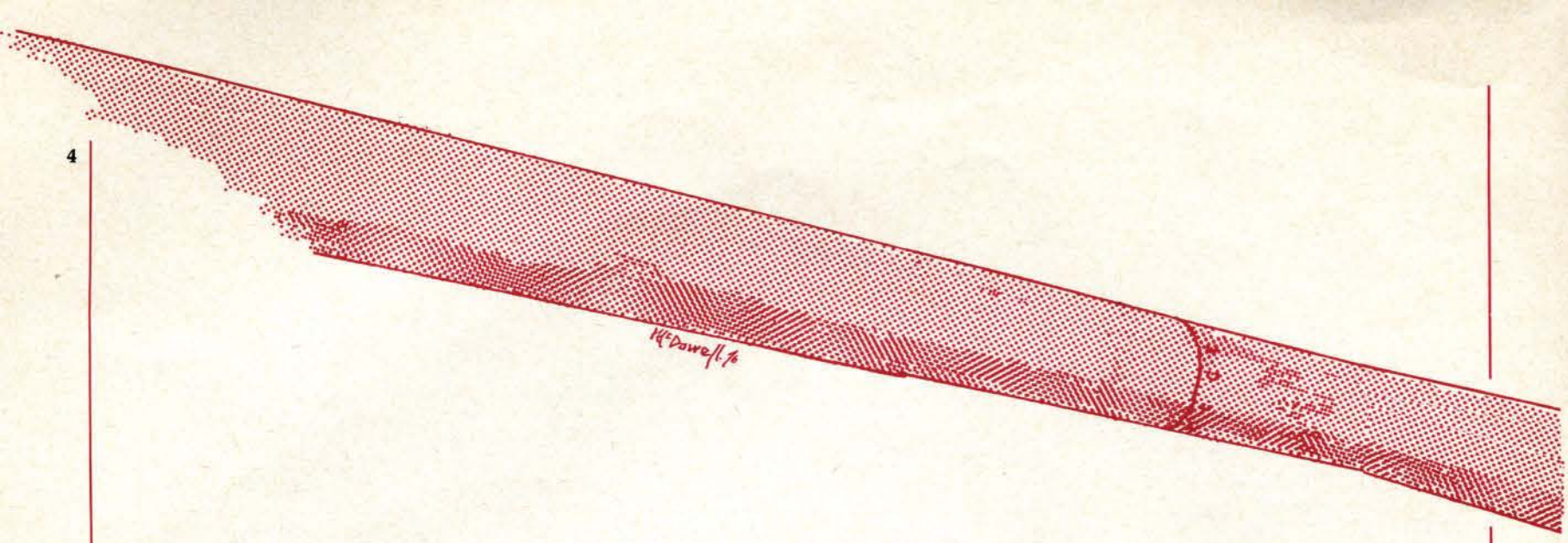
BACKGROUND

Within a short time, from the mid sixties to the mid seventies, universities have changed from being virtually private institutions to virtually public ones.

Quebec has had a ministry of education only since 1960 when it was established by the liberal government of Jean Lesage.

The provincial government has responded to increasing demands from universities for more and more financial support, sometimes favourably, sometimes reluctantly, but generally speaking with more money.

Since 1960 when the principle of annual support grants to universities was introduced, educational facilities, manpower and services have increased tremendously and, until recently, under



the privately determined jurisdictions of the individual universities.

The atmosphere during this period has changed considerably too. Part-time education, then looked down upon by many traditionalists in established institutions, is now looked on as one of the mainstays of a mobile society whose educational demands change as society's needs change.

The government has caught up with the times, although to what degree no one would probably agree. Now the government says, as its taxpayers will be saying more vociferously as expenses increase, it's the universities' turn to do some catching up.

The government wants to know where its money is going, in a word. More, the government wants a larger say in determining where it's going. Education in Quebec is an expensive undertaking. One can imagine the potential anger engendered in the taxpayer who thinks he sees public money frittered away when apparently duplicate academic programs are conducted, say, at Concordia and at McGill, a few blocks away.

Growing Government Interest

One university may be duplicating the other in legitimately well-intended ways, perhaps to balance off a program curriculum, or to fill out a research area that might otherwise be left at loose ends. The word university connotes universality, the pursuit of all things, but to some degree becomes a misnomer when applied to individual universities today.

The "universality" in the word university, the Quebec government is in effect saying, is the university **system** as a whole. Complementarity is the word of the hour, in fact of the era: to ensure what each university is teaching and researching complements (read 'adds to', 'enhances', 'advances') the teaching and research activities of the **system**.

The documents summarized and edited in the following pages make timely reading for the Concordia University community, a community sometimes jolted and often confused as our two campuses have come together. For they outline the process of still more coming together, this time with the other Quebec universities.

If universities are still sometimes thought of as ivory towers, it can only be because of our new highrise environments. Today our towers are, fortunately for our students, less remote bastions than they once were: institutions flexible enough to meet new demands placed upon them, but with a past that still keeps us rooted in established standards of excellence. But our new towers are less remote in another way: they are ringed around a still higher tower, the watchtower of the Ministry of Education.

The difference between watchtower and control tower is difficult to determine at this point.

The government took the first step towards its goal of becoming an active partner with universities in directing the course of higher education in 1964. It was in that year that the Ministry of Education established DGES (Direction générale de l'enseignement supérieur), the higher education directorate within the ministry in charge of university affairs. The writing was on the wall, even though the type and degree of governmental involvement was still unclear, a throw-back to the days when educational freedom seemed rooted in the notion of complete independence from government. Also rooted in that notion of course was the principle that educational institutions would pay their own way through private benefactions and tuition fees from their restricted clientele.

(The shift of public and private roles is eye-opening in the score of years leading up to 1976. In the '50's, when the federal government played a modest financing role, through the provincial governments, public financing of universities and colleges amounted to under 20 percent of operating costs. Today Quebec has assumed the job of paying 84 percent of annual operating costs.)

In 1968, government activities accelerated, with the establishment of the Council of Universities (Conseil des universités) and the new, entirely government-created University of Quebec. In a few short years, the government had moved with some hesitance into the field of higher education and jumped from that to establishing a university.

The Council of Universities was the body which was to have particular significance in the formation of a coordinated university system. Its mandate was to advise the Minister of Education on the needs of higher education. With representatives from government, the universities (administration, faculty and students) and the community at large, the 15 member Council was to provide more global, disinterested and critical advice on objectives and standards for higher education and on proper means of coordinating educational institutions.

Coordinating Academic Programs

In 1970 the Council, together with DGES, created a joint program committee (Comité conjoint des programmes). This committee's function was to approve and assure coordination of all academic programs in Quebec universities.

One outcome of government activity in coordinating academic programs was the institution, in 1971, of sectoral planning operations by the Ministry of Education (DGES). Sectoral planning operations look at particular academic areas, such as health sciences or applied sciences, on a province-wide basis with a view to coordinating the province's resources to best meet society's needs. In practical terms, operations have resulted in moratoria on some new programs, abolition of certain programs, combining or restructuring of others. Since 1971, operations have been conducted in three areas: applied sciences, health sciences and fundamental sciences.

The same year, in 1971, universities were called upon to submit outlines of their own development plans for the next five years to the Council, as a prelude to the Council's own massive continuing study on how each would fit into a streamlined, coordinated university network. The Council's study, under the heading "General Objectives of Higher Education and Major Orientations of Each Institution" has produced essentially two reports, the first comprising three parts, Cahiers I, II and III, and the report just released by the Council, Cahier IV, entitled "Perspective 1976: Orientations of Higher Education". Like the three-part study preceding it, Cahier IV details the progress of the individual universities and the system as a whole.

In fact, much of the current document reviews points established in earlier ones, and since many readers are probably not familiar with the general drift of the Council's thinking, it is worth following the major points of the report here.

CAHIER IV

In Cahier IV, the Council confirms certain trends in higher education, among them, the increasing interest of government in educational affairs, the fact that the current climate of austerity will continue and that while full-time student numbers will decline, part-time enrolment will increase; the Council also believes that the individual characteristics or identities of universities have been strengthened.

The report notes that while the Council approves the universities' attempt to regain initiative for their own development, it cautions the institutions that taxpayers will not support this inclination unless they are assured that the university system is functioning well and is still working toward society's goals.

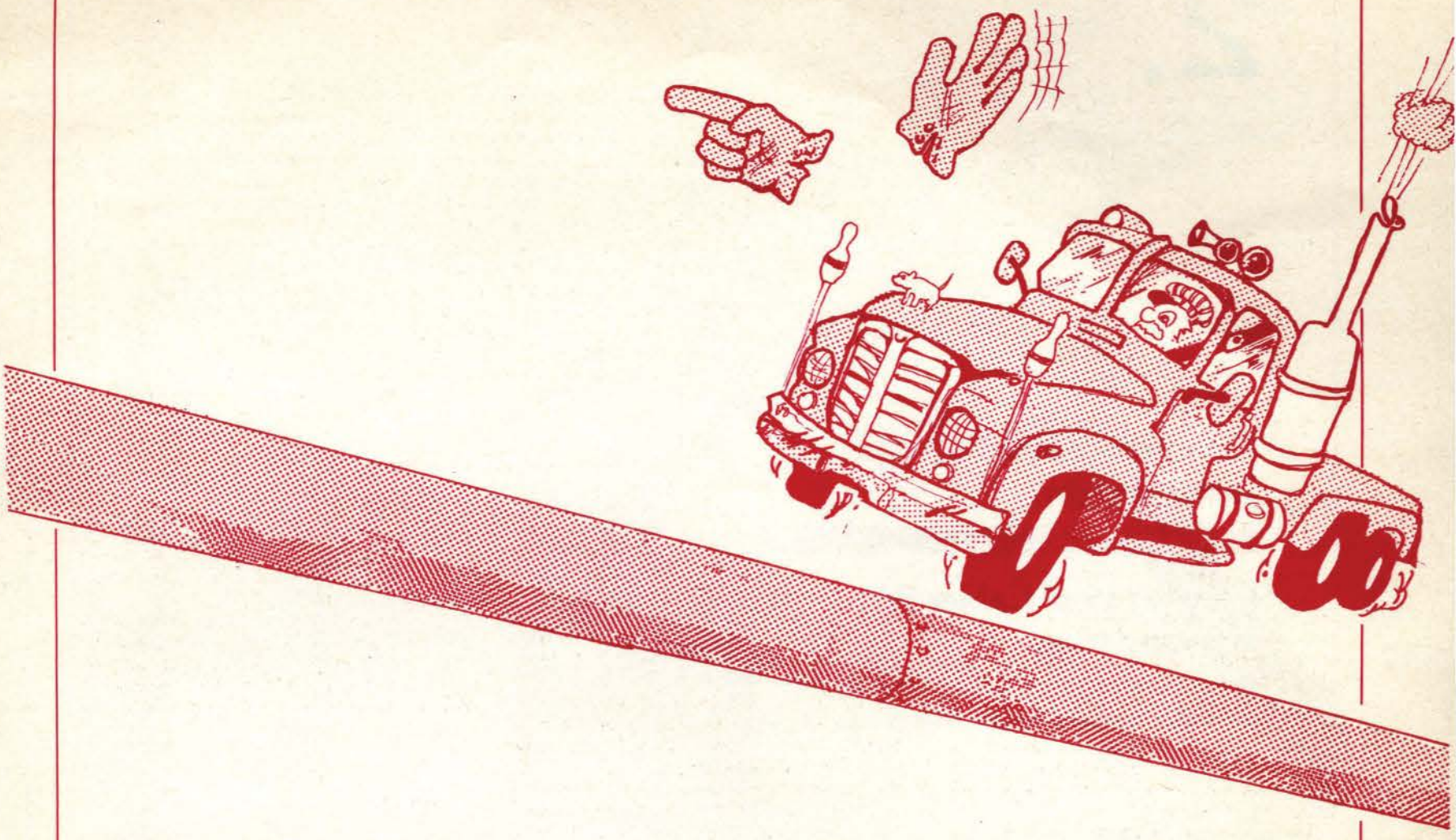
The Council goes on to say that it supports current moves to decentralize but points out that the notion of autonomy doesn't exclude coordination. (In fact, the Council takes pains to emphasize that it is the lack of coordination among autonomous universities that incites further governmental activity.) The process of increased autonomy should be paralleled with a move to spread the decision-making and policy-making process to include all members of a university's community of administration, faculty and students.

