

THE EUROPEAN PUBLIC'S ATTITUDES TO  
SCIENTIFIC AND TECHNICAL DEVELOPMENT

OPINION POLL IN THE COUNTRIES OF THE EUROPEAN COMMUNITY

COMMISSION OF THE EUROPEAN COMMUNITIES  
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## QUESTIONNAIRE

This opinion poll was carried out at the request of the Directorate-General for Research, Science and Education of the Commission of the European Communities.

In October 1978, an identical questionnaire (a copy of which is attached) was put in all nine countries to representative samples of the population aged 15 and over (9 018 people), as part of the regular programme of opinion polls known as "Eurobarometer".

The survey was carried out by eight specialized institutes that are members of the European Omnibus Survey. The names of the institutes and particulars of the survey are given in the Annex.

This report written by Sylvie de la Beaumelle was finalized after submission to the Directorate-General for Research, Science and Education of the Commission of the European Communities.

The Community institutions accept no responsibility for this report.

## I N T R O D U C T I O N

The following survey was carried out at the request of the Directorate-General for Research, Science and Education of the Commission of the European Communities. It extends and amplifies an initial survey carried out in April-May 1977 and published in October 1977 under the title "Science and European public opinion".

The work carried out in 1977 clearly demonstrates that fundamentally there is no crisis of confidence in science amongst the people of Europe. In the nine Community countries, the general public has a high regard for the contribution which science makes to human progress and expects still more of it in the future; at the same time it has an acute awareness of the risks involved in scientific and technical research.

This study concentrates on the public's awareness of technological risks. It is in three parts:

The first part attempts to assess the extent to which individuals are personally worried by various fears for the future; it divides people into categories on the basis of the danger which they say is of most concern to them.

The second part is designed to register general attitudes to the advantages and drawbacks of science and the use of its discoveries. It tests the individual's agreement or disagreement with positive or negative statements on:

- the image of scientific development in the future: is it a major factor in improving our lives or is it accompanied by bigger and bigger risks for society?
- the distinction between a science that is good in itself and the way it is put into practice: is this questionable, done without sufficient consideration or can the drawbacks always be counteracted by new discoveries?
- the desire to halt automation;
- the image of the relationship between the general public and those who take decisions on research policy: are they for the benefit of people in general, should more account be taken of what the public thinks, should politicians show a greater degree of concern?
- how closely the person interviewed is in contact with scientific matters: is he aware that he does not know enough about science, is he in contact with science through his work?

The third part identifies public attitudes to eight research areas defined as far as possible in terms clear to the general public. Interviewees were first given an opportunity to say whether they found each of these fields worthwhile, of no particular interest or likely to carry unacceptable risks. Then statements were made of the risks that might be incurred if we did not dare or were not able to pursue this research the risk sometimes involved in playing safe; the public was able to say whether or not it believed in the issues at stake.

## II

The poll was carried out under the same conditions as the 1977 survey. Nine thousand people were interviewed, making up a representative sample of the adult population (15 years and over) in the nine countries of the European Community.

As found in the first poll in 1977 on the image of science, those interviewed showed a high degree of interest in the subject. Although the questions in this poll were more numerous and much more difficult than in the first, the number of "don't knows" was low. The interviewers said that those questioned often had to think for some time before replying but were quite willing to do so as they found the subject both interesting and serious.

GENERAL VIEW OF EUROPEAN ATTITUDES TO  
SCIENTIFIC AND TECHNICAL DEVELOPMENT

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1. When faced with the problems of scientific and technical development, the general public in Europe is both modest and anxious to be involved. People are aware that they know too little about science and are not sufficiently in contact with the facts concerning scientific and technical development, but at the same time they express a widespread desire to be more involved in research policy. This is a European attitude that is found with slight differences of emphasis in all the peoples of the Community Member States.
2. This desire is rooted in the ambivalent nature of the confidence Europeans have in science, as revealed by the first survey conducted in October 1977 and fully confirmed by this latest poll : the image of a science that will be as beneficial in the future as it has been in the past is widely accompanied by anxiety about the growing risks that it may involve for society. This survey bears new witness to public anxiety as demonstrated in the general image of the way in which science is put into practice and of the relationship between the public and those who make decisions.

Not only does the European general public endorse the distinction between a science that is good in itself and the way it is put into practice, often questionable and problematic, but it is also widely convinced that some discoveries are put to use too quickly before a sufficient study has been made of their possible consequences. What is more, its confidence in the "self-correcting" power of a science that is always capable of finding new inventions to counteract the harmful consequences of its applications appears fairly limited and also varies considerably from one country to another.

Although on the whole Europeans tend to believe that in their own country science is put to use for the benefit of people in general, this again is a very limited conviction that is not equally shared by all peoples, with Italians contrasting sharply with the others on this point.

This comparative reluctance to acknowledge that science is always applied for the general benefit is accompanied by a widespread feeling in all countries that politicians do not give serious enough consideration to the choices that have to be made in this field.

It is, however, the mention of stopping automation and going back to nature that appears most revealing of the ambivalent nature of the attitudes to scientific and technical development. This is the sensitive point that shows a clear separation between two almost equivalent trends : a small majority (44%) who think "it would be a good thing if the construction of so many machines could be stopped and we could go back to nature" and a very strong minority (39 %) who reject this nostalgic view. There is also a separation between countries : on the one side Italy, Belgium, France and Luxembourg tend clearly towards nostalgia and on the other Denmark, Ireland and the United Kingdom reject the idea of going back, while the Dutch and Germans are fairly equally divided. It is with this desire to halt automation that the desire to be more closely involved in research policy is most clearly correlated. The most consistent attitudes are organized around this dual pole : the assertive attitudes of those wanting to be more closely involved in scientific and technical development, in particular because they are worried about the consequences of automation, who are in the clear majority in Italy, France and Belgium; the non-assertive attitudes of the others whose acceptance of automation tends to supersede the desire that more account be taken of their opinions, especially in Denmark and Ireland. It is striking that this assertive attitude is not always synonymous with pessimism about scientific development, especially as regards the risks for society, its use for the general benefit or its "self-correcting" power. On the contrary, the reader will see from the detailed analyses that some people can be both assertive and optimistic while others may be neither assertive nor optimistic, especially in the least educated minority.

3. This uneasy confidence in scientific and technical development, accompanied by a tendency to demand more involvement, is fostered by very real and widely shared fears about the future of the world.

On the four subjects of the despoiling of nature, the increase in unemployment as a consequence of automation of jobs, the more and more

artificial things coming into the life we lead and the risk that the use of new medical or pharmaceutical discoveries may severely affect the human personality, 53 % to 80 % of the replies expressed personal concern.

The two most widely shared worries - pollution and unemployment - again reveal the general public's awareness of the problem of automation : in terms of intensity, the increase in unemployment as a consequence of the automation of jobs rivals pollution as the main subject of concern and there is a split between the countries where the fear of unemployment predominates (Belgium, France, Ireland and Luxembourg) and those which are more worried about the increasing despoiling of nature, i.e. the four Anglo-Saxon countries, Germany, Denmark, the United Kingdom and the Netherlands. Italy is in a category of its own, equally worried by pollution, unemployment and the artificial things coming into our life.

Although the expression of these fears varies little from one socio-demographic category to another, it appears to be clearly correlated with the desire to stop automation and go back to nature.

4. However, one of the main lessons to be learnt from this survey is that the anxiety shown by Europeans about some consequences of scientific and technical development is neither undifferentiated nor blind to reasoning, especially to consideration of the risks that may sometimes be run by playing safe.

The replies obtained to the set of questions designed to discover whether the general public supports or opposes eight research areas and whether it believes the statements made about the issues at state and thinks these issues serious are absolutely clear : to support a research project, Europeans need to believe that the issue at state is real and that the matter is serious. Consequently they are widely in favour of research into organ transplants, which may save the handicapped, and of huge expenditure to find new sources of energy such as solar energy, when this is presented as a possible way of limiting the use of nuclear energy. It is also for this reason that they are firmly in support of research into synthetic materials, presented as an answer to the



probability that raw materials will be used up in the future.

Correlatively, it is because European views are very equally divided both on the urgent need to improve the qualities of living species and the necessity to continue genetic research in order to do so that people are in two minds whether to support or reject the relevant statements. Similarly, it is because they are not convinced that it is vital to cut out wasted time on red tape nor essential for that purpose to centralize information about individual people by computer that they tend to see nothing but unacceptable risks in this project. Finally, although they view the risk of not being able to fight effectively against hunger in the world as very serious, they are not convinced that synthetic food is the only way of overcoming the problem and consequently the majority believe that research in this area is too risky.

5. There are, however, revealing exceptions to this apparent logic which indicate the need for a closer investigation of the importance of the subjective perception of technological risk.

The most striking example is the European reaction to the development of nuclear power stations. The widespread belief that there is a real and serious risk of having to restrict electricity consumption if nuclear power is not developed does not mean that support for the project is equally widespread, far from it. Its supporters ( 44 % ) only just outnumber its opponents ( 36 % ) and the fear of nuclear power appears to be at least partly blind to the logic that the issue at stake is both real and serious.

In contrast, it is probably because the image of observation satellites is still very abstract and not associated with any idea of risk that this project is supported by the majority although no great importance is attached to the issue against which it is balanced (cheap detection of new raw materials).

6. Finally, support for the project and agreement with the relevant statement are expressed most readily in the context of research areas where the risks, rightly or wrongly, appear the most remote from the individual : there is little obvious risk for me as an individual in supporting research into organ transplants, new sources energy synthetic materials or even the increase in the number of observation satellites.

In contrast, the projects evoking the strongest opposition or rejection are, from various aspects, those which conjure up the most direct risks to the individual : the possibility that his natural biochemical equilibrium will be harmed by eating synthetic food, infringement of his freedom and privacy by a single computerized information file, harm to his biological identity and that of his offspring by genetic experiments, danger to his life in the proximity of a nuclear power station.

The reaction of Europeans to those research areas which have a more direct impact on individuals varies for more by nationality than by any other criterion. In October 1978, there were differences between the countries tending to favour the development of nuclear power stations (Britain, Italy and Ireland), those tending to oppose it (Netherlands, Germany and Belgium) and those in which opinions were very equally divided (France, Denmark and Luxembourg), but there were also contrasts from one country to another in the attitudes to genetic research and centralization of information by computer. This shows the strong impact on attitudes to precise research projects of the differences in situation, culture or even information policy that exist in the member countries of the European Community.

Obviously this variability in European reactions as soon as precise aspects of scientific and technical development are mentioned complicates the job of those who are trying to develop a Community policy on information for the general public on this subject. However, they should also be encouraged by the many reasonable aspects of European public opinion that appear in this survey : widespread in the potential benefits of science, although not blind to the increasing risks that it may carry with it and the difficulties of putting it into practice; various fears for the future of the world, a temptation to reject automation and to dream of going back to nature, but also reactions that differ according to the type of research and a realization of the risk that may

sometimes be run in playing safe; desire to be more closely involved in the thinking on research policy but also an awareness of not knowing enough about science.

## CHAPTER I

REMOTENESS FROM SCIENCE AND NEED TO PARTICIPATEI. REMOTENESS FROM SCIENCE

The survey measured the feeling of remoteness from science by making two statements and asking the person interviewed to indicate whether or not he agreed with them by giving a mark between 1 (complete disagreement) and 7 (complete agreement).

- 1) The first statement was designed to measure the interviewee's awareness of how remote he is from science at cognitive level through the image he has of his level of education and ability to talk about scientific matters:

*"I find it difficult to talk about science because I don't know enough about it"* (item 142).

- As the replies averaged a mark of 5.3, it is obvious that the general public in Europe is well aware that it does not know enough to talk easily about scientific matters. More precisely, two thirds of European agree at least partially with the proposed statement (giving a mark of 5 or more) and more than two fifths agree completely (43% gave the mark of 7). Only about one fifth (19%) consider that this difficulty or lack of knowledge does not apply to them.

- This modesty is widespread in all countries with slight variations in emphasis: the two most modest countries are Italy (average mark 5.8) and Denmark (5.6); the Germans are the least modest with an average mark of 4.9 and only 26% who agree completely with the statement compared with 42% to 54% in the other countries (see Graph 2).

- This feeling varies mainly in accordance with the level of education (see Graph 5): it is shared by three quarters of those who finished their fulltime education before the age of 16 (average mark 5.8) but only 45% of those who continued after that age (average mark 4.1).

Although in all age groups a majority exhibit this modesty, it becomes more prevalent with age: the average mark varies from 4.9 in the 21-34 year group and 5.1 in the 15-20 group to 5.7 in the over 65s.

- 2) The second statement was designed to measure the degree of contact which Europeans have with science and technology through their work:

*"I am in contact, through my work, with some kinds of scientific and technical developments"* (item 143).

On the whole, the average mark (3.2) shows that the public is also well aware of a lack of contact through work with the scientific and technical world; 56% say they have little or no contact (mark 5, 6 or 7), while 41% say they have absolutely no contact (mark 7).

• However, the minority of people stating that they have some contact through their work is very much greater (31%) than the minority claiming to have sufficient knowledge to talk about science (19%). What is more, these are the replies from all those interviewed, whether working or not, the proportion being 50/50. Taking only the replies from those who work, it is found that a large proportion consider that they are in contact with science through their work to some degree: this applies to two thirds of executives and professional people, a majority of farmers, about 40% of employers and white-collar workers and a good third of manual workers.

Contact through work with some kind of scientific and technical developments	TOTAL %	Prof. execut. %	Employers %	White-collar %	Manual %	Farmers %	Not employed %
Little or no contact (1, 2, 3).....	56	30	42	45	54	36	67
Some contact (5 or 6)	17}	29}	25}	24}	16}	28}	11}
Contact (7) ..	14}31	34}63	17}42	17}41	19}35	20}48	9}20

However, although it appears that many more Europeans are in contact with science and technology through their work than are able to talk about it on the basis of the education they have received, the two dimensions are clearly correlated: the more aware someone is of the inadequacy of his scientific knowledge, the less he is in contact with science and technology through his work.

After the occupation of the person interviewed, the replies appeared to be most closely correlated with the level of education, to an even greater extent than for the preceding item: the majority of those who continued full-time education up to the age of 20 or more state that they are to some degree in contact with scientific and technical developments through their work (Graph 5).

• The analysis by country of the replies from all those interviewed show that the trend is constant whatever the country, although fluctuations are more marked than for the previous item: Ireland (2.8) and Germany (2.9) are the countries that are the most definite about the lack of contact with scientific work while Denmark (3.7) and France (3.4) are much less so (see Table 1 and Graph 3).

## II. DESIRE TO PARTICIPATE IN RESEARCH POLICY

• With the same marking system on a 7-point agreement-disagreement scale, the desire of Europeans to participate in research policy was assessed by putting the following statement to them:

*"To direct scientific and technological research in the right way it would be better to take more account of what the public thinks, in other words people like you and me" (item 139)*

Expressed in this way, the desire of the European public to participate or to be associated in research policy appears to be as widespread (average mark 5.1) as their feeling of remoteness (cognitive or through their work) from science: almost two thirds tend to endorse the proposed statement, one

third fully approving it, while one fifth express more or less marked disagreement (see Table 1 and Graph 1).

• At European level this desire appears completely constant in all age groups - it will be shown later that there are variations in different countries. However, although this desire was expressed by a majority of all the groups analysed, it appears to be closely correlated with the level of education, socio-occupational category and political views (1).

- The higher the level of education, the less desire there was to participate: only 51% of the more educated compared with 65% of the less educated.
- Correlatively, executives and professional people showed less tendency to express this desire (49%) than the other occupational categories, while the highest percentage was found amongst manual workers (67%).
- Those who expressed most categorically the desire for their views to be taken into account in research policy were those least to the right (average mark 5.1); this contrasted with those who categorically rejected this statement, who were the farthest to the right (average mark 6.1).

	Replies to item 139		
	Average mark	Disagreement 1, 2, 3	Agreement 5, 6, 7
	%	%	%
- COMMUNITY TOTAL	5.1	20	62
- <u>Finished full-time education:</u>			
Under 16	5.3	17	65
Between 16 and 19	5.1	20	62
20 and over	4.5	30	51
- <u>Occupation of head of household:</u>			
Executives, professional men	4.4	33	49
Employers in business and industry	5.1	19	62
White-collar workers	5.0	21	61
Manual workers	5.4	16	67
Farmers	5.2	19	60
Not employed	5.1	18	62
	Of those who gave the following mark for item 139		
	COMMUNITY TOTAL	Disagreement 1   2, 3	4   Agreement 5 or 6   7
Average position on the left-right scale	5.4	6.1   5.6	5.6   5.3 5.1

(1) To measure uniformly (although approximatively) the political views of the inhabitants of the different Community countries, each person interviewed is requested to identify his views on a 10-point left-right scale (see item 168), point 10 indicating the extreme right and point 1 the extreme left.

• An analysis by country shows that this desire to participate in a research policy is expressed by a clear majority in all countries (Table I and Graph 1), with France, followed by the Netherlands and the United Kingdom, at the head of the table and Germany at the foot.

	Disagreement 1, 2, 3	Agreement 5, 6, 7
FRANCE	16	68
NETHERLANDS	19	67
UNITED KINGDOM	21	67
LUXEMBOURG	15	64
ITALY	23	62
BELGIUM	17	60
DANEMARK	16	60
GERMANY	20	51

Curiously enough, an analysis by age reveals very substantial variations from one country to another :

- In Denmark, the Netherlands and Ireland, the desire to participate tends to decrease with age.
- On the other hand, in Germany it appears to increase with age.
- In France, Belgium and the United Kingdom, it appears most widespread in the youngest (15 - 20 and 21 - 34 years) and oldest (50 - 64 or more generally above 50) age groups.

