

ADELE RUBINO

A. RUBINO

GENERATION CHANGE

A study on the structure of the labour force.

Thesis submitted with a view to obtaining the degree
of Doctor of the European University Institute.

Florence, February 1983.

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This dissertation was prepared during my three-year stay at the European University Institute, and completed thereafter.

I would like to thank my supervisor, prof. Ezio Tarantelli, for suggesting the original subject and continuously providing stimulating ideas; and my co-supervisor, prof. Jean-Paul Fitoussi, who guided me out of several theoretical and psychological impasses.

My thanks also to the whole academic and secretarial staff of the Department of Economics, and to the many colleagues who helped me in the course of my stay at the Institute. In particular, I wish to thank Mrs. Jacqueline Bougonje, and Ms. Bonita Bonis, who carefully typed the manuscript.

Finally, I dedicate this dissertation to my daughter, who will be happy to see her mother finally terminating her student life.

Adele Rubino

GENERATION CHANGE. A STUDY ON THE STRUCTURE OF THE
LABOUR FORCE

" L'inflazione degli anni settanta e' innanzitutto il riflesso dei grandi mutamenti sociali derivanti, ai Paesi capitalistici, da quello che viene definito generalmente " lo spirito del '68". Esso ha assunto caratteristiche diverse nei vari Paesi. Le conseguenze di queste manifestazioni sociali e politiche sono state molteplici e, partendo generalmente da movimenti giovanili-studenteschi, attraverso la mobilitazione sindacale, hanno raggiunto tutte le categorie di lavoratori."

(G.Mengarelli)

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Preface

The present research centers around the industrial conflict which arose--or intensified--in many Western industrialized countries by the end of the sixties.

There is nowadays a vast literature on this subject, and of course many alternative explanations have been proposed already. It is our contention, however, that even the mainstream interpretations of the conflict, the so-called monetarist approach and the cost-push school, fail to persuasively explain the peculiarities of the industrial relations crisis of the sixties; in particular, its contemporaneity in many Western countries: starting from the French May in 1968, through the strikes in Germany in 1969, the Italian "hot autumn" in 1969, the failure in Great Britain of the Donovan Report (1968) and of the Industrial Relations Act (1971), not to forget the first industrial conflicts in Sweden (from 1966 to 1971 and on) and in Japan, which all belong in a broad sense to the same period.

The basic hypothesis of the project proposes to explain the contemporaneity of industrial conflict in Europe¹⁾ as the effect of a change in the composition of the labour force.²⁾

This change can be observed along at least four differ-

-
- 1) The U.S. experienced similar developments a few years ahead of the other Western countries: one could mention e.g. the events of Berkeley in 1964. The case of the U.S. is not included in this study, but it is often used as a relevant comparison.
 - 2) This hypothesis was originally put forward by Professor E. Tarantelli (1978) and later incorporated in the research program of this Department.

ent dimensions: the processes of urbanization and of immigration, both in full swing during the sixties; the development of mass-media (and thus a higher level of information) and of mass-education.¹⁾

In my own research, I focus on one and possibly the main element in the structural change of the labour force: the development of mass education, which led to a higher level of education of the labour force.

"The inflow in the labour market in 1968 of the eighteen year olds born in 1950, who had started primary school during the post-war school-boom of the mid-fifties, soon after the first efforts of the postwar reconstruction (the U.S. being a few years in advance, since they were exempted from such efforts) laid the basis for a generation change, which is necessary to a correct understanding of the contemporaneity of the conflict,"²⁾

It is in this spirit that our working hypothesis has been labelled the "generation leap" hypothesis.

The central characteristic of this new generation of workers is seen thus to be a higher level of education with respect to its predecessors. This higher level of education went hand in hand with great expectations, raised in the atmosphere of the European economic miracles and the American dream of the "great society".³⁾ One can argue to it that the impact of a higher level of education was in its turn connected to two important developments: on the one hand,

1) E. Tarantelli, forthcoming.

2) E. Tarantelli, 1978, p. 35. In Italian in the original.

3) Cf. E.U.I. Report on the Research Program of the Economics Department, 1978, Annex no. 1.

it contributed to create expectations in terms of income, status and prestige, given the traditional role of education in income distribution; on the other hand, education helped to form a new maturity in the working population, which in turn led to a different attitude towards working conditions and work life in general.¹⁾

Following this double line of reasoning, one can argue that the higher the level of education, the higher the expected economic and non-economic rewards from work.

Workers' expectations in terms of pay, social status and job satisfaction, however, clashed with the effective working conditions in industry, which, during the sixties, worsened in several countries as a consequence of rationalization measures at factory level and of incomes policies at national level.

Disillusion on working conditions plus "new" attitudes among the working population led to job dissatisfaction and to industrial conflict.

This is the background of the present research.

The generation leap hypothesis is based on labour market and income distribution analysis. It has been necessary however to supplement the theoretical apparatus of economic science with approaches and assumptions already commonly adopted in companion social disciplines.

The plan of this study includes a critical discussion of the pieces of theory that constitute the general framework.

1) See on this point O.E.C.D., 1972.

In this sense, this research is intended as a theoretical contribution to the current discussion on labour market analysis, which tries to deepen its understanding by incorporating the findings of other social sciences.

The hypothesis also requires empirical support in addition to theoretical formalization. The statistical analysis in Part II offers a critical appraisal of the existing statistical material on the structure of the labour force in three European countries. The hypothesis is confronted with individual national developments and with a comparative synoptic perspective.

This statistical analysis offers empirical arguments to the debate on the existence of a "new working class". It tries to answer the question of the direction taken by the structural changes in the composition of the labour force in the course of the sixties.

A broader question concerns the factors which governed the evolution of the structure of the labour force. One could mention e.g. the relationship between the educational system and the occupational needs of the economy; the role played by different recruitment policies; "environmental" conditions such as legislation and/or labour market conditions.

These issues are taken into consideration in the theoretical analysis; but they have not been empirically dealt with in the present study.

Chapter I: Presentation of the Hypothesis

I.1. The "generation-leap" hypothesis.

The main center of interest of this dissertation is the crisis that developed in the labour markets and in the systems of industrial relations in Europe in the period from the mid-60's to the mid-70's. The economic crisis paralleled a crisis in the social, political and psychological spheres.

The economic theories on inflation and industrial conflict appear to pay only minimal attention to these features of the crisis and to the role played by the different economic actors, in particular, to the role played by the labour force in the course of the industrial relations crisis. To give account of this role, we propose the hypothesis of a "generation change" in the composition of the labour force.

Our working hypothesis considers that, around the end of the 60's, a new generation of workers, who were more educated, more self-conscious and more demanding, flowed en masse into the European labour markets.

The contemporaneity of this flow was due to the demographic developments of the post-World War II period, together with the expansion in the systems of education that took place in Europe during the 50's and 60's.

This generation was used to consider school certificates in terms of an above-average social and economic status: "... it was doomed to inevitable frustration when those 'pieces of paper', once obtained, would prove on the average to be so abundant as to achieve mostly low-status,

when not also senseless, alienating occupations, or even to produce intellectual unemployment as an alternative."¹⁾

The labour market is the field where the "generation leap" became more immediately evident. On the one hand, this inflow of new graduates met with rigidities embedded in the functioning of the labour markets: rigid wage structures, hierarchical division of labour, competition on the job.²⁾

On the other hand, these rigidities hampered the smooth adjustment of prices to the changed quality of the new labour supply, and provoked the rise of unemployment of an "intellectual" type. One has to consider, in fact, that ". . . the minimum wage rates these educated workers were prepared to accept were closer to the rates of the privileged occupations than to the rates of the low-status ones (which, in the meanwhile, registered excess demand for labour)".³⁾

In this interpretation, wage requests associated with income and status expectations were the moving factor in the crisis in industrial relations.