And as a decentralized unit in the network of universities, each institution is still responsible for the mandate given to it, the Council cautions in the report. The report underlines that clear division of responsibilities among universities is indispensible in maintaining a climate of trust among members and indeed stays the tendency toward centralization.

Responsible Autonomy

The problem is defining responsibilities of member universities. As well, each partner should have a clear idea of the other partners' responsibilities, according to the Council.

Specifically the Council is saying that each institution has been too wrapped up in its own affairs and has tended to disregard the general well-being of the university system. In effect, universities have been competing among themselves when the whole exercise of developing a coordinated network of universities was intended to foster cooperation among members. And every time an institution pursues its own objectives without regard to the system as a whole, the Council says, it provokes an angry reaction from other universities and the competition snowballs. The net effect, since the taxpayer is paying the shot for all institutions, is that the squabbling provokes



the government to make important decisions in the field of higher education because there is little hope of consensus on the part of universities concerned solely with themselves.

It is understandable, says the Council, that universities are worried about the government's introduction of a new budgetary process, for the government has often been more concerned in the past with short-term controls and cuts than with making budgetary choices according to well-defined objectives. Nevertheless, the plan, which is to take effect in 1977-78, is to be based on three-year previews of universities' plans and priorities. The Council admits that the long-term implications of the application of this plan are uncertain; however it notes that centralization of budgetary decision-making is inevitable and isn't any more prejudicial to higher education than it is to other sectors where taxpayers' money is at stake.

Universities, for their part, must collaborate in planning operations and policy-making and above all, assure the application of policies. Only with the good will of the universities, stresses the Council, will planning efforts have effect.

The Council reviews recommendations of earlier cahiers underlining the general objectives of higher education. The principle of "éducation permanente" (that education is a lifelong process) was to be, and remains the centerpiece of educational policy-making generally, and of higher education particularly. Under that general heading of éducation permanente, other principles were enumerated, namely that the job of higher education was to transmit knowledge and develop a spirit of creativity, train specialists that society needs, conduct research and train researchers, and respond to local community needs where possible and where not in conflict with its other functions. These earlier stated principles, the Council notes, have been by and large accepted by all Quebec universities.

For the universities to carry out these objectives, they must work within a delicate framework of autonomy, interdependence and coordination.

Who does What

The Council also restates the different roles of universities, the government and the Council itself. The university's job, it says, is to initiate teaching and research programs as well as other related public services, and establish its own methods for accomplishing these goals. Additionally, the university participates in developing general educational policies and objectives for the system.

The government's job, says the Council, is to determine general objectives for the educational system, determine policies for pursuing them, establish levels of financial support for universities and evaluate the results of university work toward achieving stated objectives.

The Council's job is to advise the minister on objectives, policy, and on the needs and problems of higher education. Additionally, the Council participates in studies concerned with all elements of higher education.

The Council says that a study must be undertaken to define mechanisms so that universities can work together, particularly to coordinate activities within academic sectors (to ensure complementarity) and in matters concerned with the development and accreditation of programs and to determine proper allocation of financial support. While that study has been delayed, the Council says, universities consider it absolutely necessary.

Although universities generally agree on their different roles and on the principles enumerated by the Council, the report points out that where lines of responsibility are still unclear, the government or Council tends to act in areas not always obviously appropriate, while the universities tend to interpret the public good in a very personal way.

Because of this confusion, the Council wants lines of responsibility more clearly drawn.

The Council report continually hammers at the principle of developing a coordinated university system and says that the upcoming triennial budget plan is an opportune time for all universities, as well as 'agents' like the Council itself and the Ministry of Education, to clearly define roles that should be put on public record so that everyone, including the public, has a clear idea of what is going on.

More, once that everyone's role is established, each should be evaluated periodically as to how effectively the role is being filled.

The Council goes on to enumerate the means by which roles can best be played. First, says the report, each must state his own operational objectives by carrying out an inventory of fields of activity in a quantitative as well as qualitative way. In taking stock of each institution's collective worth, each must keep in mind that its major preoccupation is concerned with society's goals, as opposed to esoteric pursuits.

Secondly, the Council says, there should be a long-range plan which indicates activities planned and the budgetary means of carrying these out. The Council notes that the proposed triennial budget goes a considerable way in facilitating this.

Thirdly, there should be an annual plan in which each university states its objectives and makes appropriate alterations in the plan where the principle of coordination with other universities might point out conflicts.

Enrolment and Research

Proper planning can only come when universities know how many students they are dealing with, seems the gist of the Council's thinking.

And, says the report, there is a clear need for a student forecasting service because until now, forecasts of enrolments have been inaccurate. The total number of students attending Quebec universities for credit and non-credit courses amounted to some 200,000 this past year, half of which it is estimated took non-credit courses.

Growth of the francophone sector was considerably larger than predicted and in the anglophone sector where enrolments were forecasted to decrease, growth has almost matched the francophone sector.

In all, enrolment predictions were off the mark by 30%. (The addition of Loyola figures to university statistics accounts for 10% of this.)

In the research area, the disparity between anglophone and francophone sectors in the number of doctoral level students each produces remains a concern of the Council. McGill University still produces as many as do all the francophone universities combined. The Council urges francophone institutions to increase their output of graduate students, particularly in light of the fact that Quebec spends twice as much money per graduate student as does any other Canadian province. Returns are not reflecting investment in the graduate area, the Council contends.

Education permanente

It was mentioned earlier that éducation permanente was the centerpiece of educational policy in Quebec.

The Council proposes three specific objectives here, namely that entrance requirements be made more a matter of a candidate's level of training and maturity than simply of previous transcripts; that teaching structures (program length, scheduling, location, use of media) be reviewed, and last, that universities, government and employers share the responsibility of planning financial arrangements.

2.

Concordia's Role in the System:

Chapter 19 of Cahier IV in Translation

Concordia's View of its Principal Characteristics

According to Concordia, "Most significantly, both component parts, Sir George Williams University and Loyola College, have long histories of active concern for the part-time student."(1) Traditionally, Concordia University, particularly the Sir George Williams component, has evolved with the concern of providing university instruction to a clientele not reached by McGill University. Thus, the problem of complementarity has been and is today of major concern to Concordia University.

In the masters and doctoral programs offered, Concordia University has maintained its fundamental characteristics: in 1974-75, three-quarters of its graduate students (2,200) were enroled part time.

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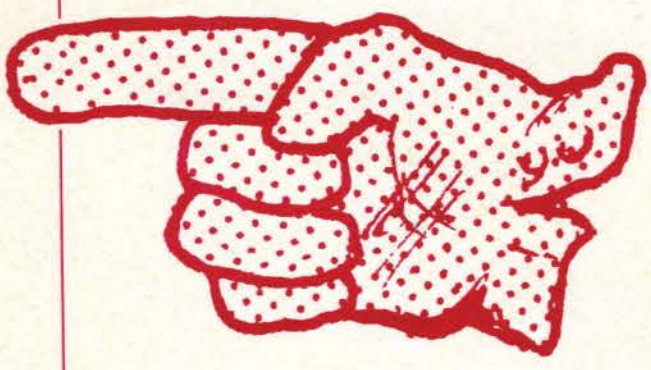
1. Progress report of Concordia University, pg. A-1



Concordia University considers that the basis of its service to the community and province lies equally in its continued concern with innovation in structure and teaching methods, and in the quality of its undergraduate education, a quality evident in its principal established and acknowledged fields: Administration, Engineering, Fine Arts, History, and Psychology.

2. Main institutional features

2.1 *Student population*

In fall, 1975, there were 10,102 full-time and 11,248 part-time students, giving a total of 21,355 (sic) enrolments at Concordia University.(2) The percentage of part-time students at the undergraduate level is 53%, at the masters level, 74%, and at the PhD level, 52%. Concordia University ranks third behind the University of Quebec and the University of Montreal in terms of number of enrolments. Converted into full-time student equivalents, these enrolments represent 15,054 students, according to the figures given by the DGES (DGES-SAF; June, 1975). Concordia University thus ranks among the large universities in Quebec.

2.2 *Range of programs*

At the present time, Concordia University offers some 200 undergraduate programs (honours, specialized, majors, minors), 22 masters programs, and 9 doctoral programs.

Concordia does not stress professional training to any great extent. Its main component and the one more oriented toward the professions, Sir George Williams, has no more than 20% of its roughly 200 undergraduate programs that could be considered "employment-oriented." Nonetheless, more than 30% of the students are registered in professional programs. While it offers some programs in Education and teacher training, Concordia has no Faculty of Education, Law, or Medicine; these faculties, along with those of Engineering and Administration, generally constitute the main areas of professional training. Thus, in a global sense, Concordia concentrates first on the Arts and Sciences; although it also has some important centers of professional training, particularly in its Faculty of Engineering and Faculty of Commerce and Administration; and despite the fact that more than 30% of the students are registered in professional programs.

2.3 *Level of studies*

Although Concordia University functions primarily at the undergraduate level, its slow but certain growth in graduate studies makes it impossible to classify it today as being exclusively an undergraduate university. In fact, Concordia offers more than twenty masters programs and nine doctoral programs, one of which is given jointly with three other Montreal universities.

Since the publication of Cahier III, the Council, through its decisions on projected new programs, has ratified and confirmed the role that Concordia can play at the level of masters and doctoral education. Graduate students now represent 10% of the total student body in the university and about 15% of Sir George students. It must also be noted that the development of graduate studies at Concordia has come about with the aim of answering the needs of a part-time student body and in the spirit of complementing McGill University whose students, for the most part, attend full time.

2.4 *Research*

We have already had occasion to point out that research grants do not give a complete picture of the importance of research quality at a university, especially when the university in question offers either little training or none at all in areas likely to attract substantial funding. Therefore, even though it approaches McGill University in terms of student population, Concordia University should not be expected to compete with McGill in terms of research grants especially since the development of graduate studies at Concordia is rudimentary as compared with that of McGill.

Nevertheless, the amount of research funds accorded to a university is an index that should not be disregarded. Given the size of the university and the relative importance of its graduate level activity, support to Concordia indicates that research there is still little developed. In 1974-75, the university was given $1,300,000 in grants; of this, $751,000 was received from the federal government. This does not class Concordia among the heavily funded universities. The main research sectors at Concordia are Engineering, Psychology, Mathematics, Biology, Computer Science, and History. Of these, Engineering seems to be the most heavily funded of all.

