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** THE "BRAIN DRAIN" recently formed the subject of a seminar organized by the Commission of the European Communities at the University of Harvard in the United States (see "Research and Technology" No. 45). European scientists who have emigrated to the United States exchanged views on their experience in Europe and America. Annex 1 contains a short summary of the conclusions which emerged.

** EUROPEAN COOPERATION IN SCIENTIFIC RESEARCH continues to be the subject of discussions by the experts of the Fifteen (the Six Community countries, plus Austria, Britain, Denmark, Ireland, Norway, Portugal, Spain, Sweden and Switzerland) on the basis of the Aigrain Report (see in particular "Research and Technology" Nos. 39 and 40). A last series of meetings of the seven expert groups set up will be held on 4-12 June in order to enable them to complete their reports.

The discussions among the Fifteen are taking place in a very constructive atmosphere, and it appears that in the purely scientific field the experts have found that European cooperation can be realized in practice without major difficulties. The study facilities are numerous and in general effective, but the infrastructure for practical execution still needs to be set up.

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- ** On a more general plane, it would appear that many of the national efforts would gain from being transferred to the European level. As from 15 June the ball will be in the political half of the court, and it will be up to the ministers to take a decision, first at the level of the Six and later at that of the Fifteen.
- ** The expert group responsible for preparing a EUROPEAN PATENT system (see "Research and Technology" Nos. 16 and 39) recently held extensive consultations with interested non-governmental international organizations on certain fundamental questions relating to the "preliminary draft of an Agreement on a European Patent for the Common Market".
- ** All the countries of the European Community (except France) devote 40-50% OF THEIR PUBLIC RESEARCH AND DEVELOPMENT FUNDS TO THE GENERAL PROMOTION OF KNOWLEDGE (basic research and higher education). Even in countries without a big military budget, public spending is CONCENTRATED ON LARGE PROGRAMMES OF NON-COMMERCIAL ADVANCED TECHNOLOGY: Italy devotes 35% of its public R&D credits to nuclear and space programmes, Belgium 30% and Germany 23%. Only the Netherlands spend less, with a modest 14%. This appears from a report presented at the recent colloquium on "Research and development and competition within the European Communities" (see "Research and Technology" No. 49) by the head of the Studies Division in the Directorate-General for Research and Technology of the Commission of the European Communities. ANNEX 2 contains two tables showing the FUNCTIONAL BREAKDOWN OF PUBLIC EXPENDITURE ON RESEARCH AND DEVELOPMENT FOR THE COMMUNITY COUNTRIES IN 1969.
- ** Five new TECHNICAL NOTES, each summarizing a result obtained under Euratom research programmes, have been issued by the Commission of the European Communities. The purpose of these texts is to enable industrial firms to assess the prospects for industrial exploitation of the results described. The subjects of these new technical notes are as follows:

1. Electron beam welding unit (No. 13/C)
2. High-precision level gauge for hostile liquids (radioactive, corrosive liquids, etc.) (No. 48/C)
3. Liquid detector (No. 52/C)
4. Gripping device for nuclear reactor fuel element clusters (No. 328)
5. Hand-operated smear tester for use on horizontal surfaces (No. 870)

** Thirty-seven contributions from eleven different countries are already entered on the provisional list of papers to be read at the international conference on RADIATION PROTECTION PROBLEMS CONNECTED WITH THE EMISSION OF STRAY X-RAYS BY ELECTRONIC SYSTEMS which is being arranged at Toulouse, 3-6 November 1970, by the Commission of the European Communities and the Centre de Physique Atomique et Nucléaire, University of Toulouse (see Research and Technology No. 40).

Other contributions can still be accepted, provided that their titles and a summary of about 200 words are received before 15 June 1970 by the Commission of the European Communities, Directorate-General for Social Affairs, Health Physics Directorate, 29 rue Aldringer, Luxembourg.

Young European Brain-Drain Scientists in the US
Give Their Views on Europe

A conference on the "brain drain" for those who have experienced it was organized at Harvard University, USA, by the Commission of the European Communities: some twenty young physicists, chemists, mathematicians, physicians, engineers, etc., spent two days pooling their experiences as young European research workers who had emigrated voluntarily to the United States. Amongst them was a young Italian painter, living in New York, who testified that the brain drain is not confined to scientists and very often includes European artists, who find in the States a more favourable climate for the development of their talents.

The only statistics available, those established by the American immigration authorities, show that the number of foreign scientists and technicians entering the USA as immigrants was 21% lower in 1969 than in 1968 (10,300 as against 13,000): the higher number of scientists of Asiatic origin is largely offset by the great drop in the number of European scientists, which fell from 5,660 in 1968 to 2,850 in 1969.

It would be tempting to account for this drop by the advances made in the move towards European integration, but the plain truth is that it is due to the new American immigration regulations, which set very strict quotas for immigrants from the Western hemisphere.

The comparison drawn, unfortunately only too easily, by the young European immigrant scientists between the working conditions provided for them in the USA and those offered in Europe affords one of the most realistic pictures of the situation in which the European universities and research are battling for life: a mandarin system still firmly entrenched, with a still paralysing artificial hierarchy; heavy, cumbersome administration, distributing funds in terms of personal prestige rather than of merit; promotion and responsibilities awarded on the basis of seniority, not talent; hidebound structures, insufficiently mobile research workers; a labour market beset by barriers due to language differences and the failure on the part of the various European countries to recognize each others' degrees and diplomas; featherbedding, which only too often encourages mediocrity, etc., etc.