This approach is consistent with a cost-push view of inflation of the wage-wage variety, where the wage-wage spiral is interpreted in terms of a gap between the "desired" wage structure, and the established one.

1) E. Tarantelli, 1978, p. 36. In Italian in the original.

2) The theoretical treatment of the functioning of the labour markets is the subject of Chapter IV.

3) E. Tarantelli, *ibidem*.

The wage structure represents here not only an economic hierarchy, but also the hierarchical conditions prevailing at the plant level and in the society. What was being questioned, as a matter of fact, was the technical and social division of labour. In Marxist terms, one could explain the conflict as a contrast between the surpassed relations of production and the evolving superstructure.¹⁾

In this light, to circumscribe the industrial relations crisis and the subsequent inflation to a mere wage-leap race would be extremely limiting, if not totally mystifying.

With the hypothesis of a generation change in the composition of the labour force we intend to provide a broader paradigm for interpretation. A generation change in the composition of the labour force implies the demand for new rules of the game in the conduct of industrial relations. The growth in living standards during the sixties had created expectations of endless improvement. The commitment of the Welfare States to full employment had loosened the links of wages with labour market conditions. Public opinion had turned in favour of working class claims.

The social impulses following these structural modifications overcame the capabilities of the existing institutions in countries like Italy, Great Britain or France. The collective bodies were not flexible enough to adjust to the shift in the relative power in favour of the base of the working population. The friction between the institutions (the form) and the content of the bargaining provoked the breaking of consensus and a greater social instability.²⁾

1) This point is developed in Chapter III.

2) H. Phelps Brown, 1975.

Our analytical framework thus refers to the existence of a systematic disequilibrium, when not also of a wide gap, between the "rules demanded" by the labour force and the "rules offered" by the political leaders representing the State.

The specification of the basket of demands varies from country to country and between situations. The new generation of workers addressed the States with many different, and sometimes contrasting, demands: ". . . a sociopolitical demand for a transformation of the State, of its institutions, of the quality of life, of hierarchies and plant-level working conditions, wage structures, distribution of income . . . demands which are profoundly different from country to country and which clash with sociopolitical systems that are incapable of answering to them."¹⁾

We submit that this disequilibrium must have been present in many Western countries at the end of the sixties, and could account for the contemporaneity (broadly speaking) of the crisis in industrial relations in those countries. Different "speeds of adjustment" of the institutions to the demands put to the fore could account for national differences in the timing and depth of the crisis.

I.2. The socioeconomic framework.

The generation leap hypothesis finds its natural context in the social atmosphere characterizing the Western industrialized countries in the course of the sixties. The social changes of that period have been analyzed in an al-

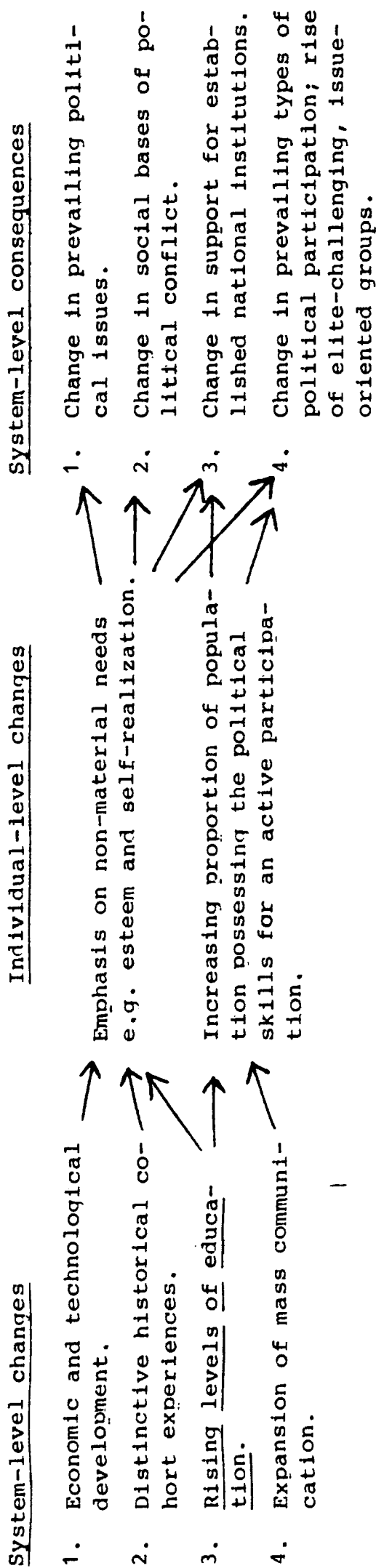
1) E.U.I. Report, cit.

ready classical book on the "silent revolution".¹⁾ The changing values and attitudes of the Western public, measured at the individual level, are the central element of the book. The sources of the change, instead, as well as the consequences of the change, are to be sought at the level of the system. The figure on the next page, which is a simplified version of Inglehart's chart, will help to clarify this issue.

A primary factor in the rise of a new type of demands is the satisfaction of the more urgent economic needs. The relation between objective economic indicators and subjective human satisfaction is old and still debated.²⁾ However, the more recent research seems to show that, according to the Maslowian scale of human needs,³⁾ a search for non-material needs such as self realization, improved quality of life, increasing political participation, only manifests itself when the satisfaction of more physiological needs can be taken for granted.

In this sense, the younger age cohorts who benefited from increased well-being and absence of fear--both in physical terms (absence of total war during their generation) and in economic sense (no direct experience of the Great Depression)

-
- 1) R. Inglehart, 1978. The book relies on data from social surveys carried out in 1971 and 1973 in several European countries and in the U.S. (the well-known "seven countries" survey of mass-public opinions). Its results are therefore particularly suitable for us to identify the social variables underlying the process of change of that period.
 - 2) On this point, see also Boudon, 1979. Authors who believe in a positive correlation between the two factors are e.g. D. Bell (1960) and the school of the "embourgeoisement" of the working class. See also below.
 - 3) Maslow, 1970.



(The arrows show the direction of causation.)

--are more likely to develop new social values.

In this context, the changing values and attitudes of the younger generations provoked a shift in the sociopolitical demand. "New" issues began to be brought into the political arena. Along with the demand for more participation and more "say" in decision-making, they began to question social roles, social and economic hierarchies, established institutions. These issues, although not completely new, took on in that period a completely new quantitative dimension.¹⁾

This process of change was made possible through the improved political skills of an increasing proportion of the population. In turn, two principal factors are found to have provoked this change: the expansion of mass communication and the rising levels of education.²⁾

The first phenomenon is of uncertain sign in the development of political consciousness, since, in principle, media can be manipulated by the leading elites to filter information.

The role of education in promoting the development of political consciousness in addition to providing cognitive skills is more widely acknowledged not only by educationists, but also by psychologists and social scientists of different disciplines. A generation's formative experience is found to be the most significant variable, both theoretically and em-

1) This shift towards new political goals is known in the literature on political science as "Post-Materialism".

2) E. Tarantelli (forthcoming) includes also the impact of mass urbanization and second-generation immigration. See also above.

pirically, in shaping one's value priorities.