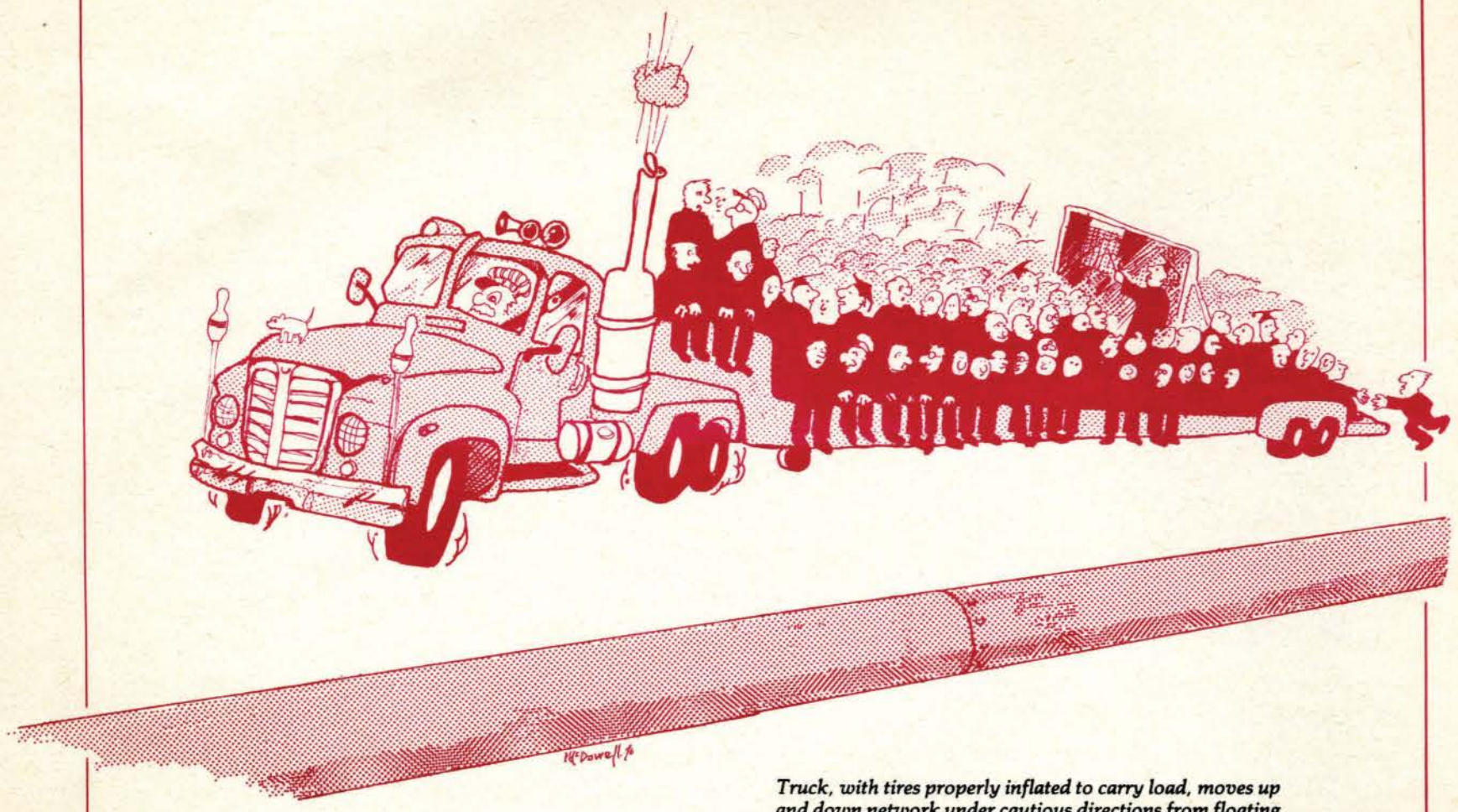
3. The role of the university as reflected by its institutional characteristics

It follows from Concordia University's characteristics that its basic role is serving the needs of the English-language community in Montreal by providing part-time education at all university levels.

The Council acknowledges this role of Concordia University within the Quebec university system. The recognition of that role does not imply that the university should not offer instruction to a full-time student body which, in fact, guarantees a certain stability to the institution; it can also make for more economical administration and is essential if second and third cycle programs are to be true centers for research training. However, this aim implies that the university should, by innovative techniques, continue to play its role of leader in continuing education and that all programs offered, be they at the undergraduate, masters, or doctoral level, should be directed in particular to that portion of the English-speaking community of Greater Montreal who wish to undertake part-time studies. By meeting the needs of this type of student body, Concordia University has a well-defined place in the system and satisfies the requirement of complementarity with McGill University, which is primarily directed towards students who follow full-time studies.

Concordia has, therefore, a very distinct place within the Quebec university system to the extent that its main activities conform to its role: openness to part-time students; the relative importance of undergraduate studies; masters, and doctoral activities complementary with McGill; and educational innovation.

2. This excludes 3,670 independent students registered in regular courses for university credit.



Truck, with tires properly inflated to carry load, moves up and down network under cautious directions from floating hands of PROVIDENCE carrying sundry education committees which keep watch on network. Taxpaying driver, conscious of rising education costs, keeps a seatbelt fastened, thinking he avoids $10 fine and extra financial burden. So concerned about rising costs, driver forgets he doesn't have to wear belt when driving truck. Driver, however, is shrewd in belting up since truck may smack into a university at unforeseen moment. Since incident, pictured above, planning charts only studied when truck is stationary to avoid losing committee members.

4. Orientations of Concordia University

Concordia remains oriented mainly toward part-time undergraduate instruction although its current tendency is to become more and more involved at the masters and PhD levels.

4.1 *The acknowledged "axes" of Concordia*
Within the perspective of the system, the Council recognizes the following priority axes of activity at Concordia University:

4.1.1 *Commerce & Administration*
This is an acknowledged area of activity at Concordia. The university should maintain and develop this sector and attempt to meet the needs for advanced training as much as possible.

Concordia University has integrated the Commerce programs of Loyola and Sir George into one faculty at the university level. It plans, nevertheless, to continue offering two distinct programs which may henceforth be followed at each of the campuses. The university is of the opinion that there is as much of a market for the very professional type of program traditionally offered at Sir George Williams campus as for the more general training given until now at the Loyola campus. To the extent that the demand justifies it, the Council sees no objection to this diversification; it questions, however, whether maintaining the two programs will not serve to favor the simple juxtaposition of resources in Commerce at the two campuses rather than their true integration.

4.1.2 *Engineering and Computer Science*
The Council recognizes the importance of activity at Concordia in Electrical, Mechanical, and Civil Engineering, and particularly in the last field, for its option in Building Engineering.

Likewise, recent developments in Computer Science programs and their relative importance lead the Council to recognize that Concordia has an axis which covers this sector.

4.1.3 *Fine Arts and Communications*
The report from Concordia and its official university documents underline the breadth of the Fine Arts and Communication Arts sectors. Students following a course of study leading to a diploma in one of the programs related to the Fine Arts total about 1,200 and it should be borne in mind that more than fifteen undergraduate programs belong to the sphere of Fine Arts and Communications.

Moreover, the quality of the Concordia presence in these areas and its spirit of innovation lead the Council to recognize a possible "Fine-Arts-Communications" axis. In the opinion of the Council, Concordia has an important role to play in the Quebec system through its Fine Arts instruction and its vocation in this field should extend beyond the Montreal area, taking into account certain linguistic implications which Concordia should be aware of.

As was pointed out in the section dealing with the range of programs offered, Concordia, with less than 20% of what could be considered professional programs, is mainly concerned with the Arts and Sciences. Now it has been noted that its two principal axes of development (i.e. Commerce and Administration; Engineering and Computer Science) belong to the professional sectors.

Excluding the Fine Arts axis, which comprises relatively little in the way of resources, Concordia has no axes of substantial development within its vast Arts and Sciences sectors. The Council does not necessarily expect every institution to provide a distinguished contribution to the system in all of its fields of endeavor; it is, however, surprised that the major portion of Concordia's resources lie outside its axes of development. For the sake of its internal planning at least, it would be desirable for Concordia to identify those fields in the vast sector of the Arts and Sciences which it most particularly intends to develop.

5. "Secteurs modèles"

The Council of Universities is tempted to propose *secteurs modèles* to Concordia (if it is willing to accept them) for part-time training at the graduate level, especially for evaluation of the performance of part-time students enroled in research training programs, and for

interdisciplinary graduate programs (here we have programs like the PhD in Humanities in mind).

We wish to stress that these are only proposals since the Council does not intend to exert pressure on a university to force it to agree to serve as a model in a given sector. For the Council, the concept of a *secteur modèle* is a demanding one; it involves experimentation under very rigorous conditions. Furthermore, by accepting a *secteur modèle*, the university also agrees, in the spirit of scientific pursuit, to systematically disseminate the results obtained at each stage of the experiment.

6. Specific problems and priorities of the university for the next few years

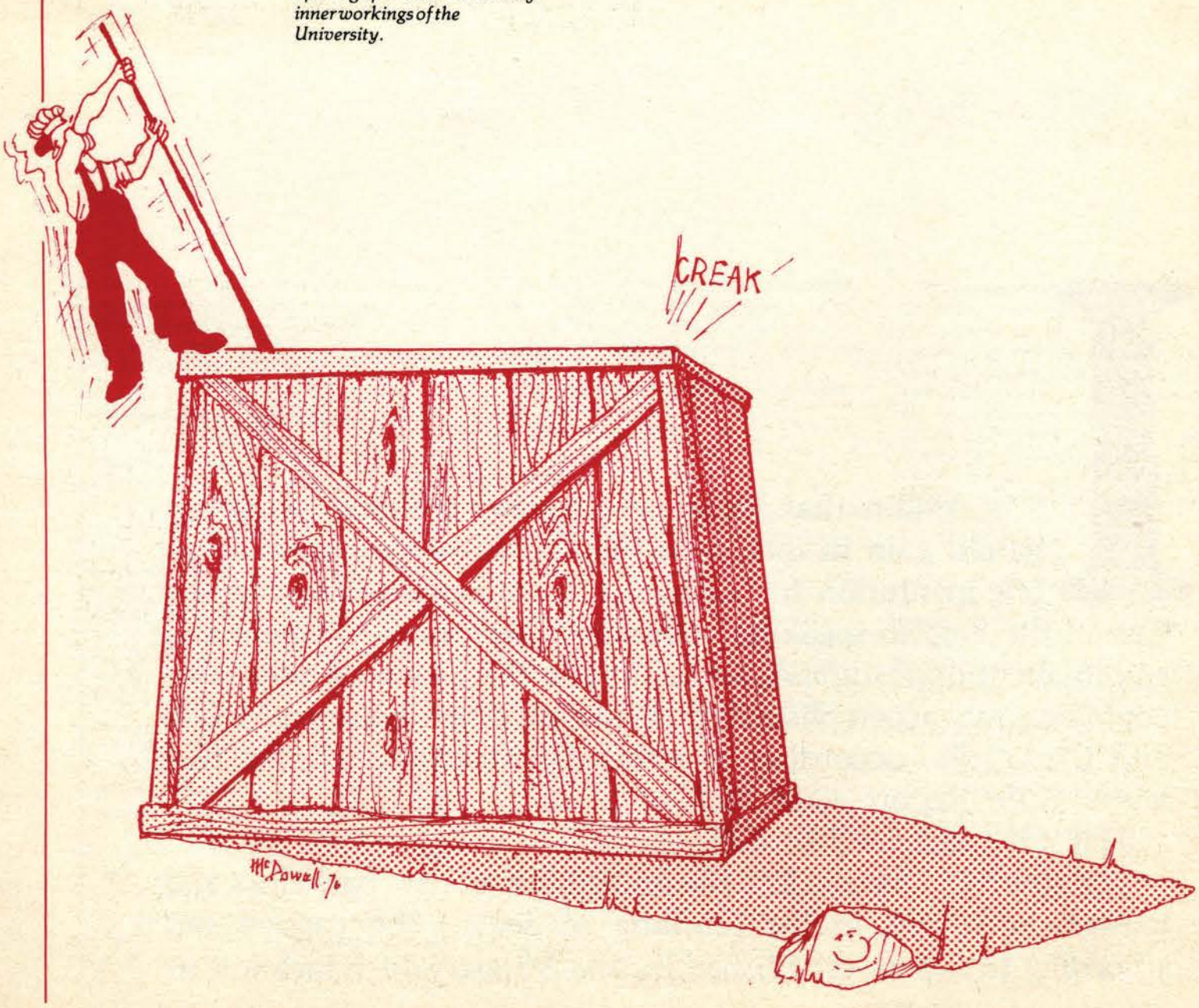
Amongst its specific problems and priorities, Concordia University attaches the greatest importance to its financial problem. For the Council, Concordia's financial problem is very important and even vital in both the short and medium term. Evening taking into account the particular nature of the activities of Concordia, the Council is indeed convinced that there exists a disparity between the financial support granted to Concordia and that given to other universities, which is difficult to justify. Thus, Concordia's financial problem has become a priority item for the Council. Ensuring a better apportionment of the budgetary envelope has become important for the stability of the system and its equilibrium.