TABLE 1  
 REMOTENESS FROM SCIENCE  
 AND NEED TO PARTICIPATE IN RESEARCH POLICY

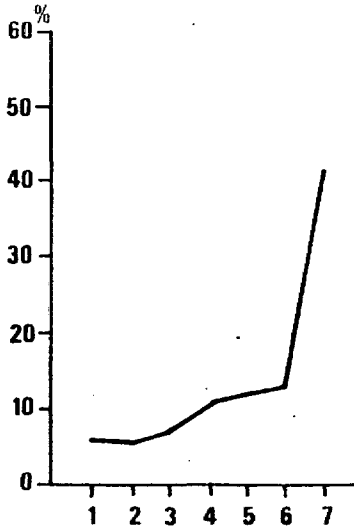
	EC	B	DK	D	F	IRL	I	L	N	UK
COGNITIVE REMOTENESS FROM SCIENCE ITEM 142										
I find it difficult to talk about science because I don't know enough about it										
AVERAGE MARK	5.3	5.3	5.6	4.9	5.4	5.6	5.8	4.5	5.2	5.2
% disagreement (1, 2 or 3)	19	18	16	22	18	16	12	31	22	21
% agreement (5, 6 or 7)	67	62	70	56	69	71	78	49	67	66
CONTACT WITH SCIENCE THROUGH WORK ITEM 143										
I am in contact, in my work, with some kinds of scientific and technical developments										
AVERAGE MARK	3.2	3.1	3.7	2.9	3.4	2.8	3.3	4.4	3.3	3.1
% disagreement (1, 2 or 3)	56	54	46	59	51	62	56	33	56	60
% agreement (5, 6 or 7)	31	27	40	22	37	26	34	50	34	31
DESIRE TO PARTICIPATE ITEM 139										
To direct scientific and technological research in the right way, it would be better to take more account of what the public thinks, in other words, people like you and me										
AVERAGE MARK	5.1	5.3	5.3	4.8	5.3	5.1	5.0	5.2	5.3	5.3
% disagreement (1, 2 or 3)	20	17	16	20	16	21	23	15	19	21
% agreement (5, 6 or 7)	62	60	60	51	68	59	62	64	67	67



GRAPH 1

REMOTENESS FROM SCIENCE  
AND NEED TO PARTICIPATE

Whole Community



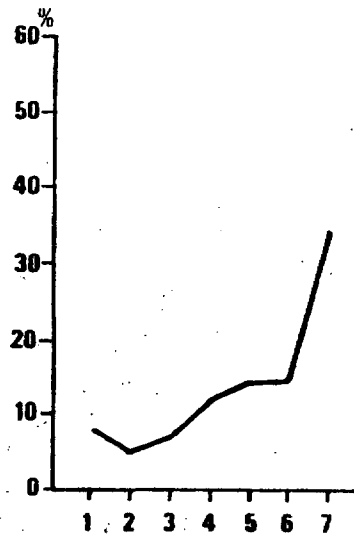
ITEM 142

I find it difficult to talk about science because I don't know enough about it



ITEM 143

I am in contact, through my work, with some kinds of scientific and technical developments

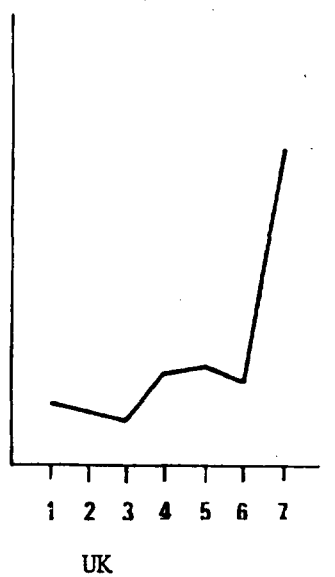
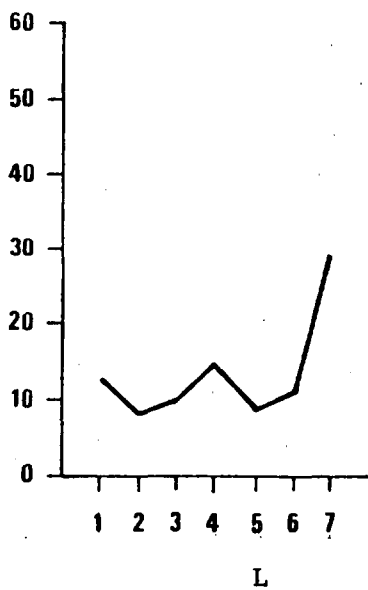
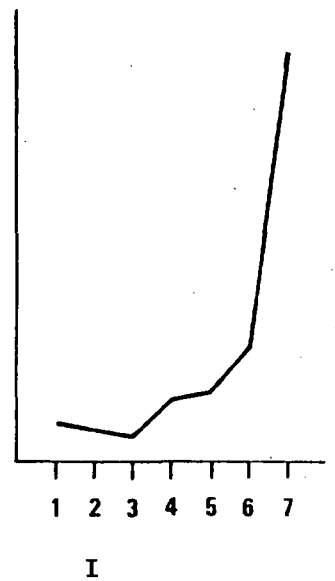
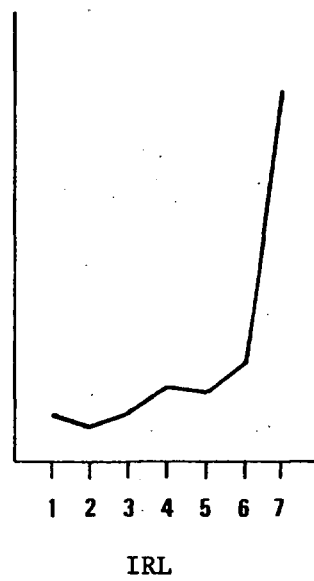
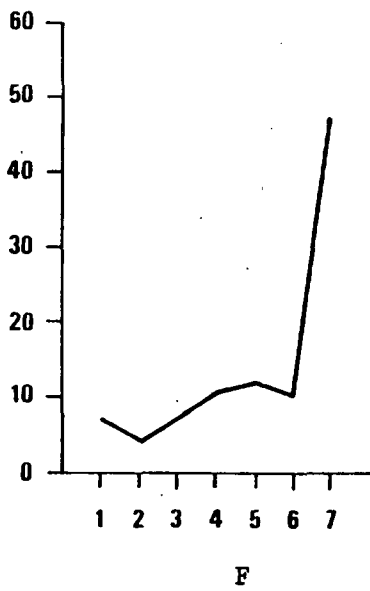
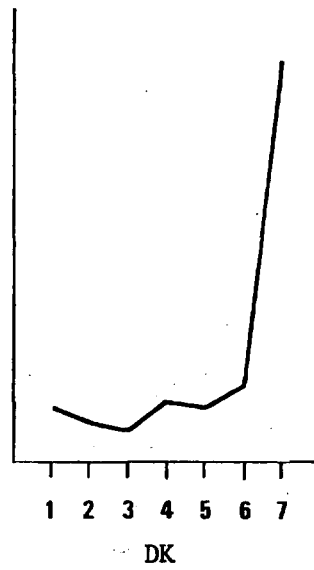
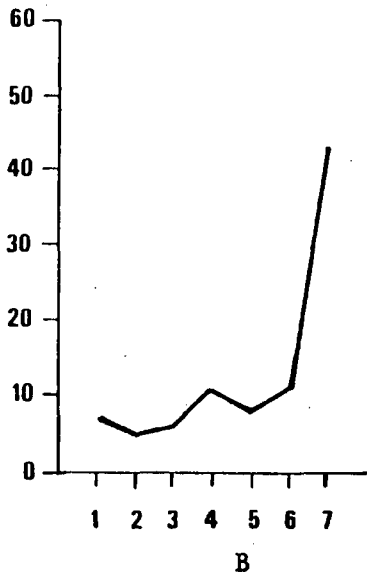


ITEM 139

To direct scientific and technological research in the right way, it would be better to take more account of what the public thinks, in other words, people like you and me

GRAPH 2

COGNITIVE REMOTENESS FROM SILENCE

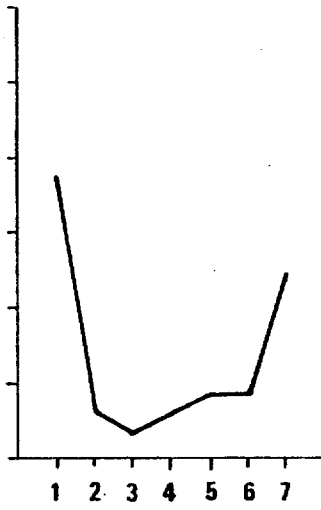


GRAPH 3

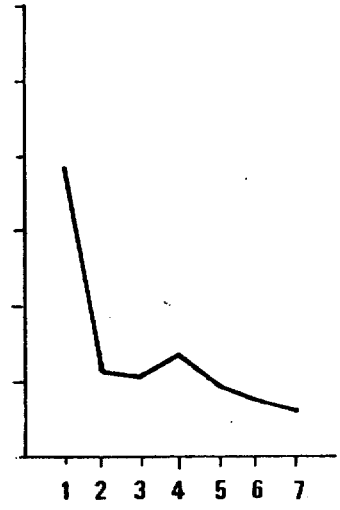
CONTACT WITH SCIENCE THROUGH WORK



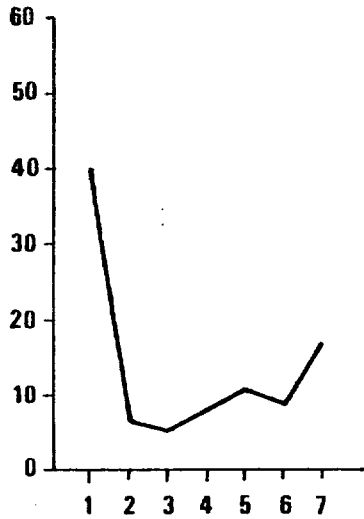
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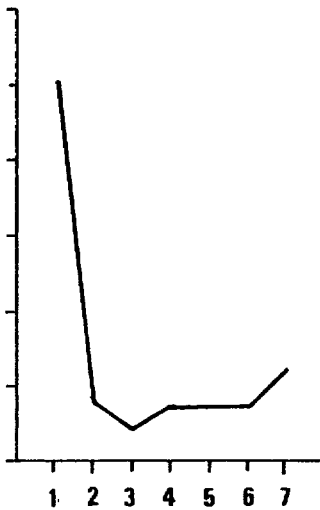
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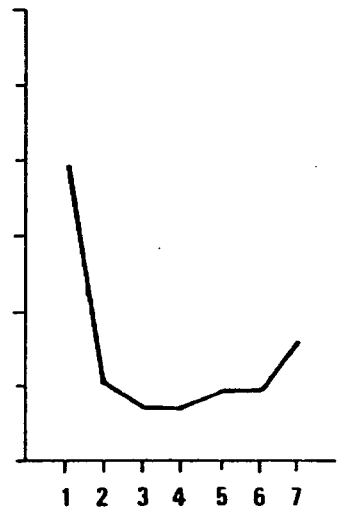
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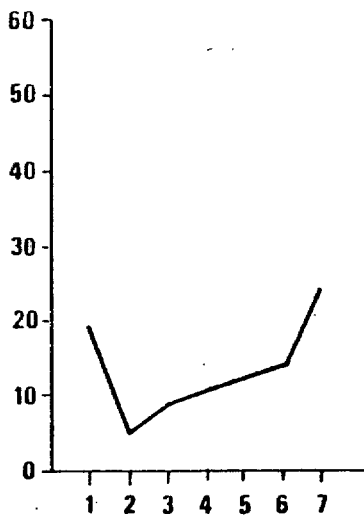
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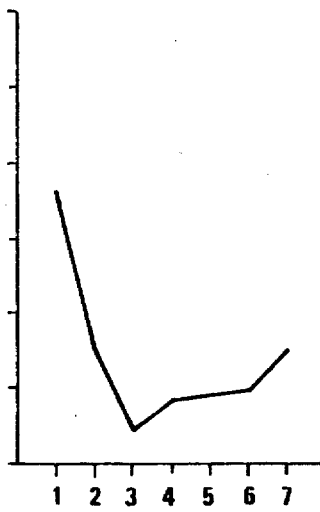
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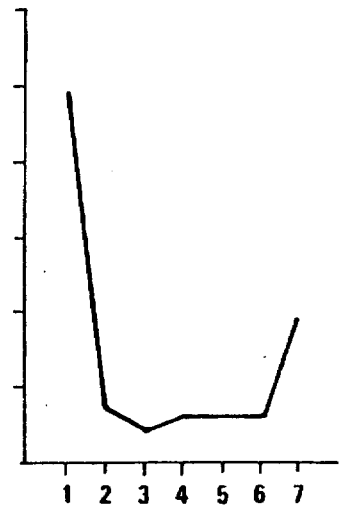
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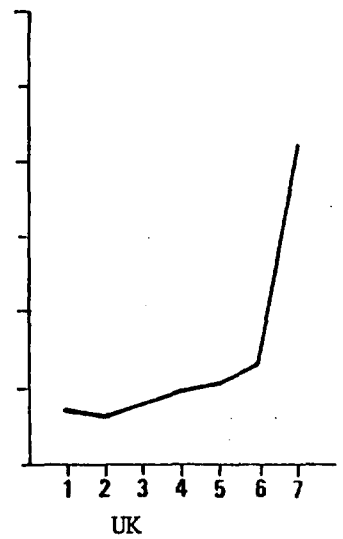
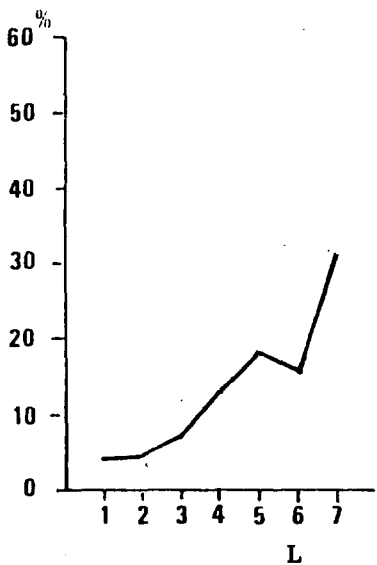
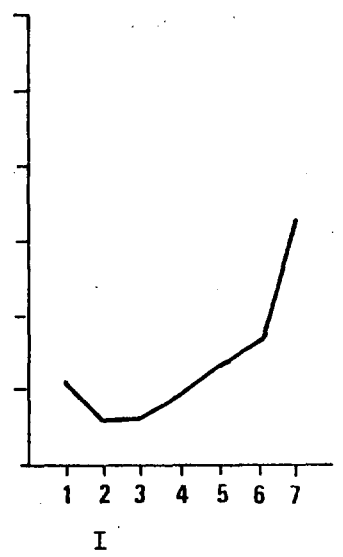
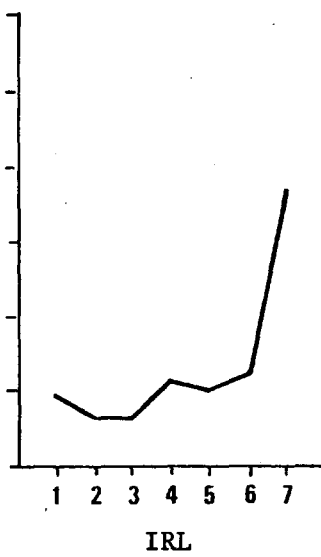
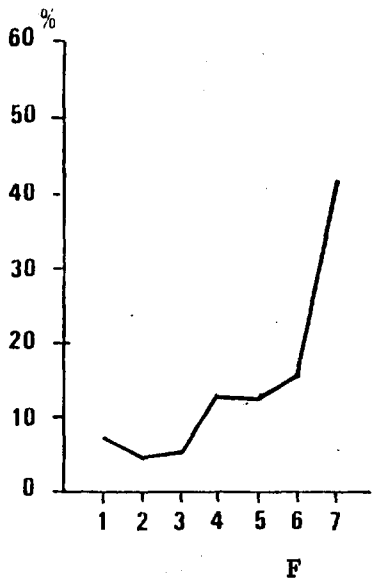
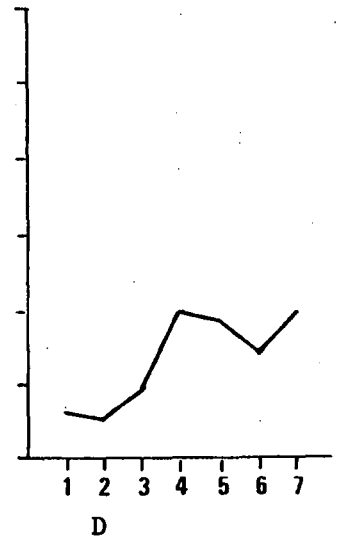
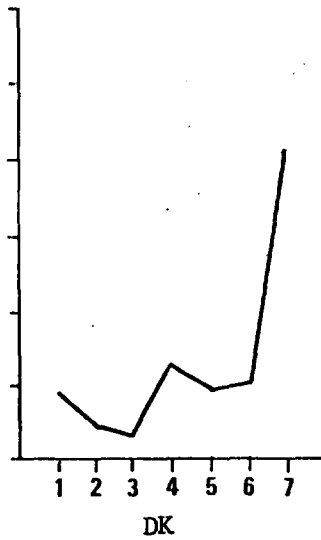
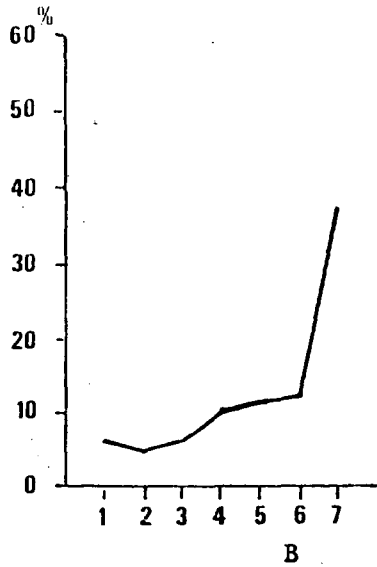
N



UK

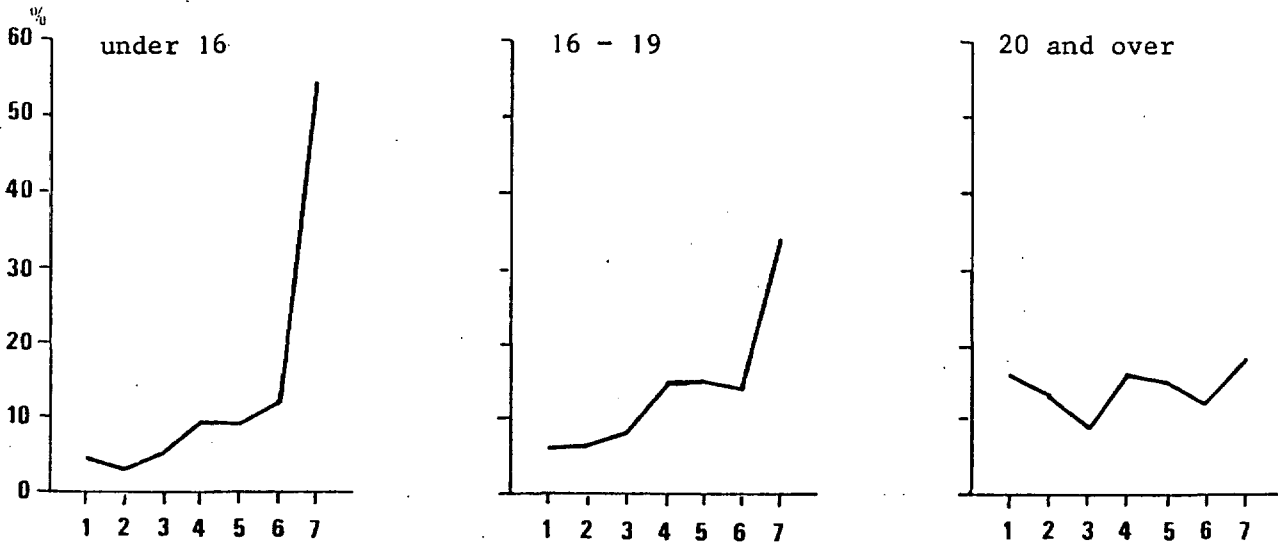
GRAPH 4

ITEM 139 : TO DIRECT SCIENTIFIC AND TECHNOLOGICAL RESEARCH IN THE RIGHT WAY IT WOULD BE BETTER TO TAKE MORE ACCOUNT OF WHAT THE PUBLIC THINKS, IN OTHER WORDS PEOPLE LIKE YOU AND ME