Education, however, also plays a role in the transmission of the established body of knowledge and in the reproduction of the social systems. It is also related to the prevailing productive system and to the social division of labour. The school systems have been designed, in the course of their evolution, as selective devices, where the "proof" of the selection was to be found in corresponding higher wages. Therefore workers were "naturally" distributed in the work hierarchy according to some criterion of productivity, in particular, the level of education. Hence the function of education in the reproduction of the social hierarchy.¹⁾ One should also consider that education is correlated with one's social origin.

Education is therefore a non-neutral variable, and its effects on individuals are multifaceted. To connect the changes in the level of education of the labour force to the industrial conflict, one must therefore specify the assumptions on the behaviour of the actors, and link them to the underlying motivations.

Our hypothesis suggests that the process of value change and the ensuing conflict-proneness have most affected the younger generations.²⁾ Levels of education have changed so

1) See on this point B. Millot, in J.C. Eicher et L. Levy-Garboua, 1979.

2) It has been shown that there exist "life-cycle" effects on conflict propensity, so that younger age groups are always more conflict-prone than the older ones. See M. Mann, 1973. Also Flanagan, Strauss and Ulman (1974) attribute the rise in the recorded level of job dissatisfaction to the shift in the share of the labour force of traditionally "insatisfied" groups like women, blacks and youngsters.

evidently in the last post-war period, however, that this variable alone can account for the observed change after controlling for age.

To consider the economic motivations of the actors, in turn, the questions one would need to answer are:

- why did an increasing proportion of young people pursue and achieve higher levels of education?
- what have they obtained, in comparison with their expectations?

The first question is that of the social and economic determinants of the private demand for education.¹⁾

A straightforward argument is that education was not demanded--at least not primarily--as a consumption good in itself, but rather as a means to achieve other material goods, such as higher levels of income, better job opportunities, etc. Since income and prestige were an increasing function of educational achievement, the motivation was stronger for working class people, who for the first time were allowed to enter into a domain formerly restricted to the elite. With the expansion of State education everyone was formally entitled to accede to higher qualifications.

The obvious implication is that people were expecting higher rewards--in terms of income, status, occupation--as a result of their spending more time at school.

This reasoning calls into question the "human capital" approach to investment in education. In that approach,

1) A comprehensive analysis of the determinants of the private demand for education is to be found in M. Blaug, 1976.

wage rates are considered as rates of return from an investment in one's own productive potential. The "generation-leap" hypothesis assumes that the rates of return this new generation was expecting--be they defined in purely economic terms or also in terms e.g. of status and occupation--turned out to be illusory when confronted with reality. We argue, in practice, that, contrary to the axioms of the "human capital" school, higher levels of education did not result in higher levels of income for the individuals, nor did the distribution of earnings become more equal as a result of mass education.¹⁾

Consequently, education may be defined as a "positional good":²⁾ "... to the extent that the demands for private consumption underlying the collective wage claims take the form of positional goods in restricted absolute supply--for education that provides better access to the more sought-after jobs, etc.--such demands are doomed to eventual nonfulfillment." The State responded to this private demand for education by blowing up the public sector's expenditure for education, but, given the nature of education as a "positional good", this did little to correct the distortion, and eventually frustration grew stronger with the fruits of such expansion.

To elaborate the point, we hypothesize a difference between the expected and the actual rates of return, that is

1) A more detailed examination of this approach is postponed until Chapter IV, where I present a formalization of this argument in terms of models of income distribution.

2) Hirsch, 1977, p. 173.

between expected income and status improvements, and the actual wage rates.

A distinction is needed between absolute and relative income attainments. An increase in the absolute level of income as a consequence e.g. of general growth leaves relative positions unaltered and might cause expectations to be disappointed. "This in turn contributes to inflationary pressures as individuals seek to satisfy their unmet demands either through increased private spending or by calls for still more public spending. A sequence of this kind has been one element in the deterioration of Western economic performance since the mid 60's,"¹⁾

The implications of the hypothesis are evidently in terms of relative positions in the wage structure. Collective wage demands may be induced by the simple progression of economic growth, since increased competition for products in limited supply raises their relative price or lowers their quality,

In this scheme, real growth could contribute to frustration and inflation.

Taking account of both demand²⁾ and supply factors, the hypothesis predicts a two-sided impact of a new generation of workers on the labour markets:

- on the one hand, rising levels of education of the labour

1) Hirsch, *ibidem*, p. 107.

2) The demand side of this model of the functioning of the labour markets is basically the same as in the job-competition model of Thurow, and as it is implied in the "screening hypothesis". See also below, Chapter IV.

force met with rising requirements on the part of the employers: so that jobs once assigned to low-educated people were only accessible to highly educated persons.

These persons found themselves performing unsatisfactory, repetitive, meaningless tasks that were often also badly paid.

- on the other hand, various (institutional) rigidities (rigid wage structures) hampered the adjustment of prices at least in the short term. As a result, intellectual unemployment became a growing share of total unemployment.

Out of these arguments, the "generation leap" hypothesis predicts a set of mismatches between the labour force's expectations and achievements as a cause of frustration and growing militancy. Consequently, the whole "human capital" approach is called into question, because of the failure of the investment in education to raise individual rates of return up to the expectations. Furthermore, contrary to the liberal ideology which expected mass education to effectuate a redistribution of income across social classes, more education for all did little to achieve the "social" goal of higher incomes for all. Education as a "means to climb the social ladder" has proved in many, if not in most, cases a poor instrument to equalize opportunities.

Higher levels of education had provoked changes in values and attitudes among the new generation of workers. The requests for "life-style" issues and the new patterns of political participation clashed, or at least were left unmet, in the traditional institutional network. This political factor is a very relevant aspect of dissatisfaction.

tion. To these possible factors of frustration, one could add the aspects grouped under the general heading of "job satisfaction" issues.¹⁾

All these elements represented a potentially explosive mixture in the framework of changing attitudes sketched above.

I.3, Plan of the research.

The theoretical part of this study starts with a discussion of the main existing theories which try to explain the industrial conflict of the late 60's and relate it to the contemporary acceleration of inflation in many industrialized countries.

The purpose of the second chapter is to seek in the period around 1968-69 the sources of the inflation and industrial conflict that many countries are still experiencing today.

It is not my intention, of course, to concentrate entirely on the special character of one single period (in this case, from 1968 to 1973). However, it seems to me that there are features of that period that still await an adequate theoretical interpretation.

Current interpretations of inflation appear on the whole to focus too narrowly on purely economic matters. Moreover they fail to give a proper account of some characteristics of the industrial conflict in question, in particular, its unofficial rising on the spontaneous initiative of the rank and file, only handled by the Trade Unions

1) See below, Chapter III.

in a later stage; and its contemporaneous uprise in many Western countries.

Alternative theories--the so-called "sociological school" and the "structuralist" positions on inflation--try to supplement the economic analysis with a proper account of the sociopolitical elements of the conflict. On the background of these alternative theories, the hypothesis of a "generation change" in the level of education of the labour force can help to explain its economic and social behaviour,

With the hypothesis of a "generation change", it is possible, starting from the well-known events of 1968-69, to bridge the theoretical gap between typical labour market analysis and issues pertaining to the field of industrial relations.