Considering the necessity of resolving the short-term financial problem, the Council proposes that Concordia University recognize two priorities for its development: the structuring of the university and caution in the development of second and third cycle studies.

The Council is aware that Concordia University has only been in existence for less than two years. Nevertheless, it considers that the merger of the two institutions from which it was created was at first a juxtaposition of resources, more than a true integration. Even if Concordia's present financial problem should not be related to the merger, it is nonetheless possible that more systematic integration could partially help in solving the problem. The various steps taken by the university (creation of single faculties, coordinating groups and organizations) seem inadequate or are not explicit enough to satisfy the Council as to the present equilibrium between the two components of Concordia. The Council expects from the university an academic and physical plan for long-term integration leading to the constitution of one university which, even if it continues to occupy numerous buildings, will have a unified academic and administrative organization at all levels.

Finally, if the Council judges that Concordia University should not be limited in its vertical growth, the necessities of institutional coordination within the system involve respect for the major orientations of all the establishments with a view to avoiding costly and sometimes useless duplication. This implies that Concordia, in addition to following its policy of complementarity with McGill at the masters and doctoral levels, should extend this consideration to research, especially if the research is a precursor to projected programs in graduate training. Furthermore, it is incumbent on Concordia to be more innovative than its prestigious neighbour, since McGill already covers the majority of traditional fields of university activity and the English-language population of Montreal is not sufficiently great to fill two large universities which have identical activities.

A taxpayer in early stages of opening up Concordia to study inner workings of the University.



3.

Concordia's Role in Science Among Quebec Universities

Excerpts of OSF Report in Translation

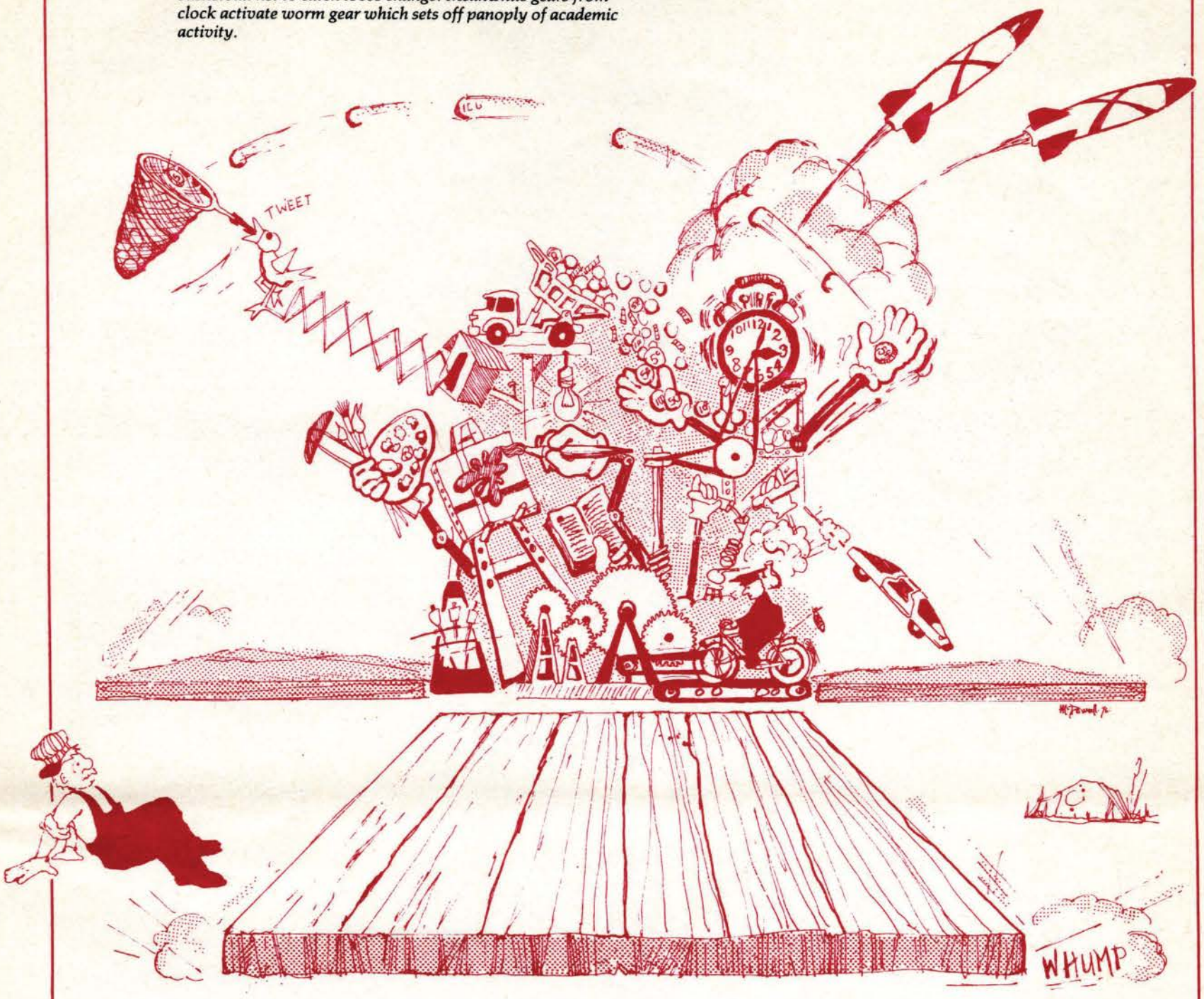
Teacher Training - first level training programs

It is certain that these new teacher training programs would gain in quality if they could be concentrated in one institution for each of the language sectors. In the case of the English-speaking community where the clientele and employment opportunities are mainly in the Montreal area, this could be easily accomplished by dividing the task between McGill and Concordia, according to either the discipline or the two levels. (OSF Report, page 240)

THE OSF RECOMMENDS:

That the introduction into the universities of new bachelors and masters programs in the teaching of science be carried out according to a plan established by the Ministry of Education in

As our story unfolds . . . we find that the triennial budget pouch has been deposited in a university truck for distribution activating hands of time which flip funds to needy areas. Ever conscious of waste university has mechanical closed-end basketball net to catch loose change. Meanwhile gears from clock activate worm gear which sets off panoply of academic activity.



concert with the universities, ensuring, without useless duplication, both regional and linguistic accessibility to careers in the teaching of science.
(OSF Report, page 247)

Teacher Training - advanced training

Thus, there can be no question of asking all universities to be concerned with the advanced training of science teachers at the secondary level since this activity is of a provisional nature and could extend over a period of about five or six (sic) in each discipline. On the contrary, the task of working out required programs and directing their administration, while making appropriate arrangements to utilize expertise in other universities, should be assigned to one institution in each language sector.

Among the English-language institutions, the university which appears to us to be in the best position to assume responsibility for advanced teacher training is Concordia University, which has taken a certain lead in this field through its masters degrees in the teaching of Mathematics, Chemistry, and Biology.
(OSF Report, pages 241-2)

The OSF RECOMMENDS:

a) That the Ministry of Education take the necessary steps so that advanced training of science teachers at the secondary level will be completed during the next ten years;

b) That the responsibility for the necessary programs in this advanced training be assigned:

(ii) to Concordia University for the English-language sector.
(OSF Report, page 248)

Chemistry

For many years, Loyola College and Sir George Williams University have produced an appreciable number of B.Sc.'s in Chemistry. Now that they have merged into Concordia University, these two institutions intend to continue their activities in this field jointly.

Their collective resources and student clientele form a balanced whole. From this point of view, as well as from the educational one, there are no grounds to duplicate the programs and educational activities in Chemistry at Concordia.

At the graduate level in Chemistry, Sir George Williams University has always chosen to pursue applied activities. Viewed within the Quebec university system, this orientation seems adequate. Furthermore, Sir George Williams University has succeeded remarkably well in this field by the style it has established for itself. With the present addition of Loyola's contribution, we believe that Concordia's orientation at the masters level should continue to be aimed in this direction.

On the other hand, the doctoral program in Chemistry at Sir George Williams University is of recent creation. Its first Ph.D. degrees (totalling 2) were granted in 1973. It is not clear that this program is essential to Concordia's development, nor that it corrresponds to the high standards that this university has always set for itself. Nor does it appear that Concordia's production of about two or three Ph.D.'s a year is really necessary from the point of view of the Quebec university system.
(OSF Report, page 365)

THE OSF RECOMMENDS:

a) That Concordia University, with a perspective of optimum utilization of its resources in Chemistry, consolidate them into a single department with a view to offering the new programs recommended by the OSF; this should be effected so as to avoid useless duplication in courses and in other educational activities apart from cases that normally arise in every university institution;

b) That the masters degree in Chemistry at Concordia University be structured around a well-defined applied field, with dissertation or internship.

c) That Concordia University abandon its doctoral program in Chemistry.
(OSF Report, page 385)

Mathematics

THE OSF RECOMMENDS:

That Concordia University, with the per-

spective of optimum utilization of its resources in Mathematics, consolidate them into a single department with a view to offering the two types of programs recommended by the OSF; this should be effected so as to avoid useless duplication in courses and other educational activities apart from cases which normally arise in every university institution.
(OSF Report, page 444)

Physics

Both Physics instruction and research activity have progressed to some extent in these institutions (Concordia and Sherbrooke) although more slowly and in a more restricted way than in the large departments discussed above. We think that the future development of Physics in each of these universities should be oriented, to begin with, toward one well-defined major field of specialization.

At Concordia instruction should be limited exclusively to the first and second cycles. The desirable amalgamation of the Physics Departments at Concordia's two campuses should also lead to the establishment of a new field of specialization which is likely to ensure the coherent development of future second cycle activities.
(OSF Report, pages 475-6)

THE OSF RECOMMENDS:

a) That Concordia consolidate the Physics Departments of the Loyola and Sir George Williams campuses into a single department with the aim of ensuring an amalgamation of resources and avoiding duplication of activities in Physics.

b) That Concordia University direct its Physics instruction at the masters level to a new field of specialization in an Applied Physics area, which will replace its existing disciplines.

c) That Concordia University abandon its present doctoral program in Physics.
(OSF Report, page 493)

Biological Sciences

Concordia University has chosen to concentrate on fields which are particularly relevant to the needs of the milieu. Its orientation in the Biological Sciences does not yet reflect this preoccupation. It should, therefore, place emphasis on its Major program and define an orientation within the framework of a specialized program with one or two options. These options should be developed within the context of a consolidation of all its resources in the Biological Sciences.
(OSF Report, page 529)

Concordia University does not seem to have a well-defined orientation in its second cycle Biological Sciences activities. It should, therefore, restructure its program following a model of specialization in an applied field and select such a field according to the university's strengths.
(OSF Report, page 543)

In the context of its general mission of integration into the milieu, Concordia University has chosen to address itself to ecology and the environment. Given the breadth of this field and the participation of all the universities in it, this orientation needs to be made more precise.
(OSF Report, page 560)

THE OSF RECOMMENDS:

That Concordia University, with the perspective of optimum utilization of its resources in Biological Sciences, consolidate them into a single department, with a view to offering the two types of programs recommended by the OSF; this should be effected so as to avoid useless duplication of courses and other educational activities, apart from cases which normally arise in every university institution.
(OSF Report, page 563)

Biochemistry

Consequently, the B.Sc. degree in Biochemistry should be reserved for those students who have followed a specialized program requiring a distribution of credits which is comparable to the profiles suggested by the Iorio study. The existing specialized program at the University of Montreal, Laval University, and UQTR as well as McGill's Honours Program satisfy this condition. Three other institutions (University of Sherbrooke, UQUAM, and Concordia) are in positions to substitute such programs for the formulae they are now proposing for the training of biochemists.
(OSF Report, page 593)