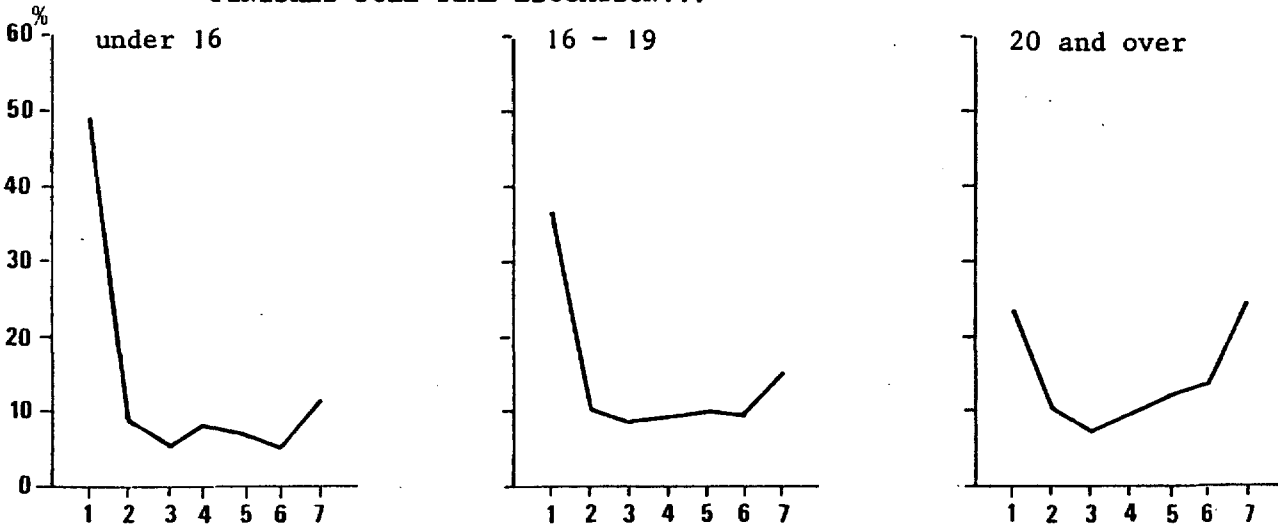


GRAPH 5

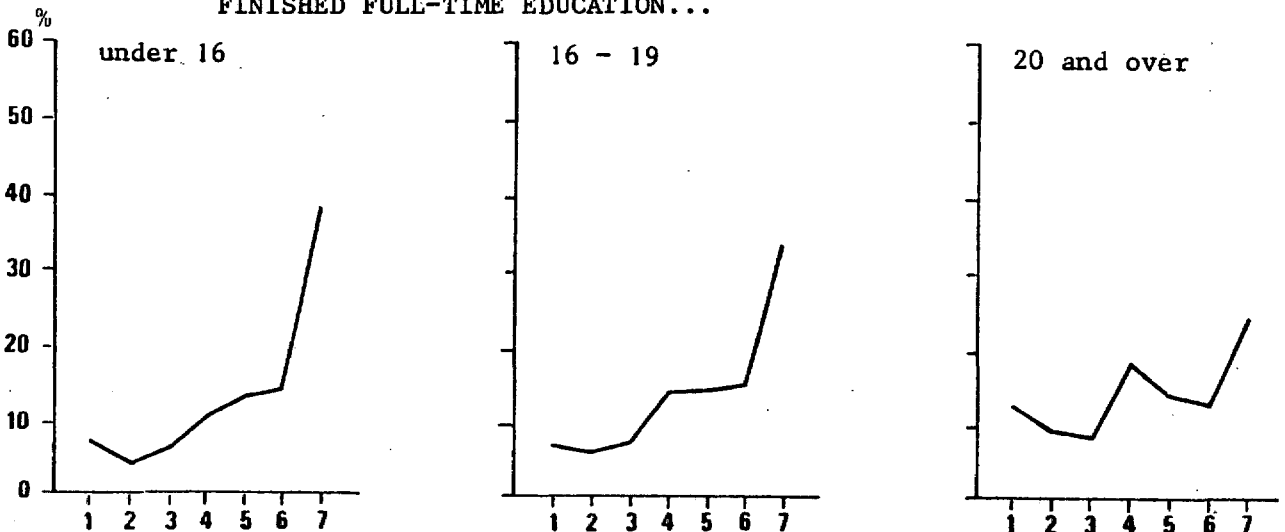
ITEM 142: I FIND IT DIFFICULT TO TALK ABOUT SCIENCE BECAUSE I DON'T KNOW ENOUGH ABOUT IT FINISHED FULL-TIME EDUCATION...



ITEM 143: I AM IN CONTACT, THROUGH MY WORK, WITH SOME KINDS OF SCIENTIFIC AND TECHNICAL DEVELOPMENTS FINISHED FULL-TIME EDUCATION...



ITEM 139: TO DIRECT SCIENTIFIC AND TECHNOLOGICAL RESEARCH IN THE RIGHT WAY, IT WOULD BE BETTER TO TAKE MORE ACCOUNT OF WHAT THE PUBLIC THINKS, IN OTHER WORDS, PEOPLE LIKE YOU AND ME FINISHED FULL-TIME EDUCATION...



## CHAPTER II

GENERAL ATTITUDES TO SCIENTIFIC AND TECHNICAL DEVELOPMENT

This survey on the awareness of technological risks included an assessment of the general attitude to the advantages and drawbacks of science and the application of its discoveries.

This part also took the form of a test on a seven-point scale of agreement or disagreement with nine positive or negative statements on the following subjects:

- the image of scientific development in the future: is it a major factor in improving our lives or is it accompanied by bigger and bigger risks for society?
- the distinction between scientific knowledge that is good in itself and the way it is put into practice: is this question able, done without sufficient consideration or can the drawbacks always be counteracted by new discoveries?
- the image of the relationship between the general public and those who make decisions on research policy: are they for the benefit of people in general, should more account be taken of what the public thinks, and should politicians shown greater degree of concern?
- the desire to halt automation.

#### I. THE IMAGE OF SCIENTIFIC DEVELOPMENT IN THE FUTURE

• The two statements put ot interviewees to assess their degree of confidence or concern about the future prospects of scientific and technical development were as follows:

*"Science will continue in the future as it has done in the past to be one of the most important factors in improving our lives"* (item 133)

*"Sometimes scientific and technical development is accompanied by bigger and bigger risks for society that will be difficult to overcome"* (item 136)

The replies obtained (see Table 2 and Graph 6) fully confirm the findings of the first survey carried out in 1977 (1): great confidence on the part of the European general public in science, about as widely accompanied by concern as it is generally affirmed. It was found that:

- Three quarters of Europeans tend to approve the first statement on the basically beneficial role of science while hardly more than one tenth (12%) express disagreement. With an average mark of 5.7, it is the most widely endorsed of all the nine statements on science on which the public was asked for its opinion.
- At the same time, however, two thirds of Europeans tend to endorse the second statement on the growing risks that are increasingly difficult to overcome in scientific development, against only 15 % that tend to disagree.

(1) See "Science and European public opinion", Commission of the European Communities, Brussels, Report October 1977 (interviews conducted in April-May 1977).

With an average mark of 5.4, this is the third most widely supported of the nine statements.

• A systematic analysis of replies from the whole of Europe reveals above all that the opinion on these two favourable and unfavourable aspects of the image of what scientific development can bring is extremely constant between men and women, the young and less young and the different socio-occupational groups. The only distinction worthy of mention is of a political nature: those who are the most doubtful about the beneficial nature of science and the most categorical about the growing risks involved are appreciably further to the left than the others.

Average position on left-right  
scale

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Science will continue in the future as it has done in the past to be one of the most important factors in improving our lives

Of those who gave the mark: 1	5.1
2 or 3	5.3
4	5.2
5 or 6	5.4
7	5.4

Sometimes scientific and technical development is accompanied by bigger and bigger risks for society that will be difficult to overcome

Of those who gave marks : 1	5.7
2 or 3	5.6
4	5.6
5 or 6	5.5
7	5.1

• The analysis by country also reveals only very slight differences in this dual consensus (see table 2 and graph 7).

- The Belgians, Danes and especially the Dutch are considerably less emphatic about the beneficial role of science than are the other Europeans;
- the Italians, French and Danes are much more emphatic about the growing risks and increasing difficulty of overcoming them than are the others.

## II. THE DISTICTION BETWEEN SCIENCE AND ITS APPLICATIONS

• Three statements were used to encourage those interviewed to express their views on this subject:

- One set forth the very principle of this distinction:  
*"Scientific knowledge is good in itself; it is only the way it is put into practice which often creates problems"* (item 135).
- Another suggested criticism of the lack of caution or excessive speed in putting some scientific discoveries into practice  
*"Nowadays some scientific discoveries are put into practice before a sufficient study has been made of the future consequences"* (item 134).

- 1) The ambivalent attitude of the general public to the future prospects of both benefits and increasing risks held out by scientific development is probably due to the fact that it is able to distinguish between science that is good in principle and the problems that often arise in the use of the discoveries made. A large majority of over two thirds expresses support for this statement which comes in second place (with an average mark of 5.5) when the nine statements tested. The minority not in agreement with this principle (marks 1, 2 or 3) represents little more than one tenth (13%) (Table 2, Graph 6).

• There is an obvious European consensus on this distinction, whatever the sex, age, level of education or socio-occupational category of the person interviewed. The only slight distinction is that executives and professional people, together with those who continued full-time education up to and after the age of 20 are rather more emphatic than the others.

• The same finding is obtained from an analysis by nationality. Support is as high as 62 to 79%, with the Danes, Irish and Italians in the lead (Table 2 and Graph 8).

- 2) With the other two conflicting statements on the lack of caution in putting certain discoveries into practice too quickly or the confidence in the ability of research to invent remedies to the ills of technological development, the criticisms of the application of scientific discoveries made by Europeans and the limits to their optimism become clear (see Table 2, Graph 8):

- On the one hand more than half (57%) are convinced that some discoveries are put into practice before a sufficient study has been made of the future consequences while less than a quarter deny this (23%).
- Although this criticism appears to be offset by the confidence of the majority in the possibility of always finding new inventions to counteract the harmful consequences of technological developments, this confidence is expressed only by less than half those interviewed (48%) while more than one quarter (28%) disagree with the statement.

• Once again the majority opinions remain the same whatever the socio-demographic categories. However the critical minorities are stronger in the most educated group (full-time education continued up to the age of 20 or over). And the correlation between criticisms or reservations regarding science and slightly leftist political views is confirmed.

• The criticism that some applications of science are premature is expressed by a fairly large majority in all countries, the United Kingdom having an appreciable lead and the Netherlands trailing behind. However, there are much greater variations in the confidence expressed in the "self-correcting" power of scientific and technical development (Table 2 and Graph 8). The findings show that:

- four countries are considerably more optimistic than the mean: the Italians (4.9), the Luxembourgers (5.0), the Germans (4.9) and the Danes (4.9);
- three others are slightly less optimistic than the mean: the French (4.4), the Dutch (4.3) and the Irish (4.2);
- the British are the only people among whom belief in the "self-correcting" power of technical progress is no more widespread (39%) than disbelief (39%) (average mark 4.1).



### III. THE RELATIONSHIP BETWEEN THE GENERAL PUBLIC AND THOSE WHO MAKE DECISIONS ON RESEARCH POLICY

Apart from the widely expressed desire of the general public to have more account taken of their views in decisions on research policy, the relationship between the general public and those responsible for making these decisions was studied from two different angles by means of two projective statements:

- The first concerns views on whether or not political decision-makers give serious enough consideration to the problems of directing research along the right lines :

*"Members of Parliament and other people who take political decisions do not take serious enough consideration of the choices that there are to be made in deciding about scientific research and applications" (Item 141).*

- The second concerns the public's opinion as to whether research is in line with the general interest:

*"In this country sufficient care is taken to ensure that scientific discoveries are put to use for the benefit of people in general" (Item 140).*

- 1) The European public, already anxious to have a greater say in decisions on research, has a marked tendency to consider that politicians do not give serious enough consideration to the choices to be made in this field: the average mark obtained by this critical statement reflects agreement (5.1) and more than half the Europeans questioned (57%) tended to agree compared with barely one twentieth who disagreed (18%) (see Table 2a and Graph 9).

People are also less interested in this point: of the nine statements used, it was the only one to which more than one tenth (13%) did not reply.

- This feeling that those taking political decisions are relatively uninterested in the lines of scientific development appears to be very uniform throughout all socio-demographic groups. Although the most critical in this respect (those who gave the mark 7) are slightly farther to the left than the others (their average position is 5.1 against 5.5 to 5.6 in the other categories), the difference is very slight.

- An analysis by country shows more marked differences of emphasis: the Italians (5.5) and the British (5.2) are the most critical of the lack of interest shown by their politicians in research policy while the Germans (4.6) and the Dutch (4.6) are the least critical (Table 2a and Graph 9).

- 2) On the whole, the European general public appears to be fairly convinced that, overall scientific discoveries are being put to use for the benefit of people in general (Item 140), although only a small majority (44%) hold this opinion as compared with a large minority of 31% who disagree.

- However, this small majority changes when a distinction is drawn by level of education:

- those most confident that science policy benefits people in general are the least educated;
- on the other hand, the most highly educated are the most critical: they tend to deny that scientific discoveries are put to use for the benefit

of people in general.

Item 140 - <i>In this country sufficient care is taken to ensure that scientific discoveries are put to use for the benefit of people in general.</i>	Average mark	Disagreement	Agreement
		1, 2, 3	5, 6, 7
		%	%
Community total	4.3	31	44
Finished full-time education:			
- under 16 years	4.5	28	47
- 16 to 19	4.3	31	45
- 20 or over	3.8	42	36

• What is more, the tendency to believe that, in one's own country, scientific development benefits the greatest number increases with age and the tendency to doubt this is much more marked amongst those on the left. The most critical (mark 1 for Item 140) have an average position of 4.7 on the left-right scale, while the most confident (mark 7 for Item 140) have an average position of 1.6.

• Opinions also vary greatly according to nationality (see Table 2a and Graph 9).

Italy differs from the eight other countries in its strongly negative attitude: 51% of Italians do not believe that in their country scientific discoveries are put to use for the benefit of people in general while only 29% believe that they are. The minority of those who disagree is 28% in Denmark and 30% in France against 20% to 26% in the other five countries.

#### IV. ATTITUDES TO AUTOMATION

The attitudes of Europeans to the future lines of scientific and technical development were sounded by reference to automation. The following statement was used to ascertain how far the current status of development created a desire to halt automation and return to nature:

*"It would be a good thing if the construction of so many machines could be stopped and we could go back to nature"* (Item 138).

Of all the items discussed here, this is the only one that tackles a specific aspect of the content of technical development. It is also the only one on which European public opinion proved to be very equally divided:

- 44% of Europeans acknowledge the desire to stop constructing machines and to go back to nature;
- 39% refuse to identify themselves with this desire or rather nostalgia.

• Opinions vary mainly in accordance with the level of education, two conflicting majority views being expressed:

- a desire to go back to nature is expressed by a clear majority of all those who terminated their full-time education before the age of 16;
- on the other hand, the majority of those who continued full-time education up to the age of 20 or over are unwilling to stop automation and go back to nature.

A further point is that the desire to go back to nature is much more widespread among women than men, but there appears to be no correlation with the position on the left-right scale.

Item 138 - *It would be a good thing if the construction of so many machines could be stopped and we could go back to nature*

	Average mark	Disagreement 1, 2, 3	Agreement 5, 6, 7
		%	%
COMMUNITY TOTAL	4.2	39	44
FINISHED FULL-TIME EDUCATION			
- under 16 years	4.5	34	50
- 16 to 19	4.0	42	42
- 20 and over	3.6	50	34
SEX			
Men	4.0	43	42
Women	4.4	34	48

• This subject is the first to reveal far-reaching differences of opinion between the member countries of the Community (see Table 2 and Graph 10):

- the temptation to go back to nature predominates in five countries (43 to 59%), the Italians and Belgians being the most numerous in to express this desire, followed by the French, Luxembourgers and Germans (1);
- on the other hand, in the four other countries a majority of 53 to 57% reject this view, especially in Denmark which has an average mark of 3.0 against 4.2 for the Community as a whole (1);

## V. SUMMING UP AND TYPOLOGY OF ATTITUDES

- 1) The analytical description of these opinions on science, of the hopes, worries or reservations about its application and of the relations between the general public and those who decide on science policy is illuminating in itself. However, it was not found sufficient and an attempt will now be made to study the correlations between the replies to the eight statements tested (2). This shows that in the main opinions may be ranged in two dimensions:
  - in the first dimension, which may be termed "assertive" or "demanding", there is a positive correlation between two very different opinions:
    - . the desire to halt automation and go back to nature (see Item 138);
    - . the desire that more account be taken of what the public thinks in decisions on science research policy (see Item 139).

(1) The Germans and Dutch may be regarded as uncertain rather than as plumping for one side or the other.

(2) Of the eleven test statements in the original list, the two concerning the extent to which the public is familiar with science (Items 142 and 143) have not been taken into account in this summary, nor has the item on the lack of consideration given by politicians to the choices to be made in science policy (Item 141) which is regarded differing from the rest in that replies are coloured by the interviewee's general attitude to the political world.

- In a second "optimistic" dimension, there is a positive correlation between the three most favourable and most hopeful opinions on science itself and its application:
  - . the conviction that scientific inventions will always be able to overcome the ills of technology (see Item 137);
  - . the feeling that science policy is in line with the general interest in the country of the person interviewed (see Item 140);
  - . the conviction that science will continue in the future to be a factor for improvement (see Item 133).

• By combining these two dimensions, we have broken down our European sample into five different types:

- Two "assertive" types which alone account for two fifths of European public opinion (42%):
  - . the assertive type tending towards optimism: 25%
  - . the non-optimistic assertive type: 16%
- Two "non-assertive" types which account for just under one third of European public opinion (31%):
  - . the non-assertive type tending towards optimism: 19%
  - . the non-assertive non-optimistic type: 12%.
- A composite intermediate type, the moderates, who account for one-quarter of the sample (24%).

• Table 3 shows in numerical form the opinions of each of these types; its main interest is that it summarizes these opinions while revealing the attitudes and combinations of attitudes underlying them:

- The two "assertive" groups express in large numbers their desire for the public to be more involved in research policy and their inclination to halt automation. In this they are opposed to the two "non-assertive" groups the large majority of which are opposed to halting automation in order to go back to nature and disagree with the idea of greater participation in science policy.
- However, there are two ways of being assertive or unassertive, depending on whether or not the attitude to scientific and technical development is optimistic:
  - . The "optimistic assertive" type and the "optimistic non-assertive" type are equally confident that science is capable of remedying the ills of technology, that science policy is conducted for the benefit of people in general and that the potential of science for the future is essentially beneficial.
  - . Similarly, the "non-optimistic assertive" type shares with the "non-optimistic non-assertive" type a lack of confidence in the aspects of scientific development about which the other two types are optimistic.
- On the other hand, these four very different groups are largely in agreement on the other aspects of scientific development studied in this chapter. The only difference is that the assertive types, whether or not optimistic, show a greater measure of agreement than the non-assertive types on the growing risks of scientific development and the inadequate consideration given by politicians to the choices to be made in that context.

2) Examination of the distribution of each of these types in the Community member countries shows that (Table 4):

- the scope of the optimistic trend is remarkably constant: the two groups

taken together (optimistic assertive and optimistic non-assertive), accounting for 45% of the population at European level, vary only between 42 and 49% in the national populations taken individually;

- there are big variations in the expression of the assertive trend: this accounts for 42% at European level and varies from 28 to 49% according to nationality.
- The assertive attitude is shown by a very clear majority in France (49% against 28% non-assertive), in Italy (49% against 27%) and in Belgium (46% against 24%); the most negative attitude - the non-optimistic assertive one - appears to be the most widespread (19% - 21%) in France and Italy (1).
- On the other hand a non-assertive attitude is shown by a clear majority in Ireland (41% against 30%) and in Denmark (40% against 28%).
- Luxembourg reflects the European average but the other three countries are more equally divided between the two attitudes: in the Netherlands and Germany the assertive attitude has a small majority of 39% against 34% and 37% against 30% respectively while in the United Kingdom the non-assertive attitude has a very small majority (37% against 35%).