The third chapter of the dissertation discusses the "generation-leap" hypothesis in comparison with other pieces of theory that have been put forward in the field of working class structure and behaviour; namely, the "new working class" hypothesis and the Marxist theories of the "mass-worker",

The hypothesis of a generation change is of an interdisciplinary nature: its full development requires in fact the contribution of social disciplines such as the sociology of the labour market, the economics and sociology of education, a knowledge of industrial relations. The implications of the hypothesis in the field of industrial relations, as well as in a broader social context, are examined in the third chapter.

From an economic point of view, the hypothesis is concerned with the mechanism of wage determination. Chapter IV of the dissertation addresses the question of the role of education in wage determination, and of how this mechanism is affected in the presence of changes in the quality of the labour supply.

The generation-leap hypothesis implies that a set of structural imbalances arose on the labour markets as a consequence of the massive inflow of the output of the school system,

This flow of new graduates needed to be accommodated in the economic structure according to their expectations, i.e. according to the occupational structure prevailing in the period immediately before. The theory of "human capital" might explain how and why these expectations were formed: but it is a fundamental contradiction of the theory that it cannot give account of the mismatch between expectations and achievements.

Alternative, unorthodox theories of the labour market have been put forward to explain the mechanisms of wage determination and the movements across time in the wage structures,

In Chapter IV, I examine the predictions of a few well-known models as to the case of an excess supply of qualified labour, and analyze the working of the adjustment mechanism.

One can argue, on the basis of our working hypothesis, that rigid wage structures and segmented labour markets have prevented a smooth adjustment of the privileged wage rates to the massive inflow of new graduates. The adjustment process

in the labour market has thus mainly taken place via a systematic downgrading of educational credentials, according to certain "unorthodox" theories of wage determination.

The "generation-leap hypothesis" is then defined within the framework of the theories on labour market segmentation: its particular contribution to the analysis is identified in the search for "supply effects" in the functioning of the labour markets.

A formalization of these arguments in matrix form is presented in the course of Chapter IV. This formalization synthesizes the theoretical background on which our hypothesis is based, and both its economic and non-economic implications.

This completes the theoretical work in my dissertation.

I have not attempted an empirical verification of the economic implications of the "generation leap" hypothesis. A study of that type would have required econometric estimates of the many possible models of wage structure determination, and this would be in itself the subject of another dissertation.

The main subject of the empirical study, instead, concerns the level of education of the labour force in three European countries. These countries have been chosen on the basis of the similarity of their experience (in the case of France and Great Britain), and to provide a useful comparison with a different type of experience (for the case of Germany).

The third and last part of this study offers empirical support to the hypothesis of a generation change in the com-

position of the labour force by level of education. It focuses on the structure by age group and by level of education of the labour force in the three countries considered, and examines, in single country-studies, its changes along the 60's and the first part of the 70's.

The "generation leap" hypothesis maintains that, during the educational explosion of the postwar period, the level of education of the younger generations has increased in such a way that one should observe a real "leap" between the educational achievements of different age groups.

To reveal the existence of this "leap", I use a series of matrices that disaggregate the population by age group and by highest educational achievement. The educational profiles of the different age groups, plotted in a series of graphs, give the visual impression of the "leap".

The purpose of the empirical part is to verify which of the hypotheses on the structure of the labour force discussed at the outset of this study is more representative of the actual developments that have taken place.

The variety of experience among countries is a factor to be taken into consideration. There was by no means a uniform response, among the workers of Western Europe, to the threats to their real wages and the level of employment.¹⁾ This is why the developments in the structure of qualifications in the course of time are examined at a national level, although the comparative aspect is present at

1) This is also shown in A. Venturini, Strikes in Europe. Unpublished Ph.D. dissertation, E.U.I., Florence, 1982.

every step in the analysis.

The conclusions of the research:

. strengthen our belief that, with qualifications from country to country, the expansion of mass education in the course of the 50's and 60's constituted a very important factor in the structural change of the labour force.

A labour force that is more qualified and more self-conscious cannot possibly adapt to a technical division of labour--wage structures, plant-level and social hierarchies --that had been devised and implemented at the beginning of this century in totally different conditions.¹⁾

The uprise of movements of protest becomes perfectly comprehensible in this proposed interpretation.

Insofar as the technical and social division of labour has not been rendered more equitable in the time that has elapsed since 1968, the relevance of the proposed analysis and its policy implications are evident today as they were ten years ago.

1) This point is developed in E. Tarantelli, forthcoming.

PART I: THE INFLATION OF THE SEVENTIES

AND THE ORIGINS OF INDUSTRIAL CONFLICT.

Chapter II: Industrial Conflict and Inflation Theory:
Some Orthodox and Unorthodox "Views"

II.1, Introduction.

"I have never been able to understand the impasse between the monetarist and the sociological explanations of inflation. I have always assumed the money supply to be sociologically determined." (Prof. Richard Cooper, undersecretary in the U.S. State Department.⁺)

"I do not believe that a general theory of inflation is possible, unless perhaps, like some monetarists, one is willing to cut off one's analysis at a very early and intellectually unsatisfying stage." (John H. Goldthorpe.⁺)

This chapter is intended to present and discuss some of the main theories that have been proposed in the economic literature to explain the inflation of the 70's and the origins of industrial conflict.

The "crisis" of the end of the 60's was manifested in the labour markets in a set of observed structural imbalances, and as a series of conflicts at different levels of the industrial relations systems. In the economic literature,¹⁾ however, the industrial conflict has not in general been studied as a relevant phenomenon in itself. Rather, its theoretical interest has been limited to its connection with the contemporaneous acceleration of inflation. Therefore the theoretical approaches range from the ones that see industrial conflict as the proximate cause of inflation, to the ones that consider it as a mere reaction--a

⁺ Both in Hirsch and Goldthorpe, 1978, p. 1 and 213 resp.

1) Excluding of course the specialistic literature on industrial relations, not generally regarded as "economics".

consequence--of accelerating inflation.

The approach taken in this study is different, in that we are interested primarily in industrial conflict as such and as an indicator of a broader social unrest.

This is why I will examine the different theories on inflation with an eye to their underlying view of industrial conflict. To do so, in each model attention will be focused on the determinants in the wage equation. In addition I will try to put into evidence the (implicit or explicit) assumptions of each theory concerning working class tendencies and behaviour.

To go beyond what we consider a too limited approach for our purposes, we will then examine the relevant--though not abundant--literature pertaining directly to industrial conflict. We will especially consider the so-called "structuralist" theories of inflation that have fundamental points of contact with our own proposed interpretation.

In this first chapter, I will therefore concentrate on the interpretations of industrial conflict: in the next chapter, I will introduce some theories on the working class that are directly connected with the interpretation of industrial conflict. This will serve to insert our own interpretation of industrial conflict in the context of the theories on the new working class, and thus to give it, in addition to its strictly "economic" connotation, a broader socio-political framework of reference.

II.2, The setting of inflation and of industrial conflict

What still attracts the interest to the period around 1958-69, is the extraordinary coincidence of inflationary

acceleration and of socio-industrial conflict of unusual intensity in many Western industrialized countries.

As table I shows, rates of inflation accelerated in several Western countries starting from 1969. After 1974, rates of inflation began to diverge between countries, although staying at higher levels than before.

Price inflation has, since then, been a world phenomenon. At the same time, wage inflation has also become a world phenomenon. The regular growth trend of wages broke down in many countries at about the same period (see table II).

This "wage explosion" was accompanied, in many countries, by social conflict of a political nature, which occasionally took on radical appearances: e.g. May 1968 in France, the "hot autumn" in Italy, the miners' strikes in Great Britain (see table III).