THE OSF RECOMMENDS:

a) That a program leading to a B.Sc. in Biochemistry be offered at each of the following institutions if it considers it advisable:

University of Montreal
Laval University
University of Sherbrooke
University of Quebec at Montreal
University of Quebec at Trois-Rivières
McGill University
Concordia University;

b) That these programs be specialized and structured according to the recommendations presented in Chapter 4 of this report;

c) That the following programs be abandoned:

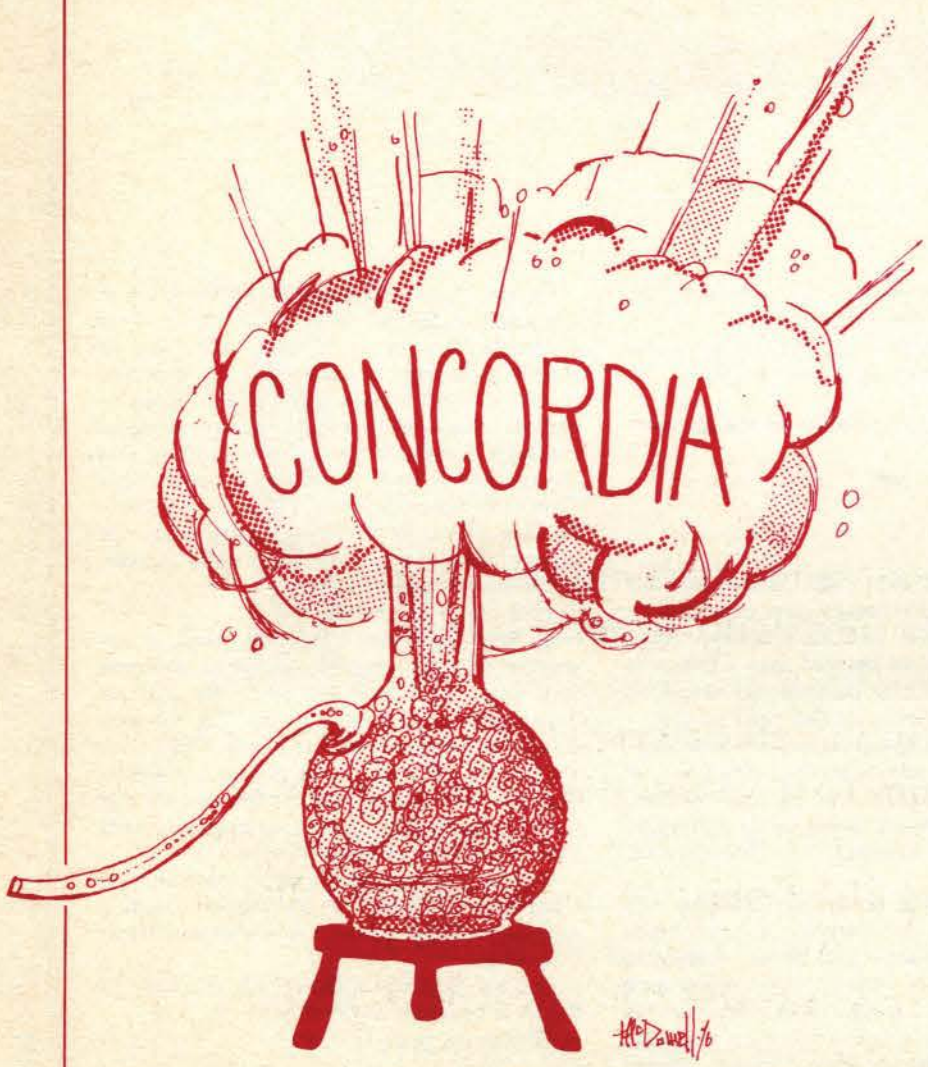
B.Sc. (Biochemistry) at Bishop's
B.Sc. (Major in Biochemistry) at Concordia
Biochemistry (Chemical Orientation) and Biochemistry (Biological Orientation) at McGill.
(OSF Report, page 601)

Geology

THIRD RECOMMENDATION

That Loyola College and Sir George Williams University integrate their resources in Geology and for the time being, jointly maintain a single undergraduate program in Geology and not offer second and third cycle programs;

That Loyola College and Sir George Williams University together, along with McGill University, study measures to be taken in order to promote a better common utilization of available resources.
(OSA Report No. 3, pages 16-17)



4.

The Future of Science at Concordia University

Excerpts from the Bordan Report

The Merger Document

The establishment of Concordia University was, de facto, the result of a resolution passed by the Board of Trustees of Loyola College, viz:

"That the revised document 'A Model for the New University', as presented by the Joint Committee to the Board of Trustees, be adopted by the Board "[1]

and of similar action taken by the Board of Governors of Sir George Williams University:

"After some discussion .... the document 'A Model for the New University' .... was approved".[2]

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1. Board of Trustees of Loyola College Resolution 72-23, November 20, 1972.

2. Extract from the Minutes of the Board of Governors of Sir George Williams University, November 9, 1972.

Both Boards accepted "A Model for the New University" or "The Merger Document" as the basis of Concordia, and it is necessary therefore to refer to that document ... to provide background to this present report.

The Merger Document, while establishing the Loyola Faculty of Arts and Science, and the SGW Faculty of Science, stipulated that: "**Representatives of the two existing Faculties of Science will meet, as soon as possible, to recommend on the organization and operation** of a single set of honours programs in Science for the new University, and will recommend on the feasibility of the establishment of a single University Faculty of Science. The Committee will report to the University Senate no later than January, 1975."

"Pending a decision of the Senate and of the Board of Governors, students may register in the Science programme and on the campus of their choice".

It was established that initially the Sir George Williams Faculty of Science " ... will provide majors and honours undergraduate programs, graduate programs, and ... interdisciplinary programs " and "The Loyola Faculty of Arts and Science will provide undergraduate education in Arts and Science disciplines together with ... interdisciplinary programs. ... the Science departments will offer major programs, and through 1974-75, honours programs."

Allowance must be made for the fact that the legal establishment of the "New University" was delayed by about a year. The dates specified above must therefore also be adjusted by a year, and hence the report from the Science Committee to Senate should have been expected in January 1976, and Science honours programs should have been expected to continue in the Loyola Faculty of Arts and Science through 1975-76.

The latter condition of the Merger Document has certainly been met, but the report " ... on the organization and operation of a single set of honours programs in Science ..." and the recommendation regarding " ... the feasibility of the establishment of a single University Faculty of Science" have not materialized.

It should be noted that in the early days of Concordia the faculty in Science became involved in participating in and responding to the sectorial study called "Opération Sciences Fondamentales". In a sense it may reasonably be said that OSF displaced the internal studies called for by the governing Boards and that the OSF recommendations have now taken precedence over what might have emerged had the internal studies been made.

Finally " ... the model allows the implementation, should this prove desirable, of department consolidation in Arts or Science on one or other campus, while ensuring that academic services that are judged essential are maintained on both campuses ...".

Opération Sciences Fondamentales

The OSF report has many recommendations of interest and immediate relevance to Concordia University. In particular, the report recommends that the present departments of Chemistry, Physics, Biology, and Mathematics merge to establish a single set of departments. OSF did not include Geology in its study; this discipline was considered in the earlier *Opération Sciences Appliquées*. OSA too recommended a merger of the separate departments in question. And so, the sectorial studies have recommended the merger of the departments in Science which are presently duplicated.

The Current Situation in Science

Science is currently organized within two Faculties—The Loyola Faculty of Arts and Science and the SGW Faculty of Science. Each Faculty includes the Science Departments of Physics, Chemistry, Mathematics, Biology; the Loyola Faculty of Arts and Science also contains Bio-physical Education and Computer Science. The duplicate departments have the characteristics shown in the table below.

Enrollment in Science

Appendix C shows the total enrollment in Science in 1975-76. This takes into account students actually registered as "scientists" as well as students taking science courses but registered in other Faculties. Although it is more difficult than perhaps it should be to get totally reliable data on a consistent basis from year to year, the tables and charts in Appendix E provide an adequate demonstration of the situation. No attempt will be made here to provide estimates of future enrollments in science. It need simply be noted that, overall, University enrollments are expected to rise only slightly in the next few years, and then drop sharply for a few years thereafter. The science share of the total potential clientele is not likely to vary substantially from the current proportion; at least there are no reasons to believe otherwise. In consequence, this report must assume that planning for the future cannot be undertaken on the basis of major enrollment increases in Concordia science. Conversely, the recommendations which follow should not be so conservative as to provide artificial barriers to growth which may, with good academic programs, be encouraged.

The purpose of the recommendations will be

Departments	No. of FT Faculty SG	Loy	Average Years of Service[2] SG	Loy	No. of Support Personnel SG	Loy	Research Funds Dollars[1] SG	Loy	Space (to nearest 100 sq. ft.) SG	Loy.	No. of Students SG.	Loy.	Programme Inventory SG.	Loy.
Biological Science	14		9.0		9		168,065		31,700					
Biology		10		7.10		5		34,580		14,400				
Chemistry	13		10.85		9		42,808		36,100					
Chemistry		10		9.72		6		17,905		14,600				
Geology	3		8.66		1		3,900		2,900					
Geology		4		9.0		1		875		5,600				
Mathematics	34		9.17		5		36,575		6,800					
Mathematics		10		9.4		1		2,170		1,800				
Physics	9		10.44		3		28,950		13,800					
Physics		7		10.14		2		200		7,500				
Sub total	73	41			27	15			91,300	43,900	SEE APPENDIX C		SEE APPENDIX D	
General (Incl. Deans Offices)	2				12				6,900					
		4*				11*				700				
TOTAL	75	45			39	26	280,298	55,730	98,200	44,600				

* 3 Asst. Deans, 1 Dean, 7 Secretaries, 2 Technical, 1 Admin., 1 Professional — for both Arts & Science

1. See Appendix B
2. Asst. Deans' years averaged in with Department of origin.

to produce the best possible science education for Concordia students within available University resources. The combined resources inherited from SGWU and Loyola College must be intelligently deployed to this end.

Organizational Considerations at the Departmental Level

The question of organizational structure appears best approached first at the departmental level. The OSF Report concerned itself solely with that level of aggregation, and for reasons that are tolerably self-evident.

It is the considered opinion of the writer that the OSF recommendations for Physics, Chemistry, Mathematics and Biology, and the OSA recommendation on Geology, regarding the creation of single departments, one in each of the disciplines, are sound. In a series of meetings to which all full-time science faculty members of the duplicate departments were invited, no serious attempt to defend the current duplication of departments was made. Perhaps this was due to a fatalistic view of the authority of OSF and of the power of the Department of Education to enforce the recommendations. One would prefer to think that the real advantages of unified departments are in fact perceived. The establishment of single departments will require the members of each discipline to meet regularly together to articulate common goals and develop appropriate academic teaching and research programs. The post-merger attempts at dialogue between departments of the same discipline have ranged from moderate success to outright hostility. It would serve little purpose to speculate on the reasons for the overall lack of success. However, there does now seem to have emerged an acceptance of the need to work together as professional members of a scientific discipline, and under the leadership of a single Chairman in each case.

It is therefore recommended:

REC. 1 That the SGW Departments of Biological Sciences, Chemistry, Geology, Mathematics, and Physics be joined with the Loyola Departments of Biology, Chemistry, Geology, Mathematics and Physics, to form a single set of University Departments.

REC. 2 That for each of the departments so established an Advisory Committee be struck, to recommend on the appointment of a Chairman for a term of three years.

REC. 3 That for this occasion each Committee be made up of two Loyola and two Sir George full-time faculty members from the discipline concerned, and one student from each campus, with its chairman appointed by the Vice-Rector, Academic.

REC. 4 That each Committee recommend to the Vice-Rector, Academic on the appointment of a Department Chairman from among the full-time members of the merged department.