3) From the socio-demographic aspect there are no real contrasts between these types: with slight variations one encounters in each type all age groups, all socio-occupational categories, country dwellers and town dwellers from large and medium-sized cities. This tends to suggest that the two dimensions of protest and optimism found in this survey are highly specific to the European attitudes towards scientific and technical development (see Table 5).

- This comment is confirmed by the fact that the type whose profile differs most from the others stands out by its position outside the two main streams, the type that is neither optimistic nor assertive.

Its major characteristic is a much higher level of education than the rest, since only one third (34%) of the Europeans of this type terminated their full-time education before the age of 16 compared with 51 to 69% in the other types. It is also clearly distinguished from the others with regard to the feeling of "remoteness" from science: only 47% of these Europeans who are neither optimistic or assertive say that they find it difficult to talk about science (compared with 68 - 78% in the other types) and 39% say that they are in contact with science through their work (compared with 28 - 31% in the other types) (see Table 3a).

Compared to the others, this type has a higher proportion of men (55%), is younger (68% under 50 compared with 60% in the other types), tends to live in towns (29% country dwellers against 32 - 36% elsewhere), has a higher proportion of heads of household who are executives or professional men (15% against 4 - 11% in the other types) and a lower percentage who are manual workers (26%).

- The other types differ little from each other:

- the two assertive types tend to have a female majority, unlike the two non-assertive types. They also have a higher percentage of workers:

(1) According to the "Eurobarometer" surveys and other European opinion polls, it is always in France and Italy that the strongest expressions of protest in socio-economic or socio-political matters are found.

- the most marked difference concerns the optimistic assertive type which is the least educated of all, three fifths (61%) having terminated full-time education before the age of 16 (compared with 47 - 53% in the other types) and only 5% having continued their education to the age of 20 or over (compared with 13 - 16%);
- finally, the two types which show slight political differences are:
  - . the "optimistic non-assertive" type, which is further to the right than the European average (left-right index of 5.8 compared with 5.4);
  - . the "non-optimistic assertive" type, which is further to the left than the average (index 5.1 against 5.3).

TABLE 2

## GENERAL ATTITUDE TO SCIENTIFIC AND TECHNICAL DEVELOPMENT

	EC	B	DK	D	F	IRL	I	L	N	UK
- IMAGE IN THE FUTURE										
Science will continue in the future as it has done in the past to be one of the most important factors in improving our lives (Item 133).										
AVERAGE MARK	5.6	5.5	5.5	5.5	5.6	5.9	5.7	5.7	5.1	5.8
- % disagreeing (mark 1, 2 or 3)	11	12	13	12	11	10	12	11	16	9
- % agreeing (mark 5, 6 or 7)	74	66	67	71	75	75	76	70	63	79
Sometimes scientific and technical development is accompanied by bigger and bigger risks for society that will be difficult to overcome (Item 136)										
AVERAGE MARK	5.4	5.4	5.6	5.2	5.5	5.3	5.7	5.2	5.2	5.2
- % disagreeing (mark 1, 2 or 3)	15	14	11	12	13	15	13	12	20	20
- % agreeing (mark 5, 6 or 7)	67	60	60	63	72	59	72	64	66	65
- SCIENCE AND ITS APPLICATIONS										
Scientific knowledge is good in itself; it is only the way it is put into practice which often creates problems (Item 135)										
AVERAGE MARK	5.5	5.6	5.8	5.3	5.5	5.8	5.7	5.3	5.3	5.5
- % disagreeing (mark 1, 2 or 3)	13	11	10	12	13	10	13	14	16	13
- % agreeing (mark 5, 6 or 7)	69	62	69	64	71	71	73	65	66	71
Item 134										
Nowadays some scientific discoveries are put into practice before a sufficient study has been made of the future consequences										
AVERAGE MARK	4.9	5.0	4.8	4.9	4.9	5.1	5.0	4.8	4.3	5.0
- % disagreeing (mark 1, 2 or 3)	23	20	25	19	23	19	26	28	39	23
- % agreeing (mark 5, 6 or 7)	57	54	52	56	57	56	57	53	50	62
Item 137										
New inventions will always be found to counteract the harmful consequences of technological developments										
AVERAGE MARK	4.5	4.5	4.9	4.9	4.4	4.2	4.9	5.0	4.3	4.1
- % disagreeing (mark 1, 2 or 3)	28	27	21	18	31	29	22	18	34	39
- % agreeing (mark 5, 6 or 7)	48	44	52	55	45	38	56	56	47	39

TABLE 2 (CONTINUED)

GENERAL ATTITUDES TO SCIENTIFIC AND TECHNICAL  
DEVELOPMENT

	EC	B	DK	D	F	IRL	I	L	N	UK
- RELATIONS BETWEEN PUBLIC AND DECISIONMAKERS										
Members of Parliament and other people who take political decisions do not take serious enough consideration of the choices that are there to be made in deciding about scientific research and decisions (Item 141).										
AVERAGE MARK	5.1	5.2	5.1	4.6	5.1	4.9	5.5	4.7	4.6	5.2
- % disagreeing: mark 1, 2 or 3	18	13	16	24	16	20	15	21	21	15
- % agreeing: mark 5, 6 or 7	57	47	51	48	53	50	65	49	45	65
In this country sufficient care is taken to ensure that scientific discoveries are put to use for the benefit of people in general (Item 140)										
AVERAGE MARK	4.3	4.3	4.4	4.5	4.4	4.5	3.5	4.6	4.7	4.6
- % disagreeing: mark 1, 2 or 3	31	25	28	25	30	26	51	25	20	25
- % agreeing: mark 5, 6 or 7	44	35	42	47	46	45	29	47	54	54
- AUTOMATION										
It would be a good thing if the construction of so many machi- nes could be stopped and we could go back to nature (Item 138)										
AVERAGE MARK	4.2	4.7	3.0	4.2	4.4	3.3	4.8	4.3	3.9	3.4
- % disagreeing: mark 1, 2 or 3	39	27	57	36	35	55	30	35	46	53
- % agreeing: mark 5, 6 or 7	44	50	22	43	49	30	59	44	39	33



TABLE 3

ATTITUDES OF THE SIX TYPES OF SCIENTIFIC AND TECHNICAL  
DEVELOPMENT

	EC TOTAL	ASSERTIVE		MODE- RATE	NON-ASSERTIVE	
		Optimi- stic	Not optimi- stic		Optimi- stic	Not optimi- stic
	%	%	%	%	%	%
(Size of group in relation to complete sample)	(100)	(26)	(16)	(24)	(19)	(12)
<b>ASSERTIVE DIMENSION</b>						
<b>ITEM 139 - To direct scientific and technological research in the right way it would be better to take more account of what the public thinks, in other words people like you and me.</b>						
AVERAGE MARK	5.1	6.4	6.4	5.0	3.7	3.0
- % agreeing (mark 5, 6 or 7)	62	92	91	63	33	17
- % disagreeing (mark 1, 2 or 3)	20	1	1	16	42	61
<b>ITEM 138 - It would be a good thing if the construction of so many machines could be stopped and we could go back to nature</b>						
AVERAGE MARK	4.2	6.0	6.2	3.5	2.1	2.1
- % agreeing (mark 5, 6 or 7)	44	82	87	27	8	7
- % disagreeing (mark 1, 2 or 3)	39	4	3	48	83	82
<b>OPTIMISTIC DIMENSION</b>						
<b>ITEM 137 - New inventions will always be found to counteract the harmful consequences of technological developments</b>						
AVERAGE MARK	4.5	5.8	3.1	4.0	5.8	2.8
- % agreeing (mark 5, 6 or 7)	48	76	21	37	75	15
- % disagreeing (mark 1, 2 or 3)	28	6	57	36	6	64
<b>ITEM 140 - In this country sufficient care is taken to ensure that scientific discoveries are put to use for the benefit of people in general</b>						
AVERAGE MARK	4.3	5.4	2.9	3.9	5.4	2.8
- % agreeing (mark 5, 6 or 7)	44	69	17	36	71	14
- % disagreeing (mark 1, 2 or 3)	31	12	60	38	9	66
<b>ITEM 133 - Science will continue in the future as it has done in the past to be one of the most important factors in improving our lives</b>						
AVERAGE MARK	5.6	6.4	4.3	5.5	6.5	4.3
- % agreeing (mark 5, 6 or 7)	74	93	46	75	96	47
- % disagreeing (mark 1, 2 or 3)	11	2	31	8	1	33

TABLE 3 (Continued)

## ATTITUDES OF THE SIX TYPES OF SCIENTIFIC AND TECHNICAL DEVELOPMENT

	EC TOTAL	ASSERTIVE		MODE- RATE	NON-ASSERTIVE	
		Optimi- stic	Not optimi- stic		Optimi- stic	Not optimi- stic
	%	%	%	%	%	%
(Size of group in relation to complete sample)	(100)	(26)	(16)	(24)	(19)	(12)
NO DIMENSION						
ITEM 135 - Scientific knowledge is good in itself; it is only the way it is put into practice which often creates problems						
AVERAGE MARK	5.5	5.7	5.6	5.4	5.4	5.2
- % agreeing (mark 5, 6 or 7)	69	75	72	71	68	65
- % disagreeing (mark 1, 2 or 3)	13	10	14	12	13	21
ITEM 136 - Sometimes scientific and technical development is accompanied by bigger and bigger risks for society that will be difficult to overcome						
AVERAGE MARK	5.4	5.7	5.8	5.1	5.1	5.1
- % agreeing (mark 5, 6 or 7)	67	75	79	65	62	63
- % disagreeing (mark 1, 2 or 3)	15	11	12	18	17	21
ITEM 134 - Nowadays some scientific discoveries are put into practice before a sufficient study has been made of the future consequences						
AVERAGE MARK	4.9	5.1	5.1	4.8	4.6	5.0
- % agreeing (mark 5, 6 or 7)	57	61	64	56	52	61
- % disagreeing (mark 1, 2 or 3)	23	21	25	25	26	24
ITEM 141 - Members of Parliament and other people who take political decisions do not take serious enough consideration of the choices that are there to be made in deciding about scientific research and application						
AVERAGE MARK	5.1	5.4	5.2	4.9	4.8	4.6
- agreeing (mark 5, 6 or 7)	57	66	62	58	50	49
- disagreeing (mark 1, 2 or 3)	18	13	18	19	21	26

TABLE 3 (Continued)

ATTITUDES OF THE SIX TYPES TO SCIENTIFIC AND TECHNICAL  
DEVELOPMENT

	EC TOTAL	ASSERTIVE		MODE- RATE	NON-ASSERTIVE	
		Optimi- stic	Not optimi- stic		Optimi- stic	Not optimi- stic
	%	%	%	%	%	%
(Size of group in relation to complete sample)	(100)	(26)	(16)	(24)	(19)	(12)
REMOTENESS FROM SCIENCE						
ITEM 142 - I find it difficult to talk about science because I don't know enough about it						
AVERAGE MARK	5.3	5.8	5.5	5.0	5.3	4.4
- % agreeing (mark 5, 6 or 7)	67	78	71	62	68	47
- % disagreeing (mark 1, 2 or 3)	19	12	15	22	19	36
ITEM 143 - I am in contact, through my work, with some kinds of scientific and technical developments						
AVERAGE MARK	3.2	3.1	3.0	3.2	3.2	3.7
- % agreeing (mark 5, 6 or 7)	31	30	28	32	31	39
- % disagreeing (mark 1, 2 or 3)	56	58	61	57	58	50

TABLE 4

IMPORTANCE OF THE FIVE TYPES IN THE  
COUNTRIES OF THE EUROPEAN COMMUNITY

	ASSERTIVE		MODE- RATES	NON-ASSERTIVE		TOTAL OPTIMI- STS	NON CLASS- IFIED	TOTAL
	Optimi- stic	Non optimi- stic		Optimi- stic	Non optimi- stic			
	%	%		%	%			
EC TOTAL	26	16	24	19	12	(45)	3	100
BELGIUM	29 42	17	20	15 31	9	(44)	10	100
DENMARK	19 28	9	25	27 40	13	(46)	7	100
GERMANY	26 37	11	26	20 30	10	(46)	7	100
FRANCE	30 49	19	21	16 28	12	(46)	2	100
IRELAND	18 30	12	24	29 41	12	(47)	5	100
ITALY	28 49	21	21	17 27	10	(45)	3	100
LUXEMBOURG	31 40	9	26	18 29	11	(49)	5	100
NETHERLANDS	21 39	18	26	21 34	13	(42)	1	100
UNITED KINGDOM	21 35	14	27	23 37	14	(44)	1	100



GRAPH 6

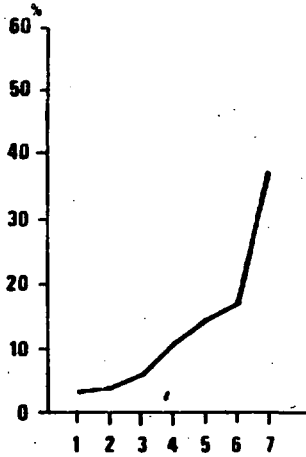
ATTITUDES OF EUROPEANS TO SCIENTIFIC AND TECHNICAL DEVELOPMENT



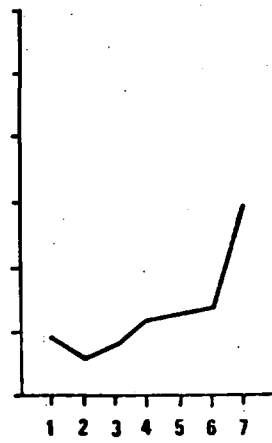
Science will continue in the future as it has done in the past to be one of the most important factors in improving our lives



Sometimes scientific and technical development is accompanied by bigger and bigger risks for society that will be difficult to overcome



Scientific knowledge is good in itself; it is only the way it is put into practice which often creates problems



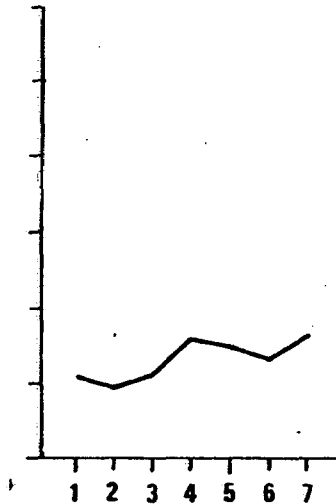
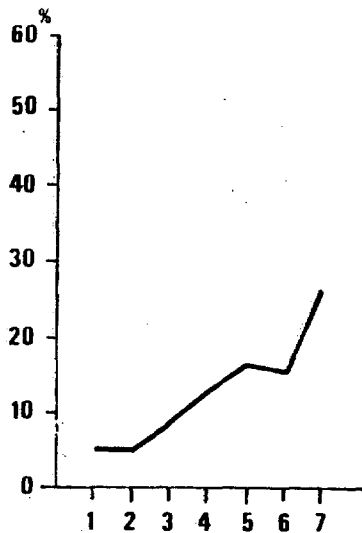
Nowadays some scientific discoveries are put into practice before a sufficient study has been made of the future consequences



New inventions will always be found to counteract the harmful consequences of technological developments

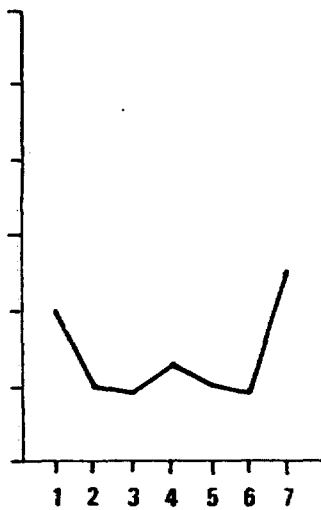
GRAPH 6 (Continued)

## ATTITUDES OF EUROPEANS TO SCIENTIFIC AND TECHNICAL DEVELOPMENT



Members of Parliament and other people who take political decisions do not take serious enough consideration of the choices that are there to be made in deciding about scientific research and applications

In this country sufficient care is taken to ensure that scientific discoveries are put to use for the benefit of people in general



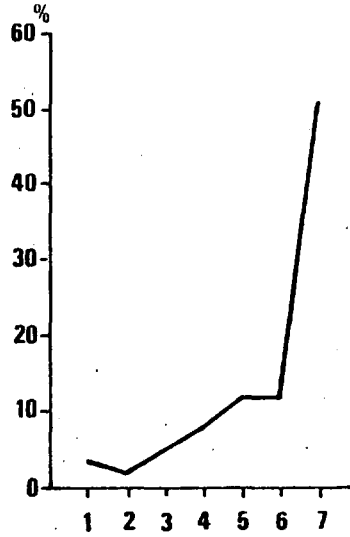
It would be a good thing if the construction of so many machines could be stopped and we could go back to nature

GRAPH 7

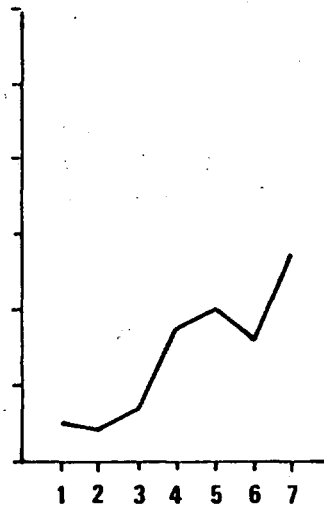
THE IMAGE OF SCIENTIFIC AND TECHNICAL DEVELOPMENT  
IN THE FUTURE

Item 133 - Science will continue in the future as it has done in the past to be one of the most important factors in improving our lives.