The "new" character of the wage inflation that world economies are experiencing since then is given by the fact that wages seem to behave independently of labour market and productivity conditions. During the whole of the 70's and well into the 80's, inflation has coexisted with high rates of unemployment and with a state of recession in the world economy. The world price inflation is generally considered a permissive factor for the employers to grant wage increases, and a motive for higher wage requests on the part of the workers.

But this can only be a partial explanation of the story. In order to be able to outline a coherent and comprehensive theory of inflation, in fact, one should not only be able to

explain the facts about inflation, but one should also be able to answer the questions:

- why did an inflationary acceleration start around 1969?
- why in so many countries at the same time?
- how was it that so many countries reached the "critical" point of social vulnerability with such surprising synchronization?¹⁾

The hypothesis of the generation change that we propose in this dissertation tries to answer these questions, and to give account of some specific characteristics of the crisis of the end of the 60's, namely,

- i) the contemporaneity of inflation and industrial conflict in many industrial countries, which points to their
- ii) interdependence;
- iii) the spontaneous, unofficial character taken on by the protest, verging at times on forms of radicalism;
- iv) the overall nature of the crisis, involving every sphere of social life: the family, society, the school system, the institutions and all established hierarchies.

These features call for a unitary explanation that should not rely on national characteristics alone.

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1) This point is also treated, with some scepticism, in S. Biasco, 1979.

TABLE I: Consumer prices  
(yearly percentage change).

|               | medie annue |         |         |      |      |      |      |      |      |      |      |      |      |      |
|---------------|-------------|---------|---------|------|------|------|------|------|------|------|------|------|------|------|
|               | 1954-68     | 1969-73 | 1974-77 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 | 1978 |
| Stati Uniti   | 1.9         | 4.9     | 8.1     | 4.2  | 5.4  | 5.3  | 4.3  | 3.3  | 6.2  | 11.0 | 9.2  | 5.8  | 6.5  | 8.9  |
| Germania      | 2.1         | 5.3     | 5.3     | 1.8  | 2.7  | 3.7  | 5.3  | 5.5  | 6.9  | 7.0  | 6.9  | 4.6  | 3.9  | 2.1  |
| Italia        | 3.4         | 3.6     | 17.5    | 1.7  | 2.6  | 4.9  | 4.8  | 5.7  | 10.8 | 19.1 | 17.2 | 16.7 | 16.9 | 12.0 |
| Gran Bretagna | 3.3         | 8.0     | 18.2    | 4.7  | 5.5  | 6.4  | 9.4  | 7.1  | 9.1  | 15.9 | 24.2 | 16.8 | 15.9 | 7.8  |
| Francia       | 3.9         | 6.1     | 11.1    | 4.6  | 6.4  | 5.2  | 5.5  | 5.9  | 7.3  | 13.6 | 11.8 | 9.6  | 9.5  | 9.3  |
| Giappone      | 4.1         | 7.5     | 13.0    | 5.4  | 5.2  | 7.2  | 6.3  | 4.8  | 11.8 | 22.7 | 12.2 | 9.3  | 8.1  | 3.3  |
| Olanda        | 3.3         | 6.7     | 8.7     | 3.7  | 7.5  | 4.4  | 7.5  | 7.8  | 8.0  | 9.6  | 10.2 | 8.8  | 6.4  | 4.2  |
| Svezia        | 3.3         | 6.8     | 10.3    | 2.0  | 2.7  | 7.1  | 7.0  | 6.5  | 7.0  | 9.8  | 9.8  | 10.4 | 11.4 | 7.8  |
| Belgio        | 2.2         | 5.2     | 10.3    | 2.7  | 3.8  | 4.0  | 4.3  | 5.5  | 7.0  | 12.6 | 12.2 | 9.2  | 7.1  | 3.9  |
| Svizzera      | 2.5         | 6.4     | 4.9     | 2.5  | 2.5  | 3.6  | 6.6  | 6.7  | 8.7  | 9.8  | 6.7  | 1.7  | 1.3  | 0.4  |

Source: S.Biasco, op. cit., p.12

N.B. The data for 1978 are provisional.

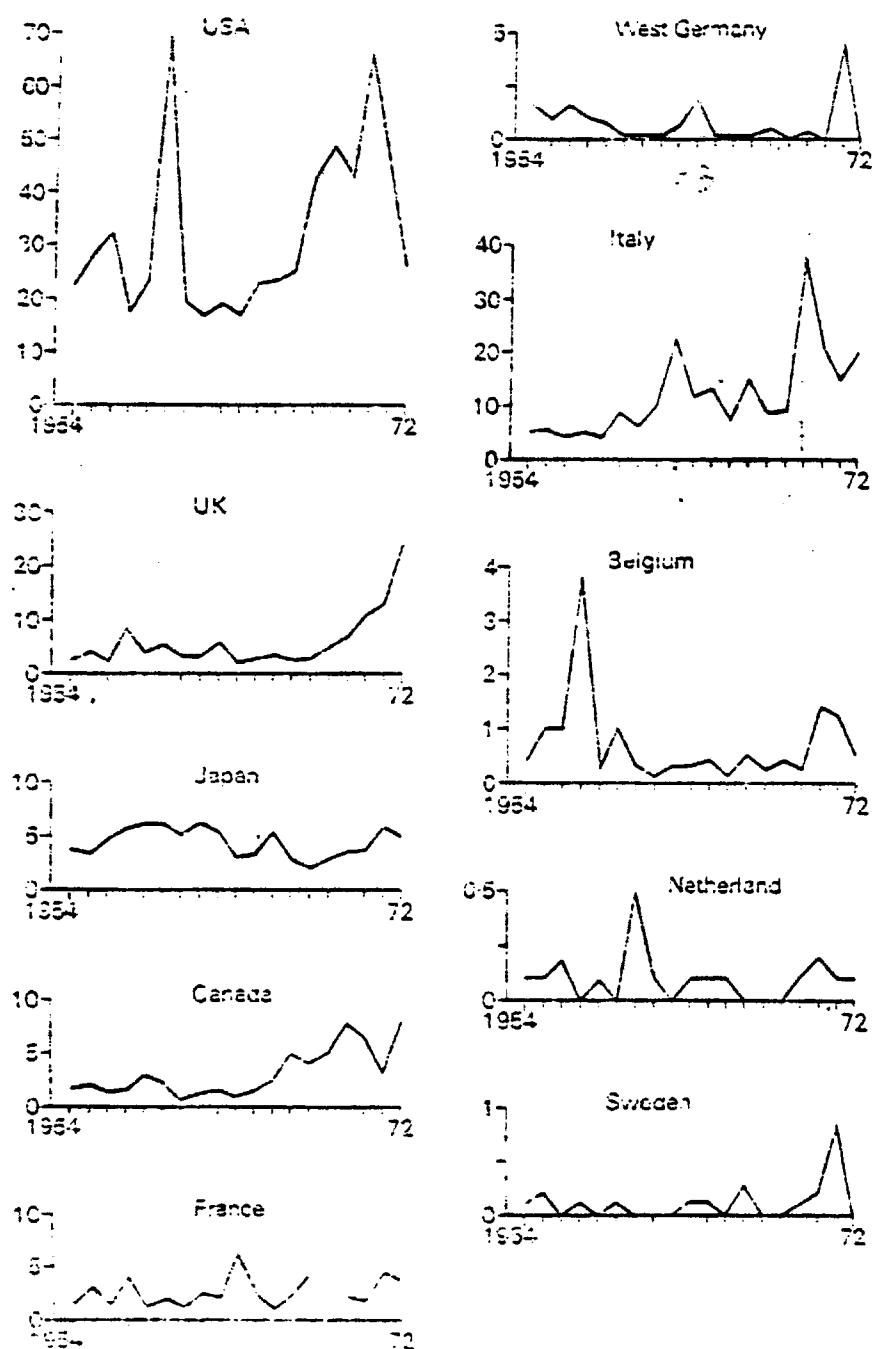
TABLE II: Money wages in manufacturing.  
( yearly percentage change).