The Ph.D. in Physics and Chemistry

OSF, in its preliminary report, recommended that the Ph.D. programs in Physics and Chemistry be abandoned. There is no obvious basis on which to argue against this recommendation in the case of Physics. The student demand for Physics Ph.D. places is low, and can be more than adequately met by other institutions. Moreover, the research activity of both Physics Departments is not high; the SGW Department has not been successful in attracting a reasonable level of research funding, without which a Ph.D. program cannot survive.* The University cannot provide from its normal academic budget the necessary stipends to support Ph.D. students. The part-time teaching and demonstrating available is limited by the relatively low undergraduate enrollments, and in the circumstances these functions should largely be assumed by full-time faculty members. In sum, the retention of the Ph.D. program in Physics is not defensible. Accordingly, it is recommended:

REC. 5 That no further candidates be accepted to the Ph.D. program in Physics.

The situation in Chemistry differs sufficiently from that in Physics to justify a serious attempt to maintain the Ph.D. program in that discipline and so it is recommended:

REC. 6 That the Ph.D. program in Chemistry be retained.

Space Considerations

Concordia as a whole is demonstrably short of space, whether measured by the sense of crowding in some Faculties or by the application of the new space norms being used by the Department of Education. These norms provide the single basis on which the University can press its demands for additional space, whether by new construction or increased rental.

It is a moot point whether the norms can be applied directly at the level of an academic department; at the greater aggregated level of a Faculty they provide an indicator which must be given serious consideration. The norms, as applied by the University Planning Department, show that Commerce and Administration, Engineering, Fine Arts and SGW Arts are all short of space to a greater or lesser extent. On the other hand, SGW Science and Loyola Arts and Science, and in particular its Science component, have a substantial surplus. The experience of students, faculty members and staff of the former Faculties supports the message of the norms. The application of the norms and the subjective evaluations would appear not to match as well in the latter two Faculties. However, nobody has maintained

*Of the nine full-time faculty members in SGW Physics, three have held NRC grants over the years 1973-74 through 1975-76. For 1976-77, these grants have been renewed, and a fourth added. In Loyola Physics, with seven full-time faculty members, there have been no NRC grants over the recent years, but one was approved for 1976-77.

that these Faculties need more space than they now have.

The following table gives a summary of the space situation.

Academic Space	Sq. ft. Actual 1975-6	Sq. ft. Norms	% over/ (under) Norms
All Faculties	408,700	423,000	(3.4)
SGW Science	98,200	66,500	47.7
Loyola Science	50,700	36,000	40.8
Total Science	148,900	102,500	45.3
Loyola Arts and Science	96,000	74,500	28.8
Other Faculties	214,500	282,000	(23.9)

Whether the norms are a good measure of internal space allocation or not, the fact remains that, for the University as a whole, they are the only measure, and the only hope of improving our overcrowded situation. It would follow that, for better or worse, the norms cannot be ignored. Their use internally must be with considerable judgement, but their application to some considerable extent is inevitable.*

It is exceedingly difficult to recommend in detail on the space configuration which should be provided for the merged Science departments. The internal arrangements are best left to the scientists themselves to consider and recommend to the University. It is, however, the responsibility of the University to decide on the total space to be made available, and on the relative distribution of that space between the two campuses. If the space norms are not to be applied literally, it follows that some element of judgement, to some extent arbitrary, will have to be applied.

A two-campus operation will be more space-consuming than operation on a single campus. Continuation of a two-campus presence is a strategic decision which will have its costs in efficiency and space. This report will recommend a two-campus operation in Science; on that account it must recommend that Science be assigned marginally more space than the norms will dictate. A second element must also be considered. Science enrollments are not high and will not likely see much growth. The overall scale of our science activity must be shaped by our hopes for science within the University, including a continued intensification of applied science research. The basic facilities for such research must be available or the University expectations of good performance will not be capable of realization. On this account then too, one should assign more space than the norms indicate on the basis of simple student numbers. Finally, one must consider the current particular facilities in moving toward rationalization. The Hall Building laboratories provide a good research environment in Biology and Chemistry, and to a less specialized extent, in Physics. Reducing the overall Science space while simultaneously duplicating research facilities on both campuses is not feasible. It follows then that the principal research activities of the merged Departments of Biology and Chemistry must be carried out where the best facilities exist, in the Hall Building. For Physics, the case is less clear, and it may well be desirable to move the research activity of the SGW Physicists to the Loyola campus, in order that the overall Science space on the SGW campus can be adequately reduced. The Geology facilities are superior on the Loyola campus, and Geology specialization must make full use of those facilities.

The space currently available to the SGW Department of Mathematics is inadequate for the range of undergraduate and particularly graduate activities presently under way. The views of the faculty in this case, match the calculations of the Planning Department based on the norms. (The norms appear to work well for departments short of space; they appear to those with more than enough space as being simply arbitrary technocratic devices; some sort of relativity theory at work here!)

The writer is led then to the following set of recommendations:

REC. 7. That the overall space assigned to Science be established at 120% of the norm, i.e. reduced to 123,000 sq. ft. That the reduction (of about 26,000 sq. ft.) be primarily on the SGW campus, where the shortage for the other Faculties is felt most acutely.

REC. 8. That research and graduate programs in Biology and Chemistry be concentrated in the Hall Building.

REC. 9 That the day undergraduate programs in Geology and Physics be concentrated on the Loyola campus.

REC. 10. That some evening and service courses in Physics and Geology continue to be available on the SGW campus along with essential, non transferable, specialized research facilities in Physics.

REC. 11 That the graduate and research programs in Physics be moved to the Loyola campus to the extent that, and as soon as, facilities can be organized to that end.

REC. 12. That the merged Department of Mathematics be provided with adequate space for its undergraduate and graduate mission, preferably on the Loyola campus, and within the total assigned space in Rec. 7.

The writer has received some expressions of concern about the possible decrease in enrollment in Geology and Physics were the undergraduate programs moved to the Loyola campus. One can only speculate on whether a decrease will result. The cause and effect relation between living and studying downtown is not at all clear; likewise the question "would you like to move to the other campus?" is almost on a par with "when have you stopped beating your wife?". The enrollment in Physics and Geology, at the University level, is not sufficient to justify two principal centres of activity for those departments. A decision must be taken to consolidate. The writer believes in the present merit of providing the full range of undergraduate programs in Science on the Loyola campus as well as a full range of undergraduate programs in the disciplines of higher enrollment—Biology, Chemistry and Mathematics—on the Sir George Williams campus. In the longer run, should a major shift in disciplinary interest occur, the Science group will have to consider the consequences of multi-campus operation in the light of the data then available, and the University will be obliged, then as now, to play its role in space assignments.

Computer Science

The Loyola Faculty of Arts and Science currently includes a Department of Computer Science with a variety of first cycle programs. The University Faculty of Engineering is the administrative unit which houses the Department of Computer Science which offers the B.Comp.Sc. degree and the M.Comp.Sc. degree, with a proposal for a Ph.D. program before the Board of Graduate Studies. This Department was established with the support of three special grants received from the Provincial Government, one for the B.Comp.Sc. and two for the M.Comp.Sc., and is part of one of the defined "Grands Axes" of Concordia.

The question of the number of departments of Computer Science in Concordia has been debated at Senate and the Board of Governors. At its meeting of May 9, 1974, the Board decided to postpone a decision until the Spring of 1975 and to ask Senate to study and report to the Board on the matter. On May 24, 1974, Senate established an ad hoc committee "to set out as completely as possible the arguments both for and against the various forms of control over programs and policy for Computer Science".

The Committee has deliberated for two years but has not yet submitted its report. In consequence, this present report cannot evade recommending on the question. The basic characteristics of the two departments are set out in Appendix F.

In addition to providing a selection of courses of interest and use to students in Arts and Science on the Loyola campus, the Loyola Department plays a significant service role for the Faculty of Commerce and Administration on that campus. Indeed, it would appear that its major thrust and interest has been in the "Commerce-user" area. The Faculty of Commerce and Administration has continuing need of courses and programs in its area of interest. The students in Arts and Science have a right to choose Computer Science courses which support the particular Arts and Science programs available on the Loyola campus. Both these needs can be fully met by a judicious regrouping of the courses and faculty members of the Loyola Computer Science Department, and in a manner that will provide appropriate longer range career paths for the faculty members concerned. It is accordingly recommended:

REC. 13. That the Commerce component of Loyola Computer Science offerings be transferred to the Faculty of Commerce & Administration.

REC. 14. That the Department of Computer Science in the University Faculty of Engineering be instructed to provide the appropriate range of courses, on the Loyola campus, to students in Arts and in Science.

REC. 15. That the members of the faculty of the Loyola Department of Computer Science become members of the Faculty of Commerce and Administration, or of the Department of Computer Science in the Engineering Faculty, as the case may be, in accordance with the primary interest of each of the faculty members concerned.

The Faculty Level

With a set of single departments established, the question of departmental groupings at the Faculty level remains to be considered. The answer here is not particularly obvious. The Merger Document talks of studying the feasibility of a single Science Faculty. There should be no doubt that a single Science Faculty at Concordia is indeed feasible, but is it the only Faculty arrangement which is ?

Loyola College first established separate Arts and Science Faculties in 1943, and continued that academic structure until the creation of the "New University". Sir George Williams created its separate Faculties of Arts and Science in 1963. The Loyola separate structures thus preceded those of SGW by twenty years.

*A simulation of space requirements, by the SGW Faculty of Science, concludes that the surplus of SGW Science space is only 2.1% above the norms. Regrettably, the University is not free to accept the validity of all of the parameters used in that simulation, since some disagree substantially with those defined for the University system by the Department of Education. It should perhaps be added that the Government norms are not a uniquely Quebec invention—they are based on studies of usage elsewhere in Canada and the United States.

The results of a questionnaire distributed to members of the Departments of Biology, Chemistry, Geology, Mathematics and Physics on both campuses show that 80% of the 35 Loyola returns were in favour of an Arts and Science configuration whereas 95% of the 60 SGW returns were in favour of a separate Science Faculty. Overall the ratio of returns in favour of a separate Science Faculty were 2.06 to 1.

It is argued that the concept of Arts and Science within a single Faculty is a matter of fundamental importance rather than just of organizational convenience. Reasons given for an Arts and Science configuration relate to the potential for devising innovative programs which might otherwise be inhibited, as well as the positive interactive effects between faculty members of Science and Arts diciplines meeting in a single council. Loyola Arts and Science, as a Faculty, has not been in existence long enough to have produced program evidence of "Arts and Science" as a concept, a philosophy, different from that which might exist in separate Arts and Science Faculties. The attempt appears to have been made—it has simply not yet had the time to demonstrate its success.