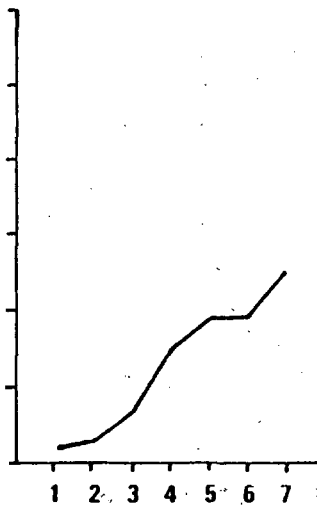
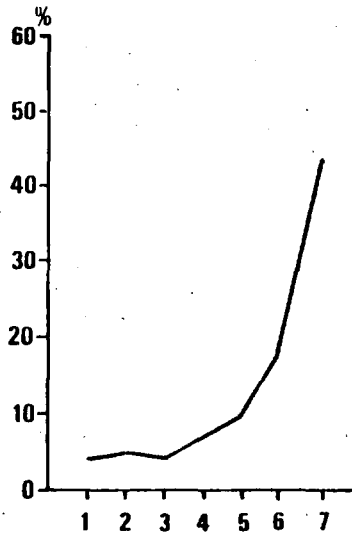
The countries most in agreement



The countries least in agreement



Item 136 - Sometimes scientific and technical development is accompanied by bigger and bigger risks for society that will be difficult to overcome



I

D

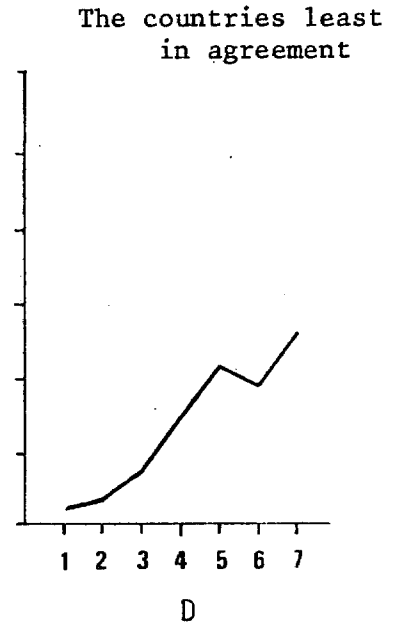
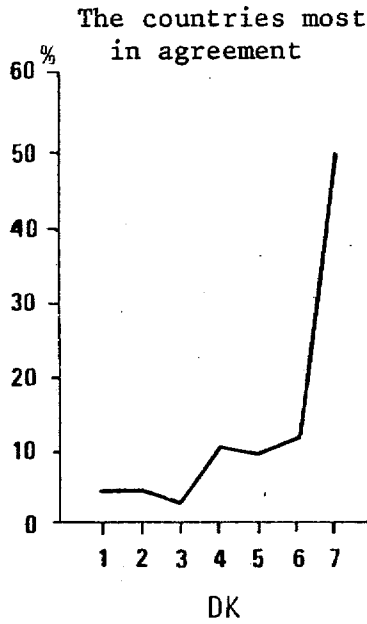
UK



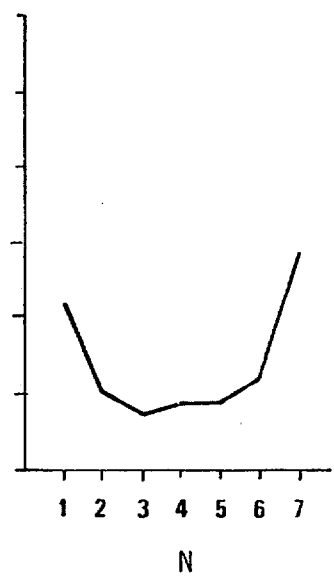
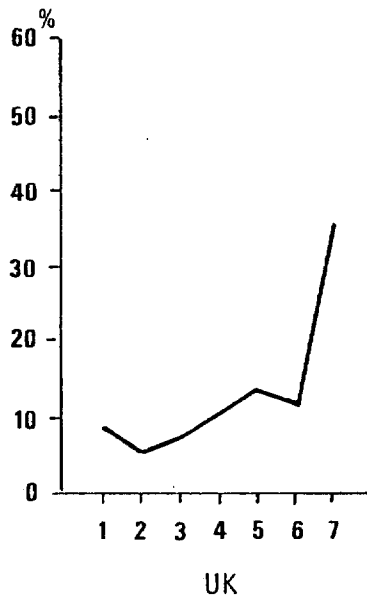
GRAPH 8

THE DISTINCTION BETWEEN SCIENCE AND ITS APPLICATIONS

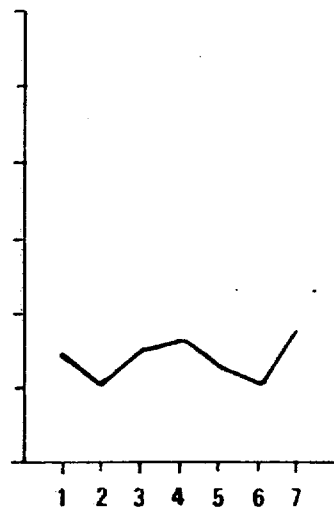
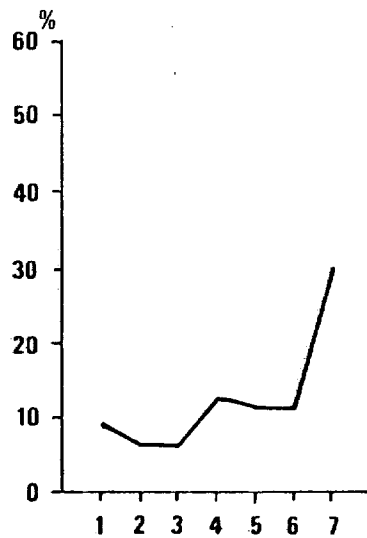
Item 135 - Scientific knowledge is good in itself; it is only the way it is put into practice which often creates problems



Item 134 - Nowadays some scientific discoveries are put into practice before a sufficient study has been made of the future consequences



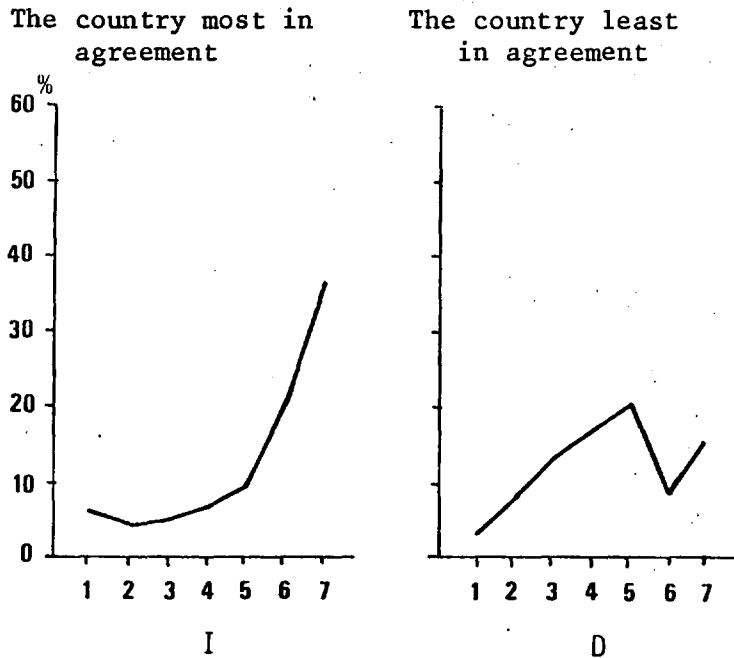
Item 137 - New inventions will always be found to counteract the harmful consequences of technological developments



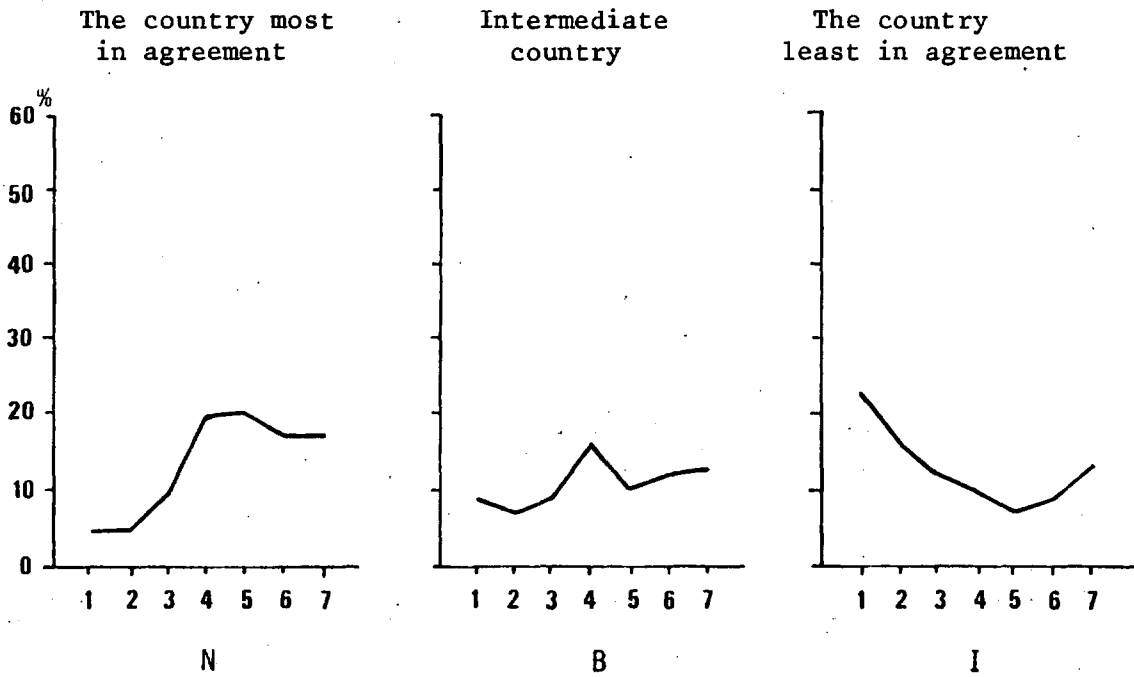
GRAPH 9

THE RELATIONSHIP BETWEEN THE GENERAL PUBLIC AND THOSE WHO DECIDE ON RESEARCH POLICY

Item 141 - Members of Parliament and other people who take political decisions do not take serious enough consideration of the choices that are there to be made in deciding about scientific research and applications



Item 140 - In this country sufficient care is taken to ensure that scientific discoveries are put to use for the benefit of people in general



GRAPH 10

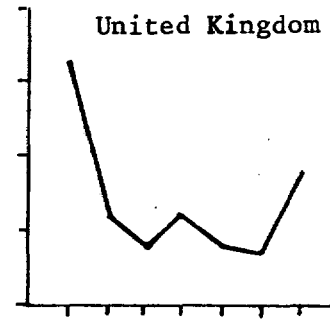
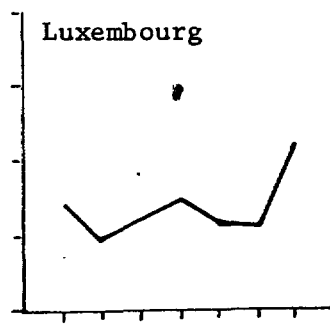
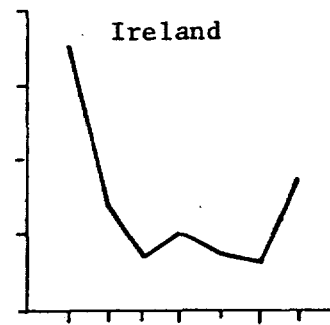
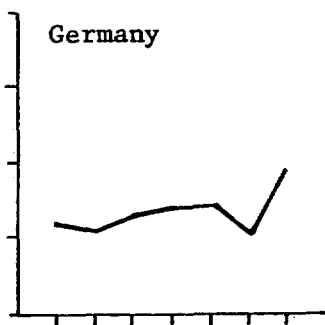
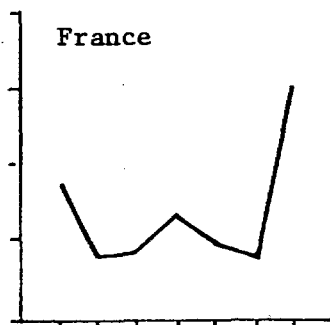
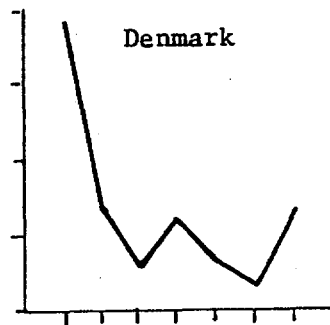
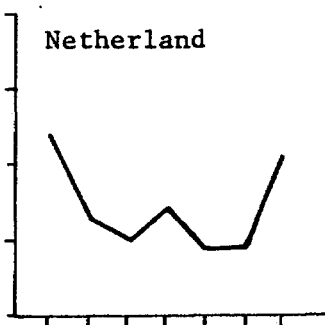
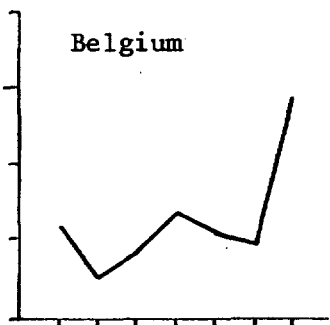
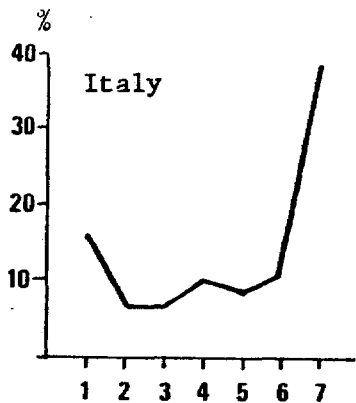
THE DESIRE TO HALT AUTOMATION

Item 138 - It would be a good thing if the construction of so many machines could be stopped and we could go back to nature.

Countries in agreement

Countries that are uncertain

Countries not in agreement



## CHAPTER III

## FEARS AND CONCERNS ABOUT THE FUTURE OF THE WORLD

I. GENERAL DATA

- 1) This survey of the awareness of technological risks attempted to relate the general public's attitudes to scientific and technical development to its degree of anxiety regarding some aspects of the changes in the modern world. Four subjects of concern were selected: changes in living conditions with the introduction of more and more artificial things, pollution, risks of harm to the human personality in the medical and pharmaceutical field and increase in unemployment as a consequence of the automation of jobs.

The results are conclusive: they show a very general climate of anxiety since 53 - 80% of the replies on each of the subjects expressed personal concern. As regards the kinds of fear, the European general public says almost unanimously (80%) that it is generally concerned and worried, when it considers the future of the world in which we live, about the "despoiling of natural life and the countryside by pollution of all kinds". This fear is even more widespread than the anxiety about the increase in unemployment as a consequence of the automation of jobs (67%). The concern about the other two subjects (more and more artificial things in the life we lead and risk of harm to the human personality) is less unanimous.

However, in terms of intensity, the order is less clear out and the fear of an increase in unemployment rivals the concern about pollution as the most disturbing subject.

*Here are certain kinds of fears which are sometimes expressed about the future of the world we live in. For each one I would like you to tell me if it is something which really concerns you or worries you or not.*

*Among these different kinds of fear are there any which you find more disturbing than the others? If yes, which one or ones?*

	YES REALLY CONCERNS	NO	DON'T KNOW	TOTAL	First reply
More and more artificial things are coming into the life we lead (housing, traffic, food, etc)	53	42	5	100	19
The despoiling of natural life and the countryside by pollution of all kinds	80	17	3	100	34
The risk that the use of some new medical or pharmaceutical discoveries may severely affect the human personality	53	38	9	100	13
Increase in unemployment as a consequence of the automation of jobs	67	28	5	100	29
					5

2) Against the general background of concern there are considerable differences in emphasis and intensity from one country to another (Table 6):

- In terms of frequency (linear replies to the first of the two questions asked), the subjects concerned come more or less in the same order in all countries, with one exception.

- In Italy the concern about the increasing number of artificial things in the life we lead is even more widespread (18%) than the fear of unemployment (74%). This is because of the particularly widespread atmosphere of anxiety in this country with a record number of 73 - 91% of replies of this kind whatever the subject.

- Germany, on the other hand, is the country where there is least concern: pollution and unemployment are really of concern to only 60 - 69% of Germans (compared with 71 - 91% of nationals of other countries) and it is the only country in which concern about the artificial things in the life we lead and the risk of harm to the human personality falls below 40%.

- In terms of intensity (replies to the second question in order of priority), national differences are more marked and the countries may be divided into two categories:

- Four countries in which concern about pollution comes well ahead of the other three subjects: this applies particularly to Denmark and Germany, followed by the United Kingdom and the Netherlands.

- Four other countries which are primarily worried about the increase in unemployment: these are Luxembourg, Belgium, France and Ireland.

- In Italy, priority is given about as often to the artificial things in the life we lead as to unemployment and pollution.

## II. ANALYSES

1) On the whole these different fears about the future of the world appeared to be equally widespread in all socio-demographic categories, with a few slight differences of emphasis (Table 7):

- women tend to be even more concerned than men;

- the young are less concerned than their elders about the artificial things in the life we lead;

- manual workers are more concerned than the other socio-occupational categories about the increase in unemployment: in terms of intensity, this is their main fear whereas professional people, executives, employers, white-collar workers and farmers are more concerned about the despoiling of natural life and the countryside;

- farmers are almost as worried as manual workers about the increase in unemployment but show less concern about each of the other three subjects;

- the subjects of concern show little variation according to level of education with the exception of the increase in unemployment: the best-educated are generally the least concerned (59% against 56 - 70% of those who finished their full-time education between 16 and 19 or earlier);

- the fears concerned are too common to be associated with political views.
- 2) In the final analysis it is the attitude to scientific and technical development, as defined by the five types analysed in the previous chapter, that is the most sensitive criterion (Table 7):
- The two "assertive" types are far more concerned than the others about all four subjects with the exception of pollution, fears about which are too widespread to depend on any specific attitude.
  - The simplest concern (unemployment) reaches a peak of 78% amongst the "optimistic assertive" type and drops to a low of 55% amongst those having a doubly negative attitude, the "non-assertive, non-optimistic" types.
  - The two most complex subjects of concern (the artificial things coming into the life we lead and the risks of harm to the human personality reach a peak amongst the pessimistic assertive type (61 - 64%) and fall to the lowest level amongst the "optimistic non-assertive" type (43 - 49%).
  - The analysis revealed a strong positive correlation between the wish to go back to nature and the expression of the three fears other than pollution.

Say that they are really concerned about:	Of those who gave the following marks for the item <u>"stop constructing machines and go back to nature"</u>					
	EC total	a mark of disagreement		mark 4	a mark of agreement	
		1	2 or 3		5 or 6	7
the increase in unemployment as a consequence of the automation of jobs	67	59	61	65	71	77
more and more artificial things coming into the life we lead (housing, traffic, food)	53	44	49	48	58	65
the risk that the use of some new medical or pharmaceutical discoveries may severley affect the human personality	53	51	50	48	54	59

TABLE 6  
FEARS AND ANXIETIES ABOUT THE FUTURE OF THE WORLD  
Analysis by country

Are really concerned about...	Despoiling of nature by pollution	Increase in unemployment as a consequence of automation	More and more artificial things in the life we lead	Risk of harm from medical or pharmaceutical discoveries
	%	%	%	%
EC	80	67	53	53
B	71	69	51	44
DK	85	73	55	60
D	69	60	35	38
F	79	72	56	44
IRL	79	75	52	60
I	91	74	81	73
L	72	76	49	54
N	88	72	58	46
UK	81	62	45	61
Mentioned first as more disturbing than the others:				
EC	34	29	19	13
B	28	38	15	9
DK	40	28	14	11
D	41	26	17	11
F	29	39	16	9
IRL	25	37	16	17
I	29	29	31	10
L	27	40	22	7
N	34	30	21	13
UK	34	23	14	21

TABLE 7

## FEARS AND ANXIETIES ABOUT THE FUTURE OF THE WORLD

Analysis by various criteria

Are really concerned about...	Despoiling of nature by pollution	Increase in unemployment as a consequence of automation	More and more artificial things in the life we lead	Risk of harm from medical or pharmaceutical discoveries
	%	%	%	%
EUROPEAN COMMUNITY	80	67	53	53
SEX: Men	80	66	52	50
Women	80	69	55	56
AGE: 15-20	78	71	40	48
21-34	81	66	53	49
35-49	80	70	57	56
50-64	82	69	59	58
65 and over	76	62	49	50
OCCUPATION OF HEAD OF HOUSEHOLD				
Executives, professional men	87	59	57	53
Employers in business and industry	83	64	55	59
White-collar workers	81	67	55	54
Manual workers	78	71	50	51
Farmers	70	70	46	46
Not employed	78	66	54	54
FINISHED FULL TIME EDUCATION				
Under 16	79	70	55	54
16 - 19	79	66	50	51
20 and over	84	59	60	53
POSITION ON LEFT-RIGHT SCALE	5.3	5.3	5.2	5.3
TYPE OF ATTITUDE TO SCIENCE				
Assertive - optimistic	82	78	59	55
Assertive - not optimistic	85	74	64	61
Moderate	82	65	53	52
Non-assertive - optimistic	75	61	43	49
Neither assertive nor optimistic	80	55	50	54



## CHAPTER IV

## ATTITUDES TO EIGHT RESEARCH AREAS

I. VARIATIONS IN ATTITUDES ACCORDING TO RESEARCH AREA

1) First we shall describe the method used to analyse and differentiate the awareness of technological risks amongst the general public in Europe:

• Eight different research areas were selected to test attitudes. They may be defined and classified as follows, in decreasing order of their direct impact on individuals as seen by the persons interviewed:

- Medicine and surgery: ITEM 145 - *To develop medical and surgical research on human organ transplants.*
- Food: ITEM 147 - *To speed up research into synthetic food so as to be able to produce food on an industrial scale which is not made from farm animals or farm products.*
- Computerization of administration: ITEM 146 - *To collect together by computer the greatest possible amount of information on each person in Britain so that it is possible, if it is needed, to know all that can be required on each person.*
- Nuclear energy: ITEM 148 - *To develop nuclear power stations that will use atomic energy for the production of electricity.*
- New sources of energy: ITEM 150 - *To spend, if necessary, a great deal of money to find and develop new sources of energy.*
- Genetics: ITEM 149 - *To carry out experiments on the transmission of hereditary characteristics which could make it possible to improve the qualities of living species.*
- Synthetic materials: ITEM 151 - *To develop synthetic materials to replace natural raw materials such as wood, iron, copper, etc.*
- Detection of new raw materials: ITEM 144 - *To increase the number of observation satellites which will circle the earth to gather and retransmit information (for telecommunications, detection of the resources on and under the earth, etc).*

For each of these areas the persons interviewed were asked:

- first whether their predominant reaction was hope (is it "worthwhile"), fear (does it "carry with it unacceptable risks") or lack of interest: this is the dimension of support or rejection;
- secondly, whether or not they were convinced that a real risk would be incurred if we did not dare or were not able to conduct research in the field: this might be called the risk sometimes inherent in daying safe, or the belief in the issue at stake. For this purpose, the questionnaire contained a statement on a major risk for each of the eight areas of research (for example: ITEM 154 - *If we don't develop our research into organ transplants, we will limit our chances of improving the lives of people severely handicapped by accidents, injury or be illness*) and the person interviewed was first asked whether he thought it a serious matter or not (see questions 152 to 167).