|               | medie annue |         |      |      |      |      |      |      |      |      |      |      |
|---------------|-------------|---------|------|------|------|------|------|------|------|------|------|------|
|               | 1954-68     | 1965-68 | 1968 | 1969 | 1970 | 1971 | 1972 | 1973 | 1974 | 1975 | 1976 | 1977 |
| Stati Uniti   | 3.7         | 4.8     | 6.4  | 5.9  | 5.3  | 6.3  | 6.7  | 7.0  | 8.2  | 9.2  | 7.9  | 8.5  |
| Germania      | 7.4         | 5.2     | 4.3  | 9.0  | 13.7 | 11.2 | 8.7  | 10.7 | 10.4 | 8.8  | 6.5  | 7.5  |
| Italia        | 5.5         | 4.1     | 3.6  | 7.5  | 21.8 | 13.5 | 12.8 | 24.2 | 22.4 | 26.6 | 21.1 | 27.9 |
| Gran Bretagna | 4.5         | 6.0     | 8.9  | 7.9  | 9.8  | 11.4 | 10.4 | 11.3 | 17.2 | 29.9 | 16.6 | 10.3 |
| Francia       | 8.2         | 8.0     | 12.4 | 11.3 | 10.5 | 13.7 | 11.3 | 14.5 | 19.3 | 17.2 | 14.7 | 12.7 |
| Giappone      | 7.7         | 13.2    | 16.1 | 16.4 | 17.6 | 13.9 | 15.6 | 23.4 | 26.1 | 11.4 | 12.6 | 9.5  |
| Olanda        | 8.1         | 8.1     | 8.0  | 9.3  | 11.4 | 11.7 | 12.5 | 12.6 | 18.1 | 13.6 | 8.6  | 7.3  |
| Svezia        | 7.0         | 7.8     | 6.5  | 8.1  | 13.8 | 8.3  | 14.7 | 9.4  | 11.0 | 14.8 | 17.9 | 6.7  |
| Belgio        | 6.4         | 7.3     | 5.6  | 7.9  | 9.8  | 11.5 | 14.3 | 16.4 | 20.8 | 20.0 | 11.1 | 9.2  |
| Svizzera      | 4.0         | 4.0     | 4.7  | 4.8  | 7.5  | 10.5 | 9.2  | 10.2 | 13.8 | 6.7  | 1.6  | 1.7  |

Source: S.Biasco, op. cit., from O.E.C.D.

N.B. For Italy, France, The Netherlands and Japan, figures refer to contractual wages. For the other countries, they refer to average actual earnings.

Table III: Working time lost through industrial disputes ( thousands days per year) in selected countries.



Source : G.Zis, 1976, p.10.

At the end of the 50's and well into the 60's, the two prevailing interpretations of inflation were the so-called "demand-pull" and the cost-push interpretations. Both turned out to be inadequate, in their more simple formulations, when confronted with the events of the end of the sixties.

Interpretations of inflation today are a lot more elaborate, and take into account the complex interplay of demand-pull and cost-push factors that may generate inflation.

For the sake of the exposition, it is here necessary to discriminate among those theories, avoiding however giving an overly simplistic, monocausal interpretation of each one of them. Among the several possible ways of subdividing the theoretical interpretations of inflation, I will focus on their underlying view of the relation between inflation and industrial conflict,

Broadly speaking, two main types of hypotheses can be said to prevail today. The one, that explains prices and wages as determined by the market forces, and that refers to an "excess demand" type of interpretation of inflation. The other approach relies only partly on economic factors as determinants of prices, and emphasizes the importance of non-economic determinants of inflation.

To the first group can be said to belong the monetarists of the Friedman school, and, with qualifications, a group of distinguished "conservative neo-Keynesians".

The second group includes the several "sociological" schools of inflation, among which the structuralist positions have recently gained predominance. These contributions are concerned in the first place with the conflict in the locus

of the income distribution, and therefore are liable to social implications.

I shall deal with the monetarist approach to inflation in some depth, since it is preliminary and necessary to its understanding of industrial conflict.

Other interpretations approach the issues the other way round, that is, starting from industrial conflict to explain inflation. The political and social aspects of inflation are the stronghold of these theories,

### II.3. The monetarist interpretation of inflation.

The monetarist interpretation of inflation derives from the traditional quantity theory of money, in particular from the theory of the demand for money and the "real cash-balance" effect.<sup>1)</sup> Via the real cash-balance effect, a positive proportional relation is established between the rate of growth of the quantity of money (supposed to be exogenously determined by the monetary authorities) and the rate of inflation.

Inflation is thus defined as "a rate of expansion of the money supply significantly in excess with respect to the rate of growth of income in real terms--their difference being precisely the rate of inflation".<sup>2)</sup> In the "crudest"<sup>3)</sup> version of monetarism, the excess of demand deriving from the

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1) Friedman, 1956, and Patinkin, 1956, respectively. A synthetic account is provided by Bronfenbrenner and Holzman, 1963,

2) This definition derives from H. Johnson, 1972 b.

3) I borrow this terminology from D. Cobham, 1978.

monetary expansion has no real effect (on the level of income or on the rate of interest) and a direct impact on the price level.

The monetarist approach has gradually evolved towards what can be called the "international liquidity approach".<sup>1)</sup> This approach is based on the particular conditions governing the world money supply under the Bretton Woods agreements, and on the special role that the U.S. dollar was able to play there. With the Western countries acting in a fixed exchange rate system, the world economy could be considered as a whole, of which the single countries constituted the "regions".

The stronghold of this approach, and of the whole monetarist interpretation of inflation, is precisely that it provides an explanation for the international character of inflation, an interpretation, that is, not based on single nations' characteristics.<sup>2)</sup>

Following the lines of the analysis sketched above, the inflation rate in the world economy will be determined by the world rate of expansion of the money supply relative to the rate of growth of income in real terms.

The countries with a balance of payments surplus would thus import inflation and the countries in deficit would instead export their inflation.

" This theoretical approach, together with the special

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1) I borrow this terminology from D. Cobham, 1978.