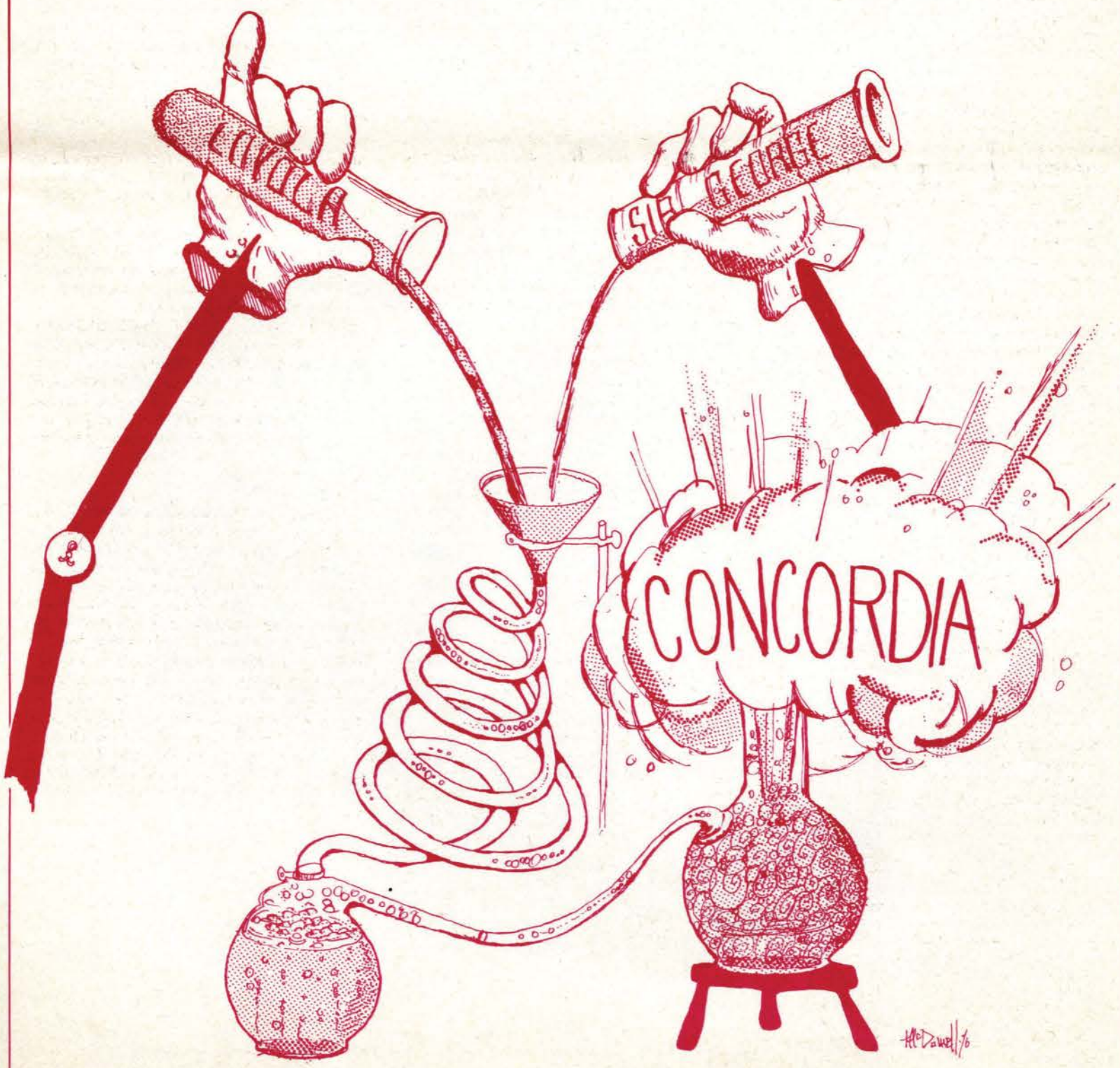
Science can surely exist, and prosper, whether as a separate Faculty or as a set of departments within a Faculty of Arts and Science. Examples of both models abound. At about the time that McGill University split its Faculty of Arts and Science into two separate Faculties for reasons that one must assume were valid, the Université de Montréal joined its Faculties into a single Faculté des Arts et Sciences for reasons which one must assume were also valid.

In both Sir George Williams and Loyola experience, students have traditionally been encouraged to cross Departmental and Faculty lines. McGill and SGW both offer a B.A. and a B.Sc. in Psychology. The Psychology Department on the SGW campus is in the SGW Faculty of Arts, at McGill it is in the Faculty of Science, but students in the "other" Faculty may follow the program and receive the degree of their choice, regardless of where the department of Psychology is administratively housed. The Centre for Interdisciplinary Studies in the Loyola Faculty of Arts and Science is chaired by a Chemist; in the SGW Faculty of Arts, it is chaired by a Physicist from the SGW Faculty of Science. Faculty boundaries thus do not appear, a priori, to set up boundaries to student choice or to innovation.

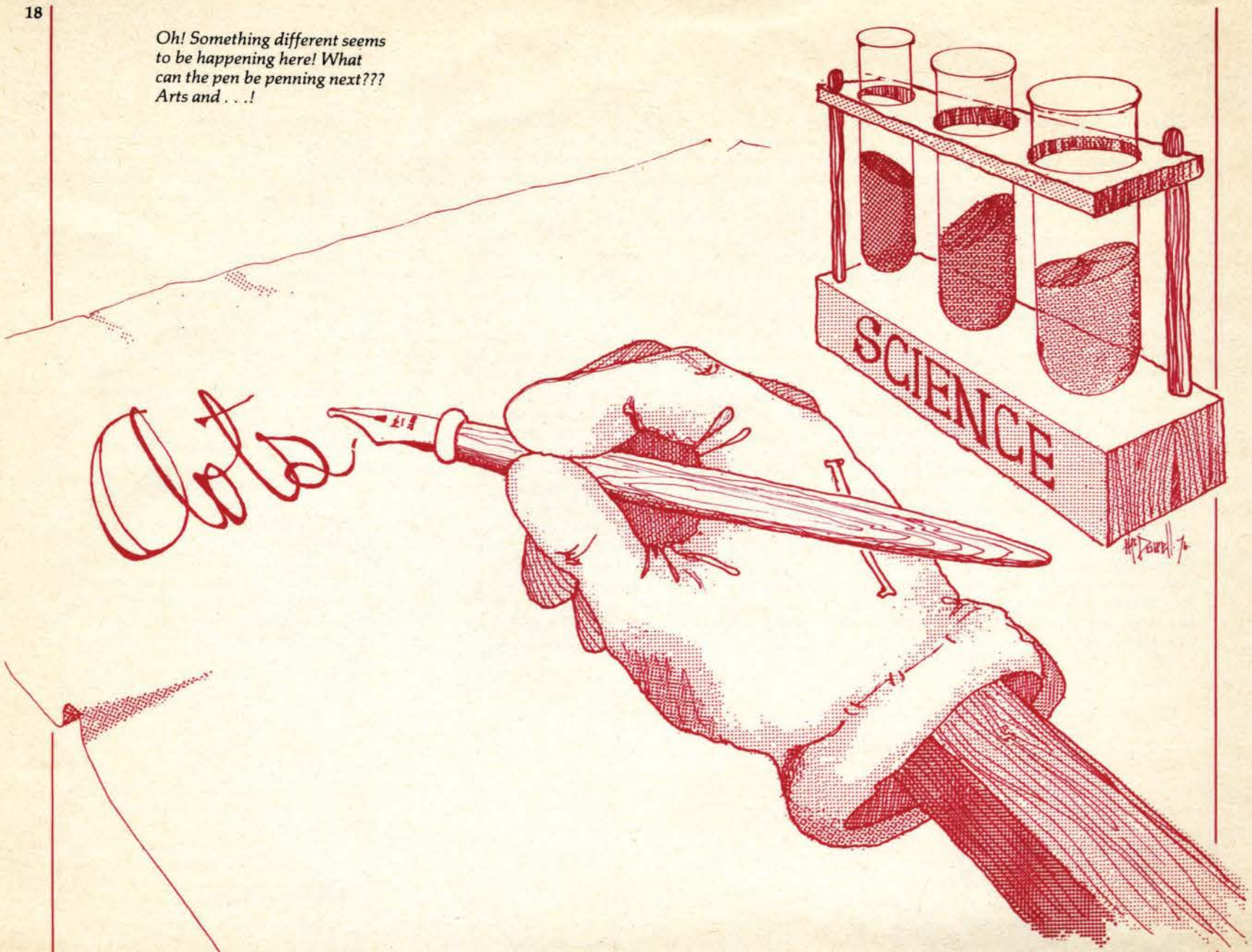
It is unlikely that students see a Faculty structure as particularly relevant; what concerns them is that programs exist to satisfy their needs and interests. However, faculty members are naturally concerned with the issue of Faculty structure. Is it possible to assess the effect on the potential positive values which will be reflected in curricula and in individual courses as a consequence of forcing interaction between faculty members in the Science and Arts disciplines? Such interaction currently exists in social settings. It is argued that interaction in committee and council rather than dining room and bar is having a desirable effect on members of the Loyola Faculty of Arts and Science.

The writer's intuitive response to the argument is very positive, and almost sufficient to cause him to recommend that Loyola Arts and Science be given the responsibility for all of Science on both campuses at Concordia. However, there remains a concern which must be expressed and weighed before a decision is finally taken. Loyola Arts and Science has not been heavily engaged in science research, nor has it had the responsibility for managing graduate programs. Can it be given the organiza-

What can this new solution be?
Or is it a mixture?



Oh! Something different seems to be happening here! What can the pen be penning next??? Arts and . . .!



tional structure necessary to assume these important functions? The SGW Faculty of Science has had many problems in accommodating to the current reality in those areas and has learned many lessons from its efforts to do *so*. Can the lessons so learned be readily transposed to the necessarily less homogeneous environment in an Arts and Science Faculty?

Despite the concern expressed above, the writer finds the notion of a Faculty of Arts and Science, with headquarters on the Loyola campus, and responsible for all of Science at Concordia, extremely attractive. Either this model or a University Faculty of Science can be made to work.

Accordingly, it is recommended that the Rector consider the following alternative models for Science at Concordia:

REC. 16(A) That a single University Faculty of Science, with its own Council and Dean be established;

OR(B) That the Loyola Faculty of Arts and Science, consisting of the current Loyola Departments in Biology, Chemistry, Geology, Mathematics and Physics, be given the responsibility for science on both campuses.

REC. 17(A) That should Recommendation 16 (a) be adopted, a Faculty Dean be chosen upon recommendation of a Search Committee, established for this occasion with an equal membership of Loyola and Sir George Williams Science faculty members, and an equal number of students from each campus, and that the Committee be instructed to search widely, both inside and outside the University, for a suitable candidate.

Should, instead, Recommendation 16 (b) be adopted, then a special set of considerations intervene. The task of melding the current Science Departments into a productive and viable single set of Departments will place particularly heavy responsibilities on the Dean's Office. There is, in general, no a priori reason why a Faculty of Arts and Science must be presided over by a Dean who is a Scientist. In the current circumstances, however, the particular situation calls for strong scientific leadership with research and graduate studies experience. This might be met by the choice of a new Dean, with the restriction that he be a Scientist, or by the establishment of the post of Associate Dean for Science for the Loyola Faculty of Arts and Science. Were the latter option to be preferred, it should be without prejudice to the future organizational arrangements which the Faculty and the Dean might wish to evolve.

REC. 17(B) That should Recommendation 16 (b) be adopted, the Rector give special consideration to the preceding paragraph.

Excellence in Undergraduate Science?

Opération Sciences Fondamentales, on page 93 of its main report, noted rather forcefully that in all the submissions it received, no university seemed to covet a reputation for offering above all an undergraduate program of the highest quality. OSF went on to suggest that there must surely be some institutions in Quebec that seek in one or other of the Science disciplines to excel chiefly at the undergraduate level.

Cahier IV of the Conseil des Universités report entitled Perspective 1976 picked up a related subject in its comments on this University (p. 287). It noted that, Concordia, though largely based on the Arts and Sciences, does not have an 'axe' in these disciplines, and it then made the following suggestion:

"It would be desirable, at least for internal planning purposes, that Concordia identify several areas in the vast sector of Arts and Science that it intends to develop in particular."

Surely, whatever the specific disciplinary developments we may plan or foster, there is one broader mission that arises very naturally from the traditions received from both Loyola and Sir George Williams—the provision of the very best in undergraduate education. To strive for less would be folly; to reach for what is clearly unattainable at this time could well prove suicidal. This in no way precludes the offering of appropriate graduate programs or the development of research, properly funded from outside sources; good research is being well funded now in some departments. Concordia scientists supported by a rational allocation of space and needed facilities, will ensure that the research which reflects their professional interests continues to benefit the academic programs to which it must be related.

Obiter Dictum

The writer is aware that serious debate is now underway in the SGW Faculty of Arts on the future of that Faculty and on the role of Arts education in general. There appears to be at least some agreement that Concordia cannot continue indefinitely with two sets of Arts Departments. The subject of merging the Loyola and Sir George Williams departments into a single Faculty of Arts or of Arts and Science is beyond the mandate of the writer. The subject of this report, however, begs the obvious question. It is, therefore, recommended:

REC. 18. That the Rector give early consideration to the question raised by the existence of duplicate Arts departments.