2) Replies for the whole of Europe differ very greatly depending on the type of subject and belief in the issues involved (see Table 8).

• The four subjects which are supported by a large majority are also lines of research for which the statements are regarded as both true and serious by a majority:

- at the top of the list comes research into organ transplants: 82% of Europeans think that this is "worthwhile", 82% agree that without such research we will limit our chances of improving the lives of severely handicapped people, and this is regarded as a serious risk by 77%.
- There is a similar consensus in favour of substantial expenditure on the development of new sources of energy: the corresponding figures are 76% in support, 75% who believe that the risk is real (otherwise we shall have to construct even more nuclear power stations) and 70% who regard it as a serious matter.
- Research into synthetic materials and the increase in observational satellites - associated with the economic issue of the foreseeable need to replace natural raw materials - are also supported by a majority (54 - 55%), while a majority also believe that the statement is true and the matter is serious. However, both these views are less marked in connection with the increase in the number of observation satellites: only 45% believe that otherwise "we won't be able to discover in a reasonably cheap way new raw materials that we need to replace the ones we shall have exhausted", against 34% who do not believe that this is true; likewise only 46% believe that, if it were true, it would be a serious matter, compared with 29% who do not think this.

• On the other hand, for the three projects opposed by a (relative) majority convinced of the "unacceptable risks" involved, there is a predominating tendency to reject the argument "If we don't do it... we shall lose our chance of..." and, in two cases out of three, a very ambivalent or negative attitude to the seriousness of the risk. In this category, in increasing order of opposition, we find:

- genetic experiments: here the discussion is very open - just over one third of Europeans regard the risks as unacceptable (35%) compared with exactly one third who regard it as "worthwhile" (33%), while 42% do not believe that if we give up such research we shall restrict our chances of improving the qualities of living species compared with 38% who do, and 37% think it is not a serious matter to restrict our chances against 38% who regard it as serious.
- Computerized centralization of information on individual people: here the opposition is much stronger with 40% of Europeans finding the potential risks of such a project unacceptable against 22% who regard it as worthwhile, while 52% think it is not true that if we give up this project we shall limit our chances of cutting out wasted time on red tape and administration against 32% who believe this statement; above all there is a majority of 46% who do not believe that this is a serious matter.
- Finally, chemical research on synthetic food: this is rejected by 49% of the European general public and supported by only 23%; 49% do not believe that if we give up such research we shall restrict our chances of fighting effectively against hunger in the world but do not deny that the matter is serious, since more than half (53%) are convinced of the seriousness of the matter.

• The development of nuclear power stations completely escapes the close positive correlation so far observed between support for the research area and belief in the truth of the relevant statement. There was (1) only a very small majority of supporters (45%) compared with a strong minority of opponents convinced that the potential risks were unacceptable (46%), although there was a strong belief in the truth of the statement (56% of Europeans believe that without the development of nuclear power stations there will be a risk of restrictions on the consumption of electricity) and a very extensive feeling that the matter is serious (52%)

- 3) Various analyses carried out on all the replies obtained on these eight research areas clearly show that in the support of these projects a fundamental role is played by the credibility of the corresponding statements proposed in the form "if we don't..., we run the risk of (or) we restrict our chances of...".

• The factorial analysis of these replies shows that they are organized around a central axis running between two poles: the statements regarded as "true" and "serious" and the statements regarded as "not true" and "not serious":

- The three projects which are most widely and consistently supported: organ transplants, new energies, especially solar energy, and synthetic materials gravitate around the pole of truth and seriousness.
- The two projects which arouse the least hope and the least belief in the truth and seriousness of the risk (genetic experiments and centralization of information by computer) are found close to the pole of non-truth and non-seriousness.
- The position outside this axis of the other three research fields is accounted for by the special cases they represent:
  - . observation satellites arouse much more hope than fear but there is relatively less belief in the truth and seriousness of the issue said to be at stake;
  - . restrictions in electricity consumption lanced against the development of nuclear power stations appear credible and serious but do not allay the predominating fears of a strong minority of Europeans;
  - . the possibility of not being able to fight effectively against hunger in the world appears serious but nevertheless does not convince Europeans that this cannot be done without developing synthetic food, and above all does not allay their predominating fears about such food.

Moreover, the analysis shows that although fear or lack of interest in a project are not necessarily synonymous with a lack of belief in the issue stated and its importance, the expression of hope in a project is regularly synonymous with a belief in the truth and seriousness of the issue said to be at stake (see Table 9):

- The supporters of each project are always widely convinced that the relevant statement is true and the majority rarely drops below 75% (2).

(1) At the time of the interviews, i.e. October 1978.

(2) Only 60% of those in favour of increasing the number of observation satellites are convinced that the statement expressed in item 152 is true.

- In addition, they are always widely convinced that the issue is serious even if this conviction drops below 60% in two cases: the advantage of observation satellites and centralization of information on individual persons by computer.

## II. VARIATIONS IN ATTITUDE BY COUNTRY

The analysis by nationality shows that attitudes to the four research areas that are supported are generally very uniform, that the replies given by each nation generally follow the European logic already described, but that attitudes towards the four research areas that are opposed or rejected often differ greatly from one country to another.

- 1) In all countries there is a majority of support of the "worthwhile" type for research into organ transplants, new sources of energy, synthetic materials and observation satellites, even if in some isolated cases these are no more than very small relative majorities (Belgium, France, Luxembourg in connection with synthetic materials).

### "WORTHWILE" RESEARCH

	EC	B	DK	D	F	IRL	I	L	N	UK
Organ transplants	82	80	81	69	90	80	90	74	89	82
New energy	76	64	83	79	70	73	80	69	80	76
Synthetic materials	54	39	51	67	36	51	51	42	50	63
Observation satellites	55	50	48	58	52	44	56	51	59	55

- 2) There are also numerous national examples of the logic whereby a people that clearly supports one of the research areas more strongly than the other nations also appears to be more convinced that the relevant statement is true and serious (see Table 10).

This applies to:

- the Germans in relation to the increase in the number of observation satellites and the British in relation to research on the development of synthetic materials;
  - the Italians, who differ from the European average in having a majority in favour of genetic research and computerized centralization of information;
  - the Germans and British, who differ from the other Europeans in having a much larger minority in favour of research into synthetic food, correlated with their more widespread belief in the argument concerning the effectiveness of the fight against hunger in the world.
- 3) As briefly mentioned earlier, some research areas call forth opposite attitudes in different countries. For exemple (see table below):
    - the Italians, the Irish and, to a lesser extent, the Belgians differ from all the others in their majority support for genetic research;
    - the Italians are the only nation to consider that computerized centralization of information on individual persons is worthwhile (47%) while the Danes, British, French and Dutch agree (in proportions varying from 49% to 59%) that there are unacceptable risks, whereas the Irish, Luxembourgers and Belgians are either less uninterested or equally

divided between the two attitudes;

- there are also very different attitudes to research on the development of synthetic food: the discussion between supporters and opponents appears extremely open in Germany and the United Kingdom whereas its opponents appears extremely open in Germany and the United Kingdom whereas its opponents are in a very large majority in France, Italy and Denmark and, to a lesser extent, in the Netherlands and Belgium.

	EC	B	DK	D	F	IRL	I	L	N	UK
- Genetic experiments										
. worthwhile	33	38	13	22	29	41	49	37	36	32
. unacceptable risks	35	22	61	45	37	22	22	18	41	36
- Computerized centralization										
. worthwhile	22	26	10	15	16	25	47	19	13	15
. unacceptable risks	45	30	59	49	58	29	20	29	54	54
- Synthetic food										
. worthwhile	23	16	13	34	10	23	11	25	23	34
. unacceptable risks	49	44	50	36	66	38	65	25	42	36

4) The most marked example of different reactions in different countries is in relation to the development of nuclear power stations. In all countries a majority is convinced that, failing such development, everyone will soon be forced to restrict his consumption of electricity, and a majority regard this risk as serious. Nevertheless:

- only the British, Italians and Irish are extensively in favour of developing nuclear power stations;
- the fear of unacceptable risks predominates strongly in the Netherlands, Germany and Belgium;
- the French, Danes and Luxembourgers are divided between the two attitudes (1).

(1) On this very controversial point the results of the opinion poll conducted in the month of October 1978 may differ from comparable national data obtained earlier. Changes may also have occurred in public opinion since that date, for example as a result of a specific event such as the general electricity failure in France on 19 December last.

	EC	B	DK	D	F	IRL	I	L	N	UK
	%	%	%	%	%	%	%	%	%	%
<b>DEVELOPMENT OF NUCLEAR POWER STATIONS (148)</b>										
. WORTHWHILE	44	29	37	35	40	45	53	35	28	57
. NO PARTICULAR INTEREST	9	14	9	7	8	10	8	22	12	10
. UNACCEPTABLE RISKS	36	39	34	45	42	35	29	31	54	25
. DON'T KNOW	11	18	20	13	10	10	10	12	6	8
	100	100	100	100	100	100	100	100	100	100
<b>OTHERWISE, RISK OF ELECTRICITY RESTRICTIONS</b>										
. TRUE	56	46	52	45	55	54	65	46	65	61
. NOT TRUE	30	32	36	34	32	30	24	41	27	27
. DON'T KNOW	14	22	12	21	13	16	11	13	8	12
	100	100	100	100	100	100	100	100	100	100
THIS RISK WOULD BE SERIOUS	62	47	54	63	57	66	65	41	49	70

5) Finally, it should be pointed out that of the six projects that were not widely supported the French regularly proved to be more fearful and more aware of the risks than the other Europeans and recorded a majority opposed to each of the four disputed projects. This contrasts with the more varying reactions of their major European neighbours (see Tables 10 and 10a):

- the Germans show more than average opposition to nuclear power stations, genetic research and computerized centralization of administrative information, but are more openminded on synthetic food;
- the Italians are much more hostile than the average to synthetic food, but have a majority in favour of nuclear power stations, genetic research and computerized centralization of information;
- the British are in favour of nuclear power stations and synthetic food but squarely opposed to computerized information and somewhat unfavourable to genetic research.

### III. VARIATIONS ACCORDING TO OTHER FACTORS

1) European opinion on these research areas has been analysed on the basis of five socio-demographic criteria (sex, age, occupation of head of household, level of education and where the interviewee says he lives)(1).

• It may be said in passing that each of the groups singled out in the analysis usually tends to react in accordance with the same logic as observed in the general public as a whole: the more they believe in the truth and seriousness of the issue against which the proposed research is balanced, the greater their support for that research.

(1) Based on the answer to the question: "Would you say you live in a rural area or village, a small or middle size town or a big town?"

• On the two projects on which there is real consensus support (organ transplants new sources of energy), European opinion appears to be absolutely uniform in all categories. On the other hand, very substantial differences are observed in the other areas which are less widely supported (synthetic materials and observation satellites), on which there is heated discussion (nuclear power stations) or which people tend to oppose (genetic experiments, computerized centralization of information and synthetic food). The main distinguishing factor here is the socio-occupational category, followed by level of education and, in some cases, age. However it is astonishing that none of these factors has a sufficient impact to bring about complete reversals of attitude from one group to the other, with one exception - genetic research.

Although the division between those who regard such experiments as "worthwhile" (33%) and those who foresee "unacceptable risks" (35%) is extremely close amongst men and women and amongst the young and less young, there is a clear discrepancy of views between :

- Executives, professional people and the most highly educated, a majority of whom (49-51%) are opposed to such research;
- Farmers and the least educated amongst whom there is a small majority in favour of genetic experiments (35-39%).

	GENETIC EXPERIMENTS (ITEM 149)	
	Worthwhile	Unacceptable risks
EC TOTAL	33	35
OCCUPATION OF HEAD OF HOUSEHOLD		
. Professional men, executives	30	51
. Employers	34	37
. White collar workers	32	39
. Manual workers	32	32
. Not employed	35	30
. Farmers	39	33
FINISHED FULL-TIME EDUCATION		
. Under 16	35	29
. 16 to 19	32	39
. 20 or over	29	49

These two socio-occupational categories which differ most regularly in their attitudes to these projects correspond to the occupations in which people have the greatest tendency to regard themselves as being in contact with some kind of scientific and technical development (see page 3).

• Finally, these analyses tend to confirm that attitudes vary just as much in accordance with the type of project concerned as in accordance with the socio-occupational category or level of education. Although farmers often react differently from professional people and executives, as do the less well educated in comparison with the better educated, the variations are not always in the same direction:

- Although farmers differ from professional people and executives in their support for genetic experiments, they are also less opposed than the latter to the computerized centralization of information on individuals;

- On the other hand, farmers are more opposed to synthetic food and less favourably disposed towards synthetic materials and observation satellites, projects which are either less strongly opposed or supported by executives and professional people.

	Replies "Unacceptable risks"			Replies "Worthwhile"	
	Genetic experiments	Computerized centralization	Synthetic food	Synthetic materials	Observation satellites
EC TOTAL	35	45	49	54	55
HEADS OF HOUSEHOLD:					
. Executives, professional men	<u>51</u>	<u>60</u>	54	<u>62</u>	<u>72</u>
. Farmers	33	40	<u>64</u>	43	50

Age has an effect, although a limited one, in respect of the three projects which will probably have the most practical impact on the future of young people, i.e. the development of nuclear power stations, research into synthetic food and new raw materials:

- The small majority in favour of nuclear energy which is found at European level taking all nationalities together does not exist among the under 35s: between the ages of 15 and 20, 42% are in support of nuclear power stations compared with 40% who are convinced that the risks are unacceptable; between the ages of 21 and 34 the figures are fairly close with 41% in support and 43% opposed.
  - For synthetic food, the youngest age group (15-20) is rather less convinced of its unacceptable risks (44%) than their elders (49-51%);
  - Support for the increase in the number of observation satellites reaches a peak amongst those under 35 (60-63%) and falls to 39% amongst the over 65s.
- 2) What impact do the different attitudes to scientific and technical development as summarized earlier (1) have on reactions to these research projects? The general reply to this question is that the impact is often appreciable but not very systematic and rarely decisive, except in the case of the most hotly disputed project, nuclear power stations (see Table 11 and 11a).

• There are two fairly typical contrasting trends in respect of nuclear energy:

- On the one hand, the "non-optimistic assertive" type, the majority of whom are convinced of the unacceptable risks (51%);
- On the other hand, the two types of optimists, a majority of whom are in favour of the project, especially the "non-assertive optimistic" type.

This contrast appears to be relatively typical in that:

- The "non-optimistic assertive" type is one of the most fearful, not

(1) See Chapter II pages



only of nuclear energy but also of synthetic food (61% regard the risks as unacceptable) and even, to a lesser extent, of observation satellites (21% see the risks as unacceptable compared with 9-16% in the other types);

- In contrast, the "non-assertive optimists" are the least worried not only about nuclear energy but also about synthetic food (31% think it worthwhile), synthetic materials (65%) and observation satellites (66%).

• However, there are also several indications of the non-systematic nature of these links between general attitudes to scientific development and specific research fields. For example:

- The "assertive optimistic" type, perhaps because of its optimism, shows a majority in favour of genetic experiments (41% regard them as worthwhile) and is also the least opposed to computerized centralization of information (worthwhile for 31%), but they are nevertheless opposed to the synthetic food project.
- Similarly, those who are neither optimistic nor assertive are the most opposed to computerized centralization of information and genetic experiments and are extremely divided on the question of nuclear power.

3) The analysis also reveals that support for or opposition to these eight research areas is not in any way related to peoples main concerns about the future of the world as studied earlier.

4) The only research project in respect of which attitudes are somewhat influenced by political views is the development of nuclear power stations, its opponents being much more left-wing (average position 5.1 on the left-right scale) than its supporters (average 5.6).