2) This approach is taken e.g. by Parkin, Laidler, Zis and the "Manchester School" in general. See Bibliography for references.

role of the dollar as the reserve currency in the Bretton Woods system, led the monetarists to give the blame for world inflation to the United States' monetary policy. Loose monetary policy and scarce concern for the balance of payments situation are the U.S. central monetary authorities' main responsibilities. As a matter of fact, during the years 1958 to 1971 the U.S. experienced a cumulative reserve deficit of \$56 billion. The U.S. financed this deficit by drawing on its gold reserves and by incurring liquid liabilities to foreign central banks. Exports of monetary gold financed some 23% of the cumulative deficit. The remaining cumulative deficit was financed primarily by an increase in liquid liabilities to official monetary institutions (see table IV and table V),

Table IV: Basic, Net Liquidity and Official Reserve Deficits in the U.S. Balance of Payments, 1960-1971 (billions of dollars)

| year | Net Liquidity Deficit | Official Reserves Deficit | Basic Deficit |
|------|-----------------------|---------------------------|---------------|
| 60   | -3.7                  | -3.4                      | -1.2          |
| 61   | -2.3                  | -1.3                      | 0.0           |
| 62   | -2.9                  | -2.7                      | -1.0          |
| 63   | -2.7                  | -1.9                      | -1.3          |
| 64   | -2.7                  | -1.5                      | 0.0           |
| 65   | -2.5                  | -1.3                      | -1.3          |
| 66   | -2.2                  | -0.2                      | -1.7          |
| 67   | -4.7                  | -0.4                      | -3.3          |
| 68   | -1.6                  | +1.6                      | -1.4          |
| 69   | -6.1                  | +2.7                      | -3.0          |
| 70   | -3.9                  | -1.0                      | -3.1          |
| 71   | -22.0                 | -29.8                     | -9.4          |

Source: U.S. Balance of Payments Trends (St. Louis Federal Reserve Bank of St. Louis April 1972) p. 3



Table V: U.S. Liabilities to Foreign Countries,  
1957-1971 (billions of dollars)

| End of<br>Period | Official<br>Institutions | Banks and<br>Other Private<br>Foreigners | Total<br>Liabilities |
|------------------|--------------------------|------------------------------------------|----------------------|
| 1957             | 7.9                      | 5.7                                      | 13.6                 |
| 1960             | 10.2                     | 7.6                                      | 17.8                 |
| 1963             | 14.4                     | 9.2                                      | 23.6                 |
| 1966             | 13.7                     | 14.2                                     | 27.9                 |
| 1967             | 15.6                     | 15.8                                     | 31.4                 |
| 1968             | 12.4                     | 19.4                                     | 31.8                 |
| 1969             | 12.0                     | 28.2                                     | 40.2                 |
| 1970             | 20.1                     | 21.8                                     | 41.9                 |
| 1971             | 47.1                     | 15.1                                     | 62.2                 |

Source: *Federal Reserve Bulletin* (Washington: U.S. Government Printing Office, December, 1971), Table 6, p. A78, and (January, 1974), Table 6, p. A76.

The "political" argument maintains that, as from 1965, the financing of the Vietnam war added to the irresponsible behaviour of the U.S. monetary authorities. Hence, the substantial increase in the total money supply is seen as the origin of the acceleration of inflation.

This inflation would then have been exported to the other countries via the channels of world trade, labour mobility and others, according to different models of "transmission of inflation" applying to different countries.<sup>1)</sup>

#### II.4. The monetarists and industrial conflict.

Monetarist economics essentially implies a middle-class view of the world, it is the economics of the "petit bourgeois".

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1) See e.g. the "Scandinavian" model of the transmission of inflation, applying to small open economies (Aukrust, 1977). This model, however, is neutral as to the determinants of inflation.

Monetarism therefore cannot have a developed theory of working class behaviour or of class struggle. It does instead have a theory of industrial conflict, however implicit and secondary to their interpretation of inflation.

In order to get an insight into the monetarist theory of industrial conflict, we must refer to the determinants of inflation in the monetarist wage equation. In the monetarist analysis, both the rate of price increase and the rate of wage increase are determined as a function of excess demand. An analysis of the Phillips curve type is at the basis of this argument, and it can be shown to fit the events up to the mid-60's.

To account for the behaviour of real wages in the process of wage inflation, Friedman introduced inflationary expectations into the Phillips curve. In its expectations-augmented formulation, verification of the Phillips curve requires both that a measure of the excess supply of labour --usually unemployment--carry a significant negative coefficient and, if people are rational, that the coefficient on the inflationary expectations term be unity (absence of money illusion at least in the long run, leading to a vertical Phillips curve).<sup>1)</sup>

Inflationary expectations are at the core of the monetarist theory of industrial conflict. Thus the monetarist wage equation implicitly embodies some behavioural charac-

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1) This result has been econometrically obtained by adding the expectations deriving from international inflation to the expectations about domestic inflation, in a context of open economies. See Cross and Laidler, 1976.

teristics of the labour force that are relevant for their understanding of industrial conflict.

In the monetarists' framework, workers only react when their expectations turn out to be wrong. They bargain for their money wages, but what they really consider is their real wages,<sup>1)</sup> so they insert in their requested wage their expectations about the future trend of prices. From one contract renewal to another, expectations are revised in the light of the past experience (adaptive/rational expectations).<sup>1)</sup> When the rate of price increase is correctly anticipated and taken into account in the wage-fixing contract, there is no reason for strife in industry. A rate of inflation greater than expected, or the cumulative effect of real wage erosion--due e.g. to long-term contracts--lead to an action to restore the real value of wages.

To summarize, in this perspective, industrial conflict is the form taken by the attempt to realize real wage increases against a rate of inflation not correctly anticipated. Thus, for the monetarists, industrial conflict is the logical consequence, and not by any means the cause, of the acceleration of world inflation.<sup>2)</sup>

Workers' Behaviour is thus a rational maximizing behaviour under the constraint of labour market conditions. In this kind of approach, Trade Unions represent an element of rigidity in the equilibrium model of real wage determination and labour force allocation. Trade Unions reduce wage flexibility and shift the burden of the adjustment from the prices

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1) P. Cagan, 19 .

2) A major weakness of this approach, of course, is the degree of arbitrariness involved in the measuring of the amount of inflation anticipated when the wage bargaining takes place.

to the quantity (from wages to the level of employment). Thus, Trade Unions increase the "natural" rate of unemployment. The "natural" unemployment that is compatible with a high rate of wage inflation can be, on the other hand, politically unacceptable.

The question arises, whether Trade Unions' action might have influenced monetary authorities towards the money expansion that is supposed to have started inflation. Put in other terms, one might wonder whether the money supply is really independent from the inflation rate and the excess demand, i.e. whether it is exogenous. This question, concerning the reasons for the inflationary behaviour of the governments, is possibly the weakest point of the monetarist construction. In what has been called the "crudest" version of monetarism<sup>1)</sup> government behaviour, in contrast to workers' behaviour, is considered as "irrational", or "inefficient", having regard to purely technical factors affecting money-supply control. Alternatively, the government is assumed to gain from an inflationary policy--fiscal drag, reduction of public deficit in real terms, etc.

In a more "refined" version of monetarism, the "electoral-cycle" hypothesis of government behaviour explains monetary expansion as a means to gather consensus for the ruling parties in the period before the elections. Conversely, a monetary restriction would follow after the elections, in an attempt to control the economy.

Socio-economic factors thus enter the money-supply equation. This is particularly so, for instance, when mone-

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1) D. Cobham, op. cit.

tary policy is instrumental to the achievement of full employment, or when it is used to finance a program of social security instead of recurring to higher fiscal pressures.<sup>1)</sup> Monetary expansion may result from deficit spending due to interest groups pressures.

Alternatively, inflation may be caused in the attempt to substitute for economic growth, in order to cushion the pressures from the income distribution struggle ("crisis inflation"). In this perspective, inflation is not a technical problem, but rather a solution, *sui generis*, to more fundamental problems of a sociopolitical nature.<sup>2)</sup> The inflationary behaviour of the governments would aim at preserving the sociopolitical stability of the system. In this last version, the monetarist interpretation of inflation is compatible with a more eclectic position, where sociopolitical factors are determinant in the wage equation and public spending is a means to prevent and/or manage the social conflict.