APPENDIX B

CONCORDIA UNIVERSITY

RESEARCH FUNDING

SCIENCE

1975-76

	SGW CAMPUS						LOYOLA CAMPUS					
	Biological Sciences	Chemistry	Geology	Maths.	Physics	Total	Biology	Chemistry	Geology	Maths.	Physics	Total
NRC	76,537	26,835	3,900	27,994	28,950	164,216	32,075	5,705	-	1,920	-	39,700
FCAC	8,500	-	-	5,000	-	13,500	-	-	-	-	-	-
Internal } FCAC	2,945	2,031	-	-	-	4,976	-	-	-	-	-	-
Internal } NRC	7,665	7,665	-	-	-	15,330	200	200	-	-	-	400
Internal } CASA	1,877	777	-	-	-	2,654	2,305	-	875	250	200	3,630
Other Federal Gov.	70,541	-	-	-	-	70,541	-	12,000	-	-	-	12,000
Industries	-	5,500	-	-	-	5,500	-	-	-	-	-	-
Miscellaneous	-	-	-	3,581	-	3,581	-	-	-	-	-	-
	$168,065	$42,808	$3,900	$36,575	$28,950	$280,298	$34,580	$17,905	$875	$2,170	$200	$55,730

APPENDIX B

APPENDIX C

STUDENT ENROLLMENT
1975-1976

	UNDERGRADUATE*				GRADUATE**				
SGW	Intro. & † Prep.	Upper Level	% of Total	TOTAL	Full-time 2d cycle	Full-time 3d cycle	Part-time 2d cycle	Part-time 3d cycle	FT & PT # Thesis and BMR
Bio Sciences	3,687	2,712	42.4	6,399	19	-	54	-	10
Mathematics	12,339	2,073	14.4	14,412	18	-	93	-	12
Chemistry	3,678	2,064	35.9	5,742	8	3	89	-	22
Physics	3,453#	577	14.3	4,030	6	-	14	3	11
Geology	339#	570	62.7	909	-	-	-	-	-
TOTAL	23,496	7,996		31,492	51	3	250	3	55
LOYOLA									
Biology	4,111	2,253	35.4	6,364					
Mathematics	6,634	828	11.1	7,462					
Chemistry	2,805	1,782	38.8	4,587					
Physics	2,000	255	11.3	2,255					
Geology	474	489	50.8	963					
Sub Total	16,024	5,607		21,631					
Bio-phys. Ed.	1,914	3,419	64.1	5,333					
Computer Sci.	4,083	1,350	24.8	5,433					
TOTAL	22,021	10,376		32,397					

* Student Course Credits (÷ 30 to get "FTE Students" approximately)
** Number of Students
† Includes MSP, ECP, and UI level courses, including upper year students in them.
\# Includes non-resident; BMR - Beyond Minimum Residence
\# SGW Science by category of students

	Physics	Geology	
MSP	1,441	66	
ECP	423	18	
1st year UG	740	111	
	2,604	195	
Tot. Reg.	3,453	339	
Difference	849	144	equals upper year student course credits

APPENDIX D

Programme Inventory 1975-76

SGW Faculty of Science

Biological Sciences
Honours in Biological Sciences
Specialization in Biological Sciences
Major in Biological Sciences
Major in Cell & Molecular Biology
Major in Botany
Major in Environmental Biology
Major in Zoology
Minor in Botany
Minor in Environmental Biology
Minor in Zoology
Minor in Biological Sciences
Minor in Cell & Molecular Biology
Minor in Life Sciences
Certificate in Scientific Measurement (Biology Option)
MSc Option A (Thesis)
MSc Option B (Teaching of Biology)

Chemistry
Honours in Chemistry
Specialization in Analytical Chemistry
Specialization in Biochemistry
Specialization in Chemistry
Major in Chemistry
Minor in Chemistry
Minor in Biochemistry
Certificate in Scientific Measurement (Chemistry Option)
MSc Option A (Thesis)
MSc Option B (Teaching of Chemistry)
Ph.D.

Geology
Major in Geology
Major in Geology with Minor in Ecology
Specialization in Geology
Minor in Geology

Mathematics
BSc or BA Honours in Applied Mathematics
BSc or BA Honours in Mathematics
BSc or BA Honours in Statistics
BSc or BA Specialization in Applied Mathematics
BSc or BA Specialization in Mathematics
BSc or BA Specialization in Statistics
BSc or BA Major in Applied Mathematics
BSc or BA Major in Mathematics
BSc or BA Major in Statistics
BSc or BA Minor in Mathematics
BSc or BA Minor in Statistics
BSc or BA Minor in Mathematics for students in Arts
Certificate in Mathematics for Teachers (Elementary School level)
Certificate in Mathematics for Teachers (Junior Secondary School level)
MA/MSc Option A (Thesis)
MA/MSc Option B (without Thesis)
MTM Option A (Thesis)
MTM Option B (without Thesis)
Diploma in the Teaching of Mathematics

Physics
Honours in Physics (Experimental option)
Honours in Physics (Theoretical option)
Specialization in Physics (Experimental Option)
Specialization in Physics (Theoretical option)
Specialization in Physics Marketing
Major in Physics
Minor in Physics
Certificate in Scientific Measurement (Physics option)
MSc Option A (Thesis)
MSc Option B (without Thesis)
Ph.D.

Loyola Faculty of Arts and Science

Biology
Honours in Biology
Specialization in Biology
Joint Major Component - Biology
Major-Minor in Biology
Minor in (Science) Biology
Minor in (Science) Zoology
Minor in (Science) Botany
Minor in (non-Science) Biology

Chemistry
Honours in Chemistry
Specialization in Chemistry
Specialization in Biochemistry and Medicinal Chemistry

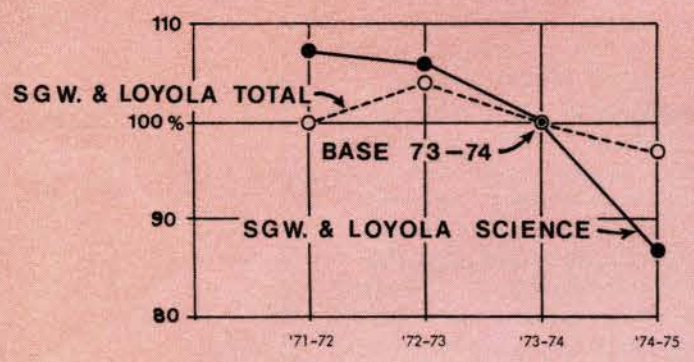
Geology
Honours in Geology
Specialization in Geology
Major in Geology
Minor in Geology

Mathematics
BSc or BA Honours in Mathematics
BSc or BA Specialization in Mathematics
BSc or BA Major in Statistics (Mathematics)
BSc or BA Major in Mathematics
BSc or BA Minor in Mathematics

Physics
Honours in Physics
Specialization in Physics
Major in Physics
Minor in Physics

APPENDIX E-1

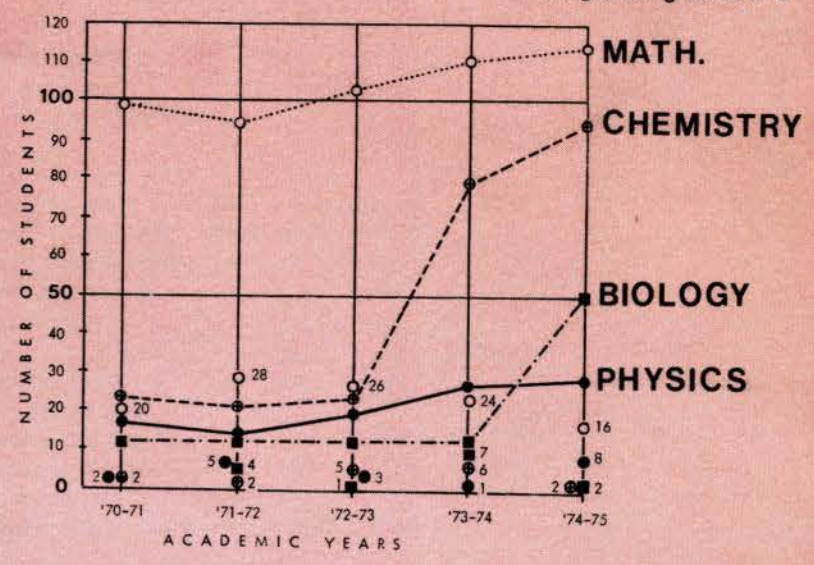
CONCORDIA UNIVERSITY
S.G.W. & LOYOLA COMBINED % CHANGE IN F.T.E. STUDENTS



Rector's Meeting - May 1975

APPENDIX E-2

MASTERS STUDENTS (S.G.W. CAMPUS) Enrollment degrees granted o 24



Rector's Meeting - May 1975

APPENDIX E-3

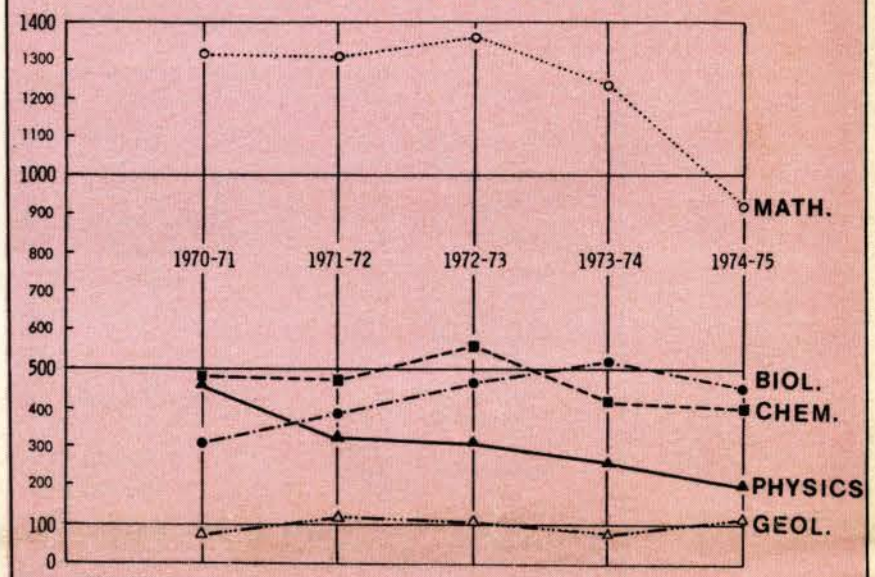
Doctoral Students

	CHEMISTRY		PHYSICS	
	Enrollment	Degrees Granted	Enrollment	Degrees Granted
1970-71	7	—	3	—
1971-72	8	—	3	—
1972-73	12	1	8	1
1973-74	9	4	11	—
1974-75	7	1	9	1

Rector's Meeting - May 1975.
Amended, May, 1976.

APPENDIX E-4

SCIENCE STUDENT ENROLLMENT
S.G.W. & LOYOLA COMBINED



NO DATA FOR LOYOLA EVENING STUDENTS IN 1970-71, 1971-72.

Rector's Meeting - May 1975.

APPENDIX F-5

CHARACTERISTICS OF COMPUTER SCIENCE DEPARTMENTS

	No. of FT Faculty	Average Years of Service	No. of Support Person.	Research Funds 1975-76 Dollars	Space (to nearest 100 sq. ft.)
SGW Campus	15	3.0	7	78,685	5,800
Loyola Campus	6	4.5	1	-	1,900

ENROLLMENT
1975 - 1976

	UNGERGRADUATE Student Course Credits				GRADUATE Number of Students	
	Intro. & Preparatory	Upper Level	% of Total	TOTAL	Full-Time	Part-Time
SGW Campus	4,758	1,996	29.6	6,754	20	57
Loyola Campus	4,083	1,350	24.8	5,433	-	-

concordia university