TABLE 8  
ATTITUDES TO THE EIGHT RESEARCH AREAS

	Question 144 and following				Question 152 to 166 "If we don't... we will..."			Questions 153 to 167 "Supposing it were true, do you think it is ... "					
	"Worth-while"	"No particular interest"	"Unacceptable risks"	"Don't know"	YES	NO	DON'T KNOW	Very serious	Quite serious	(TOTAL SERIOUS)	Not very or not at all serious	Don't know	TOTAL
Organ transplants ..	82	6	7	5	82	10	8	42	35	(77)	14	9	100
New sources of energy .....	76	12	5	7	75	12	13	39	31	(70)	16	14	100
Synthetic materials	54	24	12	10	59	27	14	28	31	(59)	22	19	100
Observation satellites .....	55	20	13	12	41	34	25	16	30	(46)	29	25	100
Nuclear power station .....	44	9	36	11	56	30	14	32	30	(62)	21	17	100
Genetic research ...	33	19	35	3	38	42	20	16	22	(38)	37	25	100
Centralization by computer .....	22	24	45	9	32	52	16	14	18	(32)	46	22	100
Synthetic food .....	23	21	49	7	38	49	13	27	26	(53)	26	21	100

TABLE 9

## CREDIBILITY OF RISK DEPENDING ON SUPPORT FOR PROJECTS

EC TOTAL	CONSIDERED THAT THE PROJECT CONCERN- ED...			
	IS WORTHWHILE	IS OF NO PARTICULAR INTEREST	CARRIES UN- ACCEPTABLE RISKS	
%	%	%	%	%
● IF WE DON'T DEVELOP RE- SEARCH INTO ORGAN TRANS- PLANTS... (154/155)				
. TRUE .....	82	91	44	45
. NOT TRUE .....	10	5	43	38
. DON'T KNOW .....	8	4	13	17
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
IF IT WERE TRUE, IT WOULD BE:				
. VERY SERIOUS .....	42	47	14	22
. QUITE SERIOUS .....	35	37	30	29
. TOTAL SERIOUS .....	<u>77</u>	<u>84</u>	<u>44</u>	<u>51</u>
. TOTAL NOT VERY OR NOT AT ALL SERIOUS .....	14	11	37	33
● IF WE DON'T EXPAND RE- SEARCH INTO SOLAR ENERGY ... (164/165)				
. TRUE .....	75	82	58	63
. NOT TRUE .....	12	10	27	21
. DON'T KNOW .....	13	8	15	16
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
IF IT WERE TRUE, IT WOULD BE:				
. VERY SERIOUS .....	39	44	23	25
. QUITE SERIOUS .....	31	32	30	32
. TOTAL SERIOUS .....	<u>70</u>	<u>76</u>	<u>53</u>	<u>57</u>
. TOTAL NOT VERY OR NOT AT ALL SERIOUS .....	14	14	27	25
● IF WE DON'T DEVELOP SYN- THETIC MATERIALS... (166/167)				
. TRUE .....	59	82	37	29
. NOT TRUE .....	27	11	49	61
. DON'T KNOW .....	14	7	14	10
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
IF IT WERE TRUE, IT WOULD BE:				
. VERY SERIOUS .....	28	40	15	18
. QUITE SERIOUS .....	31	37	26	24
. TOTAL SERIOUS .....	<u>59</u>	<u>77</u>	<u>41</u>	<u>42</u>
. TOTAL NOT VERY OR NOT AT ALL SERIOUS .....	22	15	36	33

TABLE 9 (Continued)

## CREDIBILITY OF RISK DEPENDING ON SUPPORT FOR PROJECTS

EC TOTAL	CONSIDERED THAT THE PROJECT CONCERN- ED...			
	IS WORTHWHILE	IS OF NO PARTICULAR INTEREST	CARRIES UN- ACCEPTABLE RISKS	
%	%	%	%	%
● IF WE DON'T INCREASE THE NUMBER OF OBSERVATION SATELLITES... (152/153)				
. TRUE .....	41	60	20	21
. NOT TRUE .....	34	25	54	57
. DON'T KNOW .....	25	15	26	22
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
IF IT WERE TRUE, IT WOULD BE:				
. VERY SERIOUS .....	16	21	10	14
. QUITE SERIOUS .....	30	38	21	29
. TOTAL SERIOUS .....	46	59	31	43
. TOTAL NOT VERY OR NOT AT ALL SERIOUS .....	29	26	41	32
● IF WE DON'T DEVELOP NUCLEAR POWER STATIONS ... (160/161)				
. TRUE .....	56	85	40	34
. NOT TRUE .....	30	10	44	53
. DON'T KNOW .....	14	5	16	13
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
IF IT WERE TRUE, IT WOULD BE:				
. VERY SERIOUS .....	32	44	24	26
. QUITE SERIOUS .....	30	37	29	25
. TOTAL SERIOUS .....	62	81	53	51
. TOTAL NOT VERY OR NOT AT ALL SERIOUS .....	21	13	27	32
● IF WE GIVE UP GENETIC EXPERIMENTS... (162/163)				
. TRUE .....	38	75	25	17
. NOT TRUE .....	42	16	55	68
. DON'T KNOW .....	20	9	20	15
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
IF IT WERE TRUE, IT WOULD BE:				
. VERY SERIOUS .....	16	25	9	16
. QUITE SERIOUS .....	22	36	16	15
. TOTAL SERIOUS .....	38	61	25	30
. TOTAL NOT VERY OR NOT AT ALL SERIOUS ..	37	28	49	47

TABLE 9 (Continued)

## CREDIBILITY OF RISK DEPENDING ON SUPPORT FOR PROJECTS

	EC TOTAL	CONSIDERED THAT THE PROJECT CONCERN- ED...		
		IS WORTHWHILE	IS OF NO PARTICULAR INTEREST	CARRIES UN- ACCEPTABLE RISKS
	%	%	%	%
• IF WE DON'T CENTRALIZE INFORMATION BY COMPUTER ... (156/157)				
. TRUE .....	32	76	27	17
. NOT TRUE .....	52	16	59	72
. DON'T KNOW .....	16	8	14	11
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
IF IT WERE TRUE, IT WOULD BE:				
. VERY SERIOUS .....	14	16	7	18
. QUITE SERIOUS .....	18	36	14	13
. TOTAL SERIOUS .....	32	52	21	31
. TOTAL NOT VERY OR NOT AT ALL SERIOUS .....	46	38	58	48
• IF WE DON'T DEVELOP CHE- MICAL RESEARCH INTO SYNTHETIC FOOD... (158/ 159)				
. TRUE .....	38	82	29	23
. NOT TRUE .....	49	12	60	67
. DON'T KNOW .....	13	6	11	10
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
IF IT WERE TRUE, IT WOULD BE:				
. VERY SERIOUS .....	27	47	19	23
. QUITE SERIOUS .....	26	33	29	23
. TOTAL SERIOUS .....	53	80	48	46
. TOTAL NOT VERY OR NOT AT ALL SERIOUS .....	26	12	29	32

TABLE 10

## ATTITUDES TO THE EIGHT RESEARCH AREAS

## ANALYSIS BY COUNTRY

	EC	B	DK	D	F	IRL	I	L	N	UK
	%	%	%	%	%	%	%	%	%	%
● DEVELOPMENT OF RESEARCH INTO ORGAN TRANSPLANTS (145)										
. WORTHWHILE .....	82	80	81	69	90	80	90	74	89	82
. NO PARTICULAR INTEREST .....	6	5	3	8	4	6	4	14	4	7
. UNACCEPTABLE RISKS .....	7	5	6	13	4	9	4	7	5	8
. DON'T KNOW .....	5	10	10	10	2	5	2	5	2	3
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
IF NOT, RISKS OF NOT BEING ABLE TO IMPROVE THE LIVES OF SEVERAL HANDICAPPED PEOPLE										
. TRUE .....	82	77	82	72	91	80	91	77	90	78
. NOT TRUE .....	10	9	9	12	5	9	6	17	6	16
. DON'T KNOW .....	8	14	9	16	4	11	3	6	4	6
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
THIS RISK WOULD BE SERIOUS	77	67	75	70	77	79	86	72	79	78
● EXPENDITURE ON NEW SOURCES OF ENERGY (150)										
. WORTHWHILE .....	76	64	83	79	70	73	80	69	80	76
. NO PARTICULAR INTEREST .....	12	17	4	7	17	14	11	19	11	14
. UNACCEPTABLE RISKS .....	5	6	2	4	6	5	4	4	5	5
. DON'T KNOW .....	7	13	11	10	7	8	5	8	4	5
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
IF NOT, WE MAY BE FORCED TO BUILD EVEN MORE NUCLEAR POWER STATIONS										
. TRUE .....	75	62	67	74	79	64	84	66	83	67
. NOT TRUE .....	12	16	21	11	12	16	6	22	11	18
. DON'T KNOW .....	13	22	12	15	9	20	10	12	6	15
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
THIS RISK WOULD BE SERIOUS	70	55	59	72	70	63	76	59	66	66
● DEVELOPMENT OF SYNTHETIC MATERIALS (151)										
. WORTHWHILE .....	54	39	51	67	36	51	51	42	50	63
. NO PARTICULAR INTEREST .....	24	31	16	10	33	30	29	40	30	23
. UNACCEPTABLE RISKS .....	12	16	14	7	23	9	14	8	13	6
. DON'T KNOW .....	10	14	19	16	8	10	6	10	7	8
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
IF NOT, WE WON'T HAVE AN ANSWER TO THE EXHAUSTION OF NATURAL RAW MATERIALS										
. TRUE .....	59	44	62	67	43	58	57	42	66	67
. NOT TRUE .....	27	32	23	14	43	27	32	43	25	20
. DON'T KNOW .....	14	24	15	19	14	15	11	15	9	12
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
THIS RISK WOULD BE SERIOUS	59	41	53	66	48	57	56	38	65	68

TABLE 10 (Continued)  
 ATTITUDES TO THE EIGHT RESEARCH AREAS  
 ANALYSIS BY COUNTRY

	EC	B	DK	D	F	IRL	I	L	N	UK
	%	%	%	%	%	%	%	%	%	%
• INCREASE IN THE NUMBER OF OBSERVATION SATELLITES (144)										
. WORTHWHILE .....	55	50	48	58	52	44	56	51	59	55
. NO PARTICULAR INTEREST .....	20	20	17	14	16	31	23	31	24	25
. UNACCEPTABLE RISKS .....	13	13	13	11	21	8	12	9	12	11
. DON'T KNOW .....	12	17	22	17	11	17	9	9	5	9
	100	100	100	100	100	100	100	100	100	100
IF NOT, WE MIGHT NOT BE ABLE TO DISCOVER NEW RAW MATERIALS TO REPLACE THOSE WE HAVE EXHAUSTED										
. TRUE .....	41	37	38	50	40	39	40	40	34	38
. NOT TRUE .....	34	32	42	18	39	28	41	40	45	38
. DON'T KNOW .....	25	31	20	32	21	33	19	20	21	24
	100	100	100	100	100	100	100	100	100	100
THIS RISK WOULD BE SERIOUS	46	36	31	53	42	42	46	36	37	48
• DEVELOPMENT OF NUCLEAR POWER STATIONS (148)										
. WORTHWHILE .....	44	29	37	35	40	45	53	35	28	57
. OF NO PARTICULAR INTEREST .....	9	14	9	7	8	10	8	22	12	10
. UNACCEPTABLE RISKS .....	36	39	34	45	42	35	29	31	54	25
. DON'T KNOW .....	11	18	20	13	10	10	10	12	6	8
	100	100	100	100	100	100	100	100	100	100
IF NOT, RISK OF RESTRICTIONS ON ELECTRICITY										
. TRUE .....	56	46	52	45	55	54	65	46	65	61
. NOT TRUE .....	30	32	36	34	32	30	24	41	27	27
. DON'T KNOW .....	14	22	12	21	13	16	11	13	8	12
	100	100	100	100	100	100	100	100	100	100
THIS RISK WOULD BE SERIOUS	62	47	54	63	57	66	65	41	49	70
• GENETIC RESEARCH (149)										
. WORTHWHILE .....	33	38	13	22	29	41	49	37	36	32
. OF NO PARTICULAR INTEREST .....	19	20	10	16	22	20	19	31	17	21
. UNACCEPTABLE RISKS .....	35	22	61	45	37	22	22	18	41	36
. DON'T KNOW .....	13	20	16	17	12	17	10	14	6	11
	100	100	100	100	100	100	100	100	100	100
IF NOT, WE MAY NOT BE ABLE TO IMPROVE THE QUALITIES OF LIVING SPECIES										
. TRUE .....	38	38	27	28	38	42	48	36	46	36
. NOT TRUE .....	42	31	58	44	44	31	36	45	38	47
. DON'T KNOW .....	20	31	15	28	18	27	16	19	16	17
	100	100	100	100	100	100	100	100	100	100
THIS RISK WOULD BE SERIOUS	38	32	28	41	35	45	42	32	35	35
THIS RISK WOULD BE NOT VERY OR NOT AT ALL SERIOUS	38	25	27	35	36	26	40	18	33	44

TABLE 10 (Continued)

ATTITUDES TO THE EIGHT RESEARCH AREAS  
ANALYSIS BY COUNTRY

	EC	B	DK	D	F	IRL	I	L	N	UK
	%	%	%	%	%	%	%	%	%	%
• CENTRALIZATION OF INFORMATION ABOUT INDIVIDUALS BY COMPUTER (146)										
. WORTHWHILE .....	22	26	10	15	16	25	47	19	13	15
. OF NO PARTICULAR INTEREST ...	24	29	17	23	20	34	25	42	30	26
. UNACCEPTABLE RISKS .....	45	30	59	49	58	29	20	29	54	54
. DON'T KNOW .....	9	15	14	13	6	12	8	10	3	5
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
IF NOT, WE MAY NOT BE ABLE TO CUT OUT WASTED TIME ON ADMINISTRATION										
. TRUE .....	32	38	36	21	29	27	54	29	40	22
. NOT TRUE .....	52	41	50	54	59	50	34	59	52	64
. DON'T KNOW .....	16	21	14	25	12	23	12	12	8	14
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
THIS RISK WOULD BE NOT VERY OR NOT AT ALL SERIOUS	46	38	34	42	49	48	43	20	46	52
• DEVELOPMENT OF RESEARCH ON SYNTHETIC FOOD (147)										
. WORTHWHILE .....	23	16	13	34	10	23	11	25	23	34
. OF NO PARTICULAR INTEREST ...	21	26	21	16	20	29	20	39	30	25
. UNACCEPTABLE RISKS .....	49	44	50	36	66	38	65	25	42	36
. DON'T KNOW .....	7	14	16	14	4	10	4	11	5	5
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
IF NOT, WE MAY NOT BE ABLE TO FIGHT EFFECTIVELY AGAINST HUNGER IN THE WORLD										
. TRUE .....	38	28	30	48	23	44	25	27	34	55
. NOT TRUE .....	49	51	56	31	68	40	66	61	57	35
. DON'T KNOW .....	13	21	14	21	9	16	9	12	9	10
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
THIS RISK WOULD BE SERIOUS	53	39	38	60	44	54	48	29	50	65



TABLE 11

REACTIONS TO THE EIGHT PROJECTS IN THE LIGHT OF ATTITUDES  
TO SCIENTIFIC AND TECHNICAL DEVELOPMENT

	EC TOTAL	ASSERTIVE		MODER- ATE	NON-ASSERTIVE	
		Optim- istic	Non op- timis- tic		Optim- istic	Non op- timis- tic
	%	%	%	%	%	%
● DEVELOPMENT OF RESEARCH INTO ORGAN TRANSPLANTS (145)						
. WORTHWHILE .....	82	85	80	84	87	82
. OF NO PARTICULAR INTEREST .....	6	5	7	6	4	9
. UNACCEPTABLE RISKS .....	7	7	9	7	7	6
. DON'T KNOW .....	5	3	4	3	2	3
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
IF NOT, WE MIGHT NOT BE ABLE TO IMPROVE THE LIVES OF SEVERELY HANDICAPPED PEOPLE						
. TRUE .....	82	87	82	84	85	77
. NOT TRUE .....	10	7	12	8	9	18
. DON'T KNOW .....	8	6	6	8	6	5
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
THIS RISK WOULD BE SERIOUS	77	81	76	80	80	75
● EXPENDITURE ON NEW SOURCES OF ENERGY (150)						
. WORTHWHILE .....	76	75	73	78	84	83
. OF NO PARTICULAR INTEREST .....	12	13	14	13	9	10
. UNACCEPTABLE RISKS .....	5	5	7	5	3	4
. DON'T KNOW .....	7	7	6	4	4	3
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
IF NOT, WE MAY BE FORCED TO BUILD EVEN MORE NUCLEAR POWER STATIONS						
. TRUE .....	75	79	73	76	76	76
. NOT TRUE .....	12	10	14	13	14	14
. DON'T KNOW .....	13	11	13	11	10	10
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
THIS RISK WOULD BE SERIOUS	70	71	72	72	69	71
● DEVELOPMENT OF SYNTHETIC MATERIALS (151)						
. WORTHWHILE .....	54	49	46	59	65	56
. OF NO PARTICULAR INTEREST .....	24	25	28	24	19	27
. UNACCEPTABLE RISKS .....	12	16	18	11	8	10
. DON'T KNOW .....	10	10	8	6	8	7
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
IF NOT, WE WILL HAVE NO ANSWER TO THE EXHAUSTION OF OUR NATURAL RAW MATERIALS						
. TRUE .....	59	59	50	63	66	61
. NOT TRUE .....	27	27	37	25	23	28
. DON'T KNOW .....	14	14	13	12	11	11
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
THIS RISK WOULD BE SERIOUS	59	59	55	63	65	63

TABLE 11 (Continued)

REACTIONS TO THE EIGHT PROJECTS IN THE LIGHT OF ATTITUDES  
TO SCIENTIFIC AND TECHNICAL DEVELOPMENT

	EC TOTAL	ASSERTIVE		MODER- ATE	NON-ASSERTIVE	
		Optim- istic	Non op- timis- tic		Optim- istic	Non op- timis- tic
	%	%	%	%	%	%
● INCREASE IN THE NUMBER OF OBSERVATION SATELLITES (144)						
. WORTHWHILE .....	55	54	44	57	66	63
. OF NO PARTICULAR INTEREST .....	20	19	25	21	16	18
. UNACCEPTABLE RISKS .....	13	16	21	12	9	10
. DON'T KNOW .....	12	11	10	10	9	9
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
IF NOT, WE MAY NOT BE ABLE TO DISCOVER NEW RAW MATERIALS TO REPLACE THOSE WE HAVE EXHAUSTED						
. TRUE .....	41	48	30	41	49	38
. NOT TRUE .....	34	30	44	35	31	42
. DON'T KNOW .....	25	22	26	24	20	20
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
THIS RISK WOULD BE SERIOUS	46	50	41	45	52	47
● DEVELOPMENT OF NUCLEAR POWER STATIONS (145)						
. WORTHWHILE .....	44	47	32	45	<u>57</u>	42
. OF NO PARTICULAR INTEREST .....	9	9	8	9	8	8
. UNACCEPTABLE RISKS .....	36	34	<u>51</u>	37	27	42
. DON'T KNOW .....	11	10	9	9	8	8
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
IF NOT, RISK OF RESTRICTIONS ON ELECTRICITY						
. TRUE .....	56	60	48	55	67	54
. NOT TRUE .....	30	26	40	32	22	33
. DON'T KNOW .....	14	14	13	13	10	13
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
THIS RISK WOULD BE SERIOUS	62	66	56	63	69	63
● GENETIC RESEARCH (149)						
. WORTHWHILE .....	33	41	30	30	35	27
. OF NO PARTICULAR INTEREST .....	19	20	21	19	17	20
. UNACCEPTABLE RISKS .....	35	26	39	41	38	44
. DON'T KNOW .....	13	13	10	10	10	9
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
IF NOT, WE MAY NOT BE ABLE TO IMPROVE THE QUALITIES OF LIVING SPECIES						
. TRUE .....	38	47	34	35	38	34
. NOT TRUE .....	42	35	47	47	42	51
. DON'T KNOW .....	20	18	19	18	20	15
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
THIS RISK WOULD BE SERIOUS	38	44	38	38	35	36
THIS RISK WOULD BE NOT VERY OR NOT AT ALL SERIOUS	38	33	40	40	39	42

TABLE 11 (Continued)

REACTIONS TO THE EIGHT PROJECTS IN THE LIGHT OF ATTITUDES  
TO SCIENTIFIC AND TECHNICAL DEVELOPMENT

	EC TOTAL	ASSERTIVE		MODER- ATE	NON-ASSERTIVE	
		Optim- istic	Non op- timis- tic		Optim- istic	Non op- timis- tic
	%	%	%	%	%	%
● CENTRALIZATION OF INFORMATION ABOUT INDIVIDUALS BY COMPUTER (146)						
. WORTHWHILE .....	22	31	19	20	26	14
. OF NO PARTICULAR INTEREST .....	24	24	27	26	23	21
. UNACCEPTABLE RISKS .....	45	37	47	49	45	61
. DON'T KNOW .....	9	8	7	5	7	4
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
IF NOT, WE MAY NOT BE ABLE TO CUT OUT WASTED TIME ON ADMINISTRATION						
. TRUE .....	32	40	30	29	32	29
. NOT TRUE .....	52	46	55	57	53	61
. DON'T KNOW .....	16	14	15	14	15	10
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
THIS RISK WOULD BE NOT VERY OR NOT AT ALL SERIOUS						
	46	43	44	51	46	53
● DEVELOPMENT OF RESEARCH ON SYNTHETIC FOOD (147)						
. WORTHWHILE .....	23	22	14	23	31	25
. OF NO PARTICULAR INTEREST .....	21	21	22	22	20	24
. UNACCEPTABLE RISKS .....	49	51	61	50	43	47
. DON'T KNOW .....	7	6	3	5	6	4
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
IF NOT, WE MAY NOT BE ABLE TO FIGHT EFFECTIVELY AGAINST HUNGER IN THE WORLD						
. TRUE .....	38	41	28	37	45	40
. NOT TRUE .....	49	48	59	52	45	50
. DON'T KNOW .....	13	11	13	11	10	10
	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>	<u>100</u>
THIS RISK WOULD BE SERIOUS .....	53	56	49	54	57	56

## 1. INSTITUTES DONDUCTING THE POLL AND PERSONS RESPONSIBLE

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Belgium	(B)	DIMARSO/INRA	Patrick Davies
Danmark	(DK)	GALLUP MARKEDSANALYSE	Rolf Randrup
Germany	(D)	EMNID-INSTITUT	Günter Bierbaum
France	(F)	INSTITUT FRANCAIS D'OPINION PUBLIQUE	Hélène Riffault
Ireland	(IRL)	IRISH MARKETING SURVEYS	John Meagher
Italy	(I)	ISTITUTO PER LE RICERCHE STA TISTICHE E L'ANALISI DELL' OPTINIONE PUBBLICA (DOXA)	Ennio Salamon
Luxembourg	(L)	DIMARSO/INRA	Patrick Davies
Netherland	(N)	NEDERLANDS INSTITUUT VOOR DE PUBLIEKE OPINIE (NIPO)	Jan Stapel
United Kingdom	(UK)	SOCIAL SURVEYS (GALLUP POLL) <sup>☆</sup>	Norman Webb

All the data concerning "The European Omnibus" are filed at the Belgian Archives for the Social Sciences, 1 place Montesquieu, B-1038 Louvain-la-Neuve. They are available to bodies that are members of the European Consortium for Political Research in Essex, the Inter-University Consortium for Political Research in Michigan and researchers who can show that they need these data for their research.