The list of complaints raised against Europe's scientific and university world by the young emigrants who left it is long. Having mostly gone to the USA to broaden their experience and because they were offered alluring working conditions, these young German, Italian, French, Belgian, British or Dutch scientists have stayed there because they quickly found themselves plunged into an atmosphere (some of them say "a culture") which was particularly stimulating to their initiative and advancement. They feel useful and appreciated, more than they did in Europe. And, more than they did in Europe, they feel that they are taking an active part in the great adventure science has embarked on, whose centre of gravity is unquestionably located in the United States. Moreover, in the United States more than in Europe, they are aware of what their European colleagues are doing, as though the Atlantic were less of an obstacle to scientific communication than are the frontiers raised between the European countries by national traditions and egoism.

And yet The great majority of the scientists who have emigrated to the USA admit that "you can't easily forget the charms of your native country, especially when your wife reminds you of it every day". Would they come back if they were offered the same working conditions in Europe? Yes, without any doubt.

But do they believe this is likely?

Breakdown by function of the Community countries' public
research and development expenditure in 1969

A study of Tables 1 and 2 showing the breakdown of government appropriations for R&D by function reveals two major features of the public R&D effort in the countries of the European Community:

- a) Except in France, where the proportion is no higher than 23%, the Community countries devote 40-50% (and even more in the Netherlands) of their public research and development funds to the general promotion of knowledge.

These credits:- go mainly to the universities

- are frequently the subject of decentralized distribution and allocation procedures (in some cases via apportionment funds),
- are determined, as to their expansion, by the rate of university expansion rather than by specific R&D motivations,
- are at present growing faster than the other categories of R&D appropriations

- b) Even in countries with no pronounced military effort, public appropriations are concentrated on large-scale "non-commercial" advanced technology programmes: Italy devotes 35% of her public R&D funds to nuclear and space programmes, Belgium 30% and Germany 23%. Only the Netherlands show a lower figure - 14%.

Table 1. Public R&D expenditure breakdown by function
as a percentage of the total - 1969

	Belgium	France	Germany	Italy	Netherlands	Community
1. Nuclear	23.1	17.0	16.5	30.2	9.9	17.6
2. Space	6.7	6.3	6.4	5.0	3.9	6.1
3. Defence	2.4	30.8	19.0	4.1	5.4	22.2
Total large-scale programmes (1-3)	32.2	54.1	41.9	39.3	19.2	45.9
4. Terrestrial environment	2.5	0.9	1.6	1.5	1.7	1.3
5. Health	3.5	2.1	2.0	2.8	4.2	2.3
6. Human environment	1.8	2.6	1.0	2.1	3.1	2.0
7. Agricultural productivity	5.6	4.6	2.0	3.6	9.4	4.0
8. Industrial productivity	10.7	10.1	5.1	5.0	6.7	7.8
9. Data processing, automation	0.1	1.4	2.1	0.7	0.4	1.4
10. Social and human sciences	0.8	1.1	1.7	1.2	3.7	1.4
Total (1-10)	57.2	76.9	57.4	56.2	48.4	66.1
11. General advancement of knowledge, excluding higher education	10.8	8.8	8.3	11.4	5.2	8.7
12. Ditto - higher education	32.0	14.1	34.3	32.4	46.4	25.1
Total, advancement of knowledge (11-12)	42.8	22.9	42.6	43.8	51.6	33.8
Not detailed	-	0.2	-	-	-	0.1
Total excluding defence (1-2, 4-12)	97.6	69.1	81.0	95.9	94.6	-
GRAND TOTAL (1-12)	100.0	100.0	100.0	100.0	100.0	100.0
in \$10 ⁹	0.11	2.01	1.44	0.33	0.27	4.16

Source: European Communities, Report by the statistical expert group of the Working Group on Scientific and Technical Policy (to be published)

Table 2. Public R&D expenditure breakdown by function
as % of the GDP - 1969

	Belgium	France	Germany	Italy	Netherlands	Community
1. Nuclear	1.1	2.4	1.6	1.2	1.0	1.7
2. Space	0.3	0.9	0.6	0.2	0.4	0.6
3. Defence	0.1	4.4	1.8	0.2	0.5	2.2
4. Terrestrial environment	0.1	0.1	0.15	0.06	0.2	0.1
5. Health	0.16	0.3	0.2	0.1	0.4	0.2
6. Human environment	0.1	0.4	0.1	0.1	0.3	0.2
7. Agricultural productivity	0.3	0.7	0.2	0.1	0.9	0.4
8. Industrial productivity	0.5	1.5	0.5	0.2	0.6	0.8
9. Data processing, automation	-	0.2	0.2	-	0.84	0.1
10. Social and human sciences	0.04	0.2	0.2	0.05	0.4	0.1
11. General advancement of knowledge, excluding higher education	0.5	1.3	0.8	0.5	0.5	0.9
12. Ditto - higher education	1.5	2.0	3.3	1.3	4.5	2.5
13. Total excluding defence	4.5	9.9	7.8	3.8	9.2	7.6
14. Grand total, in % of GDP	4.6	14.4	9.6	4.0	9.7	9.8
in \$ per capita	11.0	39.9	23.8	6.3	21.1	22.2

Source: European Communities