## 2. SAMPLING

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The sampling method is d-signed to cover in respresentative fahion the whole population of the nine countries of the European Community aged 15 years and over.

The sample for each country is made up of two levels:

### 1° Survey regions

Community statistics divide the territory inot 120 regions (see attached list and map). The poll is conducted in 177 regions (excluding Corsica, Greenland and Vall d'Aosta).

Each country has established at random a master sample of survey points in such a way that all categories of residential area are represented in proportion to their respective populations.

In all, interviews for the European Omnibus survey are conducted in no less than 1 100 survey points throughout the 117 regions of the Community.

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(☆) The polls in Northern Ireland are carried out jointly by Irish Marketing Surveys and Gallup Poll.

## 2° Selection of person interviewed

The persons interviewed always differ from one survey to another. The random master sample mentioned above indicates the number of people to be interviewed at each survey point. At the next stage, the persons to be interviewed are selected:

- either by drawing at random from a list in countries where exhaustive lists of individuals or households are accessible: Belgium, the Netherlands, Denmark, Luxembourg;
- or by stratified sampling on the basis of census statistics, the sample being established on the criteria of sex, age and occupation: France, Italy, United Kingdom, Ireland, Germany.

BELGIUM/BELGIE

AN : Antwerpen  
 W.V. : West-Vlaanderen  
 O.V. : Oost-Vlaanderen  
 BR : Brabant  
 LI : Limburg  
 LIE : Liège  
 HAI : Hainaut  
 NA : Namur  
 LX : Luxembourg

GERMANY

S.H. : Schleswig-Holstein  
 STA : Stade  
 AUR : Aurich  
 OLD : Oldenburg  
 B : Bremen  
 LUN : Luneburg  
 BR : Braunschweig  
 OSN : Osnabrück  
 HAN : Hannover  
 MUN : Münster  
 DET : Detmold  
 HIL : Hildesheim  
 DUS : Düsseldorf  
 ARN : Arnsberg  
 KAS : Kassel  
 AA : Aachen  
 KOL : Köln  
 TRI : Trier  
 KOB : Koblenz  
 DA.WI. : Darmstadt-Wiesbaden  
 U.F. : Unterfranken  
 O.F. : Oberfranken  
 SAA : Saarland  
 RH.PF. : Rheinhessen-Pfalz  
 N.B. : Nordbaden  
 N.W. : Nordwürttemberg  
 M.F. : Mittelfranken  
 O.PF. : Oberpfalz  
 N.BAY. : Niederbayern  
 S.B. : Südbaden  
 S.W. : Südwürttemberg  
 SCH : Schwaben  
 O.BAY. : Oberbayern  
 BER : Berlin

DENMARK

JYLL : Jylland  
 SJÆ : Sjælland  
 FYN : Fyn  
 GRØ : Grøland

FRANCE

NORD : Nord  
 PIC : Picardie  
 H.N. : Haute-Normandie  
 R.P. : Région Parisinne

CHA : Champagne  
 LOR : Lorraine  
 AL : Alsacé  
 B.N. : Basse-Normandie  
 BRE : Bretagne  
 P.LOI : Pays de la Loire  
 CEN : Centre  
 BOU : Bourgogne  
 F.C. : Franche-Comté  
 P.CH : Poitou-Charentes  
 LIM : Limousin  
 AUV : Auvergne  
 R-A : Rhône-Alpes  
 AQU : Aquitaine  
 M.P. : Midi-Pyrénées  
 LAN : Languedoc  
 P.CDA : Provence-Côte d'Azur  
 COR : Corse

IRELAND

DON : Donegal  
 N.W. : North West  
 N.E. : North East  
 W. : West  
 M. : Midlands  
 E. : East  
 M.W. : Mid West  
 S.E. : South East  
 S.W. : South West

ITALY

V.D.A. : Valle d'Aosta  
 PIE : Piemonte  
 LOM : Lombardia  
 T.AA : Trentino-Alto Adige  
 VEN : Veneto  
 F.V.G. : Friuli-Venezia Giulia  
 LIG : Liguria  
 E-R : Emilia-Romagna  
 TOS : Toscana  
 UMB : Umbria  
 MAR : Marche  
 LAZ : Lazio  
 ABR : Abruzzi  
 MOL : Molise  
 CAM : Campania  
 PUG : Puglia  
 BAS : Basilicata  
 CAL : Calabria  
 SIC : Sicilia  
 SAR : Sardegna

LUXEMBOURG

LX : G.D. du Luxembourg

NETHERLAND

GR : Groningen  
 FR : Friesland

DR : Drenthe  
 OV : Overijssel  
 NH : Noord-Holland  
 GEL : Gelderland  
 ZH : Zuid-Holland  
 UT : Utrecht  
 ZE : Zeeland  
 N.B. : Noord-Brabant  
 LI : Limburg

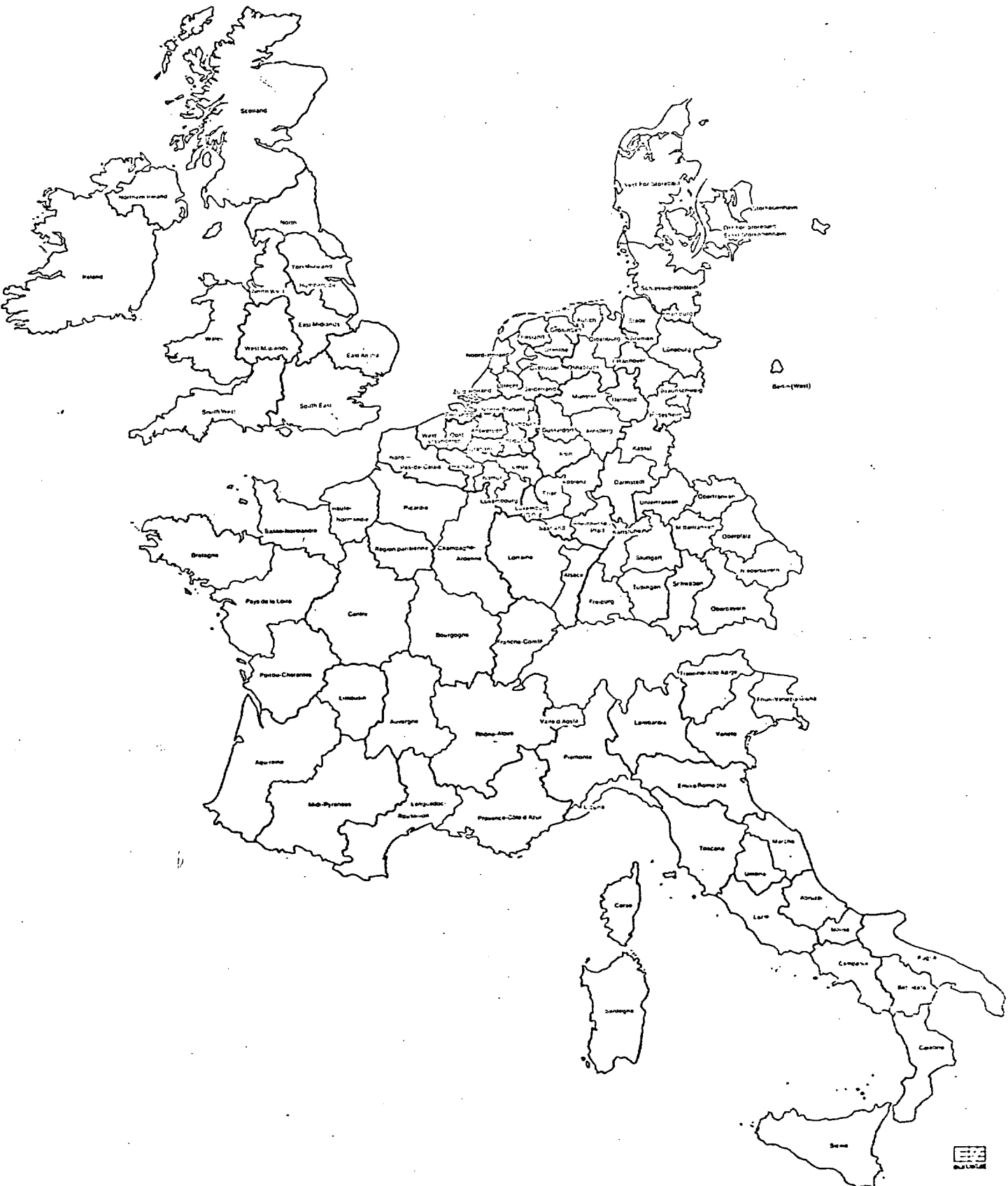
UNITED KINGDOM

SCOTL : Scotland

N. : North  
 N.I. : Northern  
 Ireland  
 N.W. : North West  
 Y.H. : Yorkshire  
 and  
 Humberside

WALES : Wales

W.M. : West Midlands  
 E.M. : East Midlands  
 E.A. : East Anglia  
 S.W. : South West  
 S.E. : South East



### 3. POPULATION STUDIED. SIZE OF SAMPLES, DATES OF WORK

	Population (1)		Echantillons	Dates
	'000	%	EUR. A.10	EURO. A.10
B	7 653	3.84	1 014	13-27 October 1978
DK	3 925	1.98	983	7-15 October 1978
D	48 561	24.42	1 000	5-15 October 1978
F	40 272	20.25	1 340(2)	2-16 October 1978
IRL	2 167	1.09	1 006	16-27 October 1978
I	42 611	21.42	919	6-25 October 1978
L	285	0.14	330	16-31 October 1978
N	10 292	5.18	1 083	20-27 October 1978
UK	43 108	21.68	1 306	19-28 October 1978
EC	198.874	100.00	9 018	

### 4. NOTE FOR THE READER

In sample surveys, allowance must be made for a margin of error in sampling. With samples of around 1 000 persons interviewed, percentage differences of less than 5% should not normally be regarded as statistically significant.

(1) 15 and over.

(2) Including over-representation of 161 country dwellers.



QUESTIONNAIRE

## QUESTIONNAIRE TO BE PUT TO A MAN OR WOMAN OVER IS

112. Here are certain kinds of fears which are sometimes expressed about the future of the world we live in. For each one I would like you to tell me if it is something which really concerns you or worries you, or not.		Yes - really <u>concerns</u>	No - not really not at all <u>concerned</u>	Don't know -----
112.	More and more artificial things are coming into the life we lead (housing, traffic, food etc.)	1	2	0
113.	The despoiling of natural life and the countryside by pollution of all kinds	1	2	0
114.	The risk that the use of some new medical or pharmaceutical discoveries may severely affect the human personality	1	2	0
115.	Increase in unemployment as a consequence of the automation of jobs	1	2	0
116/	Among these different kinds of fear (Show CARD A) are there any which you find more disturbing than the others? <u>If YES:</u> Which one or ones ?		First reply -----	Second or third <u>replies</u>
117	. More and more artificial things are coming into the life we lead (housing, traffic, food, etc)		1	1
	. The despoiling of natural life and the countryside by pollution of all kinds		2	2
	. The risk that the use of some new medical or pharmaceutical discoveries may severely affect the human personality		3	3
	. Increase in unemployment as a consequence of the automation of jobs		4	4
	. None		0	0

133/ Now let us go on to some other things. People hear about scientific and  
 143. technical developments these days. I am going to tell you some  
 different opinions about this. Here is a seven-point scale (Show  
 CARD F). For each statement that I read you, could you give me a mark  
 between 1 and 7 according to whether you agree or not with what is  
 said. 1 shows that you completely disagree and 7 shows that you  
 completely agree. The numbers in-between will allow you to give less  
 definite opinions. (Ask the question for each of the 11 following  
 items. Write in code number)

- |      |  |   |   |   |   |   |   |   |   |
|------|--|---|---|---|---|---|---|---|---|
| 133. | Science will continue in the future as it has done in the past to be one of the most important factors in improving our lives.....   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 0 |
| 134. | Nowadays some scientific discoveries are put into practice before a sufficient study has been made of the future consequences .....  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 0 |
| 135. | Scientific knowledge is good in itself; it is only the way it is put into practice which often creates problems  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 0 |
| 136. | Sometimes scientific and technical development is accompanied by bigger and bigger risks for society that will be difficult to overcome .....  | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 0 |
| 137. | New inventions will always be found to counteract the harmful consequences of technological developments .....   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 0 |
| 138. | It would be a good thing if the construction of so many machines could be stopped and we could go back to nature .....   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 0 |
| 139. | To direct scientific and technological research in the right way it would be better to take more account of what the public thinks, in other words people like you and me .....                              | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 0 |
| 140. | In this country sufficient care is taken to ensure that scientific discoveries are put to use for the benefit of people in general .....   | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 0 |
| 141. | Members of Parliament and other people who take political decisions do not take serious enough consideration of the choices that are there to be made in deciding about scientific research and applications | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 0 |

142. I find  
 142. I find it difficult to talk about science  
 science because I don't know enough  
 about it..... 1 2 3 4 5 6 7 0
143. I am in contact, through my work, with  
 some kinds of scientific and technical  
 developments 1 2 3 4 5 6 0

- 144- Now I am going to ask your opinion about a number of possible  
 151. scientific research projects, or aims to which scientific research  
 can be directed towards. Naturally, the research that is needed to  
 succeed in these different areas requires effort, time and money.  
 It may also involve some risks. In each case I am going to ask you if  
 you, yourself, would say that this project is either worthwhile, of  
 no particular interest, or whether it carries with it unacceptable  
 risks.  
 Here is the first one. (Show CARD G1) (Do NOT prompt. don't suggest  
 anything. Help the respondent to read correctly if it's needed. Then  
 do the same with CARD G2 up to G8)

		<u>Worth-</u> <u>while</u>	<u>No par-</u> <u>ticular</u> <u>interest</u>	<u>Unaccep-</u> <u>table</u> <u>risks</u>	<u>Don't</u> <u>know</u>
<u>G.1</u> 144.	To increase the number of observation satellites which will circle the earth to gather and re-transmit information (for telecommunications, detection of the resources on and under the earth, etc.)	1	2	3	0
<u>G.2</u> 145	To develop medical and surgical research on human organ transplants	1	2	3	0
<u>G.3</u> 146.	To collect together by computer the greatest possible amount of information on each person in Britain so that it is possible, if it's needed, to know all that can be required on each person	1	2	3	0
<u>G.4</u> 147.	To speed up research into synthetic food so as to be able to produce food on an industrial scale which is not made from farm animals or farm products	1	2	3	0
<u>G.5</u> 148.	To develop nuclear power stations that will use atomic energy for the production of electricity	1	2	3	0

	<u>Worth-</u> <u>while</u>	<u>No par-</u> <u>ticular</u> <u>interest</u>	<u>Unaccep-</u> <u>table</u> <u>risks</u>	<u>Don't</u> <u>know</u>
<u>G.6</u> 149. To carry out experiments on the transmission of hereditary characteristics which could make it possible to improve the qualities of living species	1	2	3	0
<u>G.7</u> 150. To spend, if necessary, a great deal of money to find and develop new sources of energy	1	2	3	0
<u>G.8</u> 151. To develop synthetic materials to replace natural raw materials such as wood, iron, copper, etc.	1	2	3	0

---

152- Now I am going to read you some different statements. For each one, can you tell me - if you think that it's  
 167. true or not? Supposing, for the moment, it were true, do you think it's a serious matter or not ? (Show CARD H1  
 and ask the two questions for this first items. Again with CARD H2 etc. up to CARD H8).

	<u>True</u>	<u>Not true</u>	<u>Don't know</u>	<u>Very serious</u>	<u>Quite serious</u>	<u>Not very</u>	<u>Not at all</u>	<u>Don't know</u>
<u>H.1</u>								
152- If we don't increase the number of observational 153. satellites, we won't be able to discover in a reasonably cheap way new raw materials that we need to replace the ones we shall have exhausted	1	2	0	1	2	3	4	0
<u>H.2</u>								
154- If we don't develop our research into organ 155. transplants we will limit our chances of improving the lives of people severely handicapped by accident, injury or by illness	1	2	0	1	2	3	4	0
<u>H.3</u>								
156- If we don't centralise information about 157. individual peoples by electronic computer we will limit our chances of cutting out wasted time on red tape and administration	1	2	0	1	2	3	4	0
<u>H.4</u>								
158- If we don't develop chemical research in the 159. direction of manufacturing synthetic food, we will restrict our chances of fighting effectively against hunger in the world	1	2	0	1	2	3	4	0
<u>H.5</u>								
160- If we don't develop nuclear power stations we 161. shall soon be obliged to restrict our consumption of electricity	1	2	0	1	2	3	4	0
<u>H.6</u>								
162- If we give up experiments and research on the 163. transmission of hereditary characteristics, we will restrict our chances of improving the qualities of living species	1	2	0	1	2	3	4	0

	<u>True</u>	<u>Not true</u>	<u>Don't know</u>	<u>Very serious</u>	<u>Quite serious</u>	<u>Not very</u>	<u>Not at all</u>	<u>Don't know</u>
H.7 164- If we don' expand our research into solar 165. energy (energy from the sun) we will be forced to build even more nuclear power stations	1	2	0	1	2	3	4	0
H.8 166- If we don't develop synthetic materials to 167. replace the natural raw materials we won't have any answer to the foreseeable possibility that our raw materials will, at some future date, be all used up	1	2	0	1	2	3	4	0

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