In general, however, the monetarist interpretation seems restricted, by its very assumptions, to explaining only the period after 1971, when a serious deficit first arose in the U.S. balance of payments.<sup>3)</sup> In addition, it does not seem capable of explaining the conflict arising from causes other than purely money matters, and the different forms taken by the conflict in the social and the political arena.

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1) Parkin, 1975.

2) Goldthorpe and Brittan, in Hirsch and Goldthorpe, 1978.

3) Witness the figures on page 34. W. Nordhaus (1972) was able to conclusively reject a simplified version of the monetarist approach, in which real output and the money supply were the explanatory variables.

## II.5. The cost-push interpretation of inflation.

The relevance of wage behaviour in the inflationary process underlies an alternative approach that has been called the "real wage hypothesis". The role of real wages is even more emphasized than in the monetarist approach by putting lagged real wages into the Phillips curve.<sup>1)</sup>

The basic assumption of the real wage hypothesis is that money wages inflation is to be related to a discrepancy between a "target" or "bargaining equilibrium" real wage and the actual real wage. This discrepancy may arise as a consequence of lags in the adjustment of wages to the demand conditions;<sup>2)</sup> or, alternatively, it can arise as a discrepancy between a "desired" real wage, based on workers' aspirations, and the actual real wage.<sup>3)</sup>

The two versions of the hypothesis also differ as to the determinants of the workers' wage behaviour. The first version essentially still refers to the Phillips curve formulation, where excess demand is the determinant of the wage behaviour. Lags in the adjustment of wages to demand conditions provoke industrial conflict and a subsequent push from the cost side.

The latter version instead assumes a (mostly) spontaneous initiative of the workers in the wage demands, linked in part to non-economic requests, as a cause of cost-push inflation.

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1) See e.g., M.J. Artis and M.H. Miller, 1977.

2) F. Modigliani, 1980; Tobin, 1975.

3) This is the Hicksian "real wage resistance" (1974).

The theory of cost-push inflation is built on institutional factors in the labour markets, most notably the role of Trade Unions. Wage increases in any period are a function of the difference between the "desired" wage level and the actual wage level currently being paid.

In models of this type, the rate of inflation is determined by the excess of the total claims of the various groups in the economy over the total available income.

The difficulty with the real wage approach, in general, is the specification of how the target or bargaining equilibrium real wage is generated. These models in general do not offer any empirically testable theory as to what determines the total of claims in the economy.

At one extreme, one can consider models in which the target real wage is assumed to be the market equilibrium wage. Thus formulated, the real wage approach and the excess demand approach are very much the same thing, e.g. in models where lagged consumption prices enter the wage equation.

At the other extreme, it can be assumed that the target real wage is determined exogenously, by the aspirations of the workers as expressed by the Trade Unions. The attitudes of Trade Union leaders, in turn, may be influenced by political, social or cultural factors, and by the organizational structure of the Trade Unions themselves.<sup>1)</sup>

This last theory of inflation as a cost-push phenomenon derives from Keynes's wage equation, where the wage is determined exogenously and in turn determines the general price level.

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1) These issues are also treated in E. Tarantelli (forthcoming).

In the Treatise on Money, Keynes distinguished between a "spontaneous" and an "induced" increase in earnings, the former of which gave a start to the theory of cost (or supply) inflation.

With the Phillips curve, the conditions under which a cost push could occur were identified in a causal relation linking the demand for labour to the wage change. However, when combined with a theory of bilateral monopoly, the Phillips curve turned into a measure of the relative strength of the bargaining partners.<sup>1)</sup>

In conditions of (approximately) full employment, workers acquire a stronger bargaining power with respect to their employers. So the Trade Unions enjoy a "monopoly power" that shifts the Phillips curve upwards to the right. This view is still linked to the original market forces formulation of the Phillips curve, where a measure of labour market conditions (of the demand for labour) is used to weigh the relative strength of the bargaining partners.

Taken to the extreme, however, the idea of a monopoly power of the Trade Unions led to a rejection of the influence of labour market conditions on wage demands. In a period where the Phillips curve seemed incapable of explaining the coexistence of inflation and unemployment in the Western economies, it seemed only natural to reject an interpretation of wage requests as dependent on market forces. Trade Unions' action became an independent variable in the wage equation. There remained the problem, however, of how to measure the Trade Unions' bargaining power with a proxy that would

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1) See e.g. the literature on the "Bargaining theory".



not, in turn, depend on the level of economic activity.<sup>1)</sup>

The bargaining power hypothesis relies on the notion that, when profit levels are high, Trade Unions feel that a favourable opportunity exists to press for higher wages with a minimum of resistance on the side of the employers. Profitability, however, is not an independent variable, but is itself determined by the state of demand, productivity levels, and so on. One could argue that profits are a good proxy for excess demand.<sup>2)</sup>

But, as Perry puts it, ". . . in France and the U.K., unemployment had been rising through the year of the wage explosions".<sup>3)</sup> In the other countries of his study (Italy, Germany, Sweden, Japan and Belgium), unemployment was falling and relatively low. In no country, however, was unemployment lower than it had been in previous boom periods, nor was there any unusual burst of price inflation preceding the wage explosions.

The possibility that economies crossed a new threshold of labour market tightness does not seem acceptable as an explanation of the conflictual behaviour of the end of the 60's. The goals of the Trade Unions, and their control over supply, become then important as to the question of whether or not a cost push will take place.

If Trade Unions' action is exogenous (that is, independent of labour market conditions), then, from an economic

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1) The classical reference for the first measure of Trade Unions' strength is Hines, 1964. Among the more recent contributions, Hibbs, 1977.

2) R. Jackman et al., 1981.

3) G. Perry, 1975.

point of view, it may appear "irrational", "shortsighted", when not also totally "stupid".<sup>1)</sup> Industrial conflict is thus taken as an independent variable in the wage equation.

For other authors of the cost-push school, instead, economic considerations of the Phillips curve type go together with considerations of a more "social" character. Social and institutional factors, such as workers' concern with their relative wages and the power of Trade Unions can (again, as Keynes had originally observed) have more influence on wage bargains than the pressure of demand on the labour markets.

#### II.6. The "sociological schools of inflation".

The basic idea of income distribution inflation is that, at full employment, different groups in the society attempt to raise their real incomes by raising their monetary incomes. If output cannot be expanded to satisfy expectations, prices rise and all groups experience some frustration. In other words, real demand (income objectives) exceeds the available real supply.<sup>2)</sup>

In this interpretation, ". . . the current inflation consists of a social dispute about the distribution of the national income: persistent attempts by many social groups to increase their consumption faster than is consistent with the aims of other groups or with macroeconomic stability: persistent consequential bid up of the price level in a

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1) Kahn, 1976.

2) Bronfenbrenner and Holzmann, 1963.

wage-price or wage-wage spiral".<sup>1)</sup>

As it appears from this quotation, the cost-push hypothesis may be expressed by disaggregating the analysis to take account of the rivalry between different groups in the same broad income category, for example, between members of different unions, competing with each other to establish or maintain a "fair" pattern of wage differentials.

Income distribution inflation lends itself to sociopolitical interpretations. The starting point is still the distribution of income, but the battle over the shares quickly extends from the economic structure to the network of power relations.

The political element becomes relevant in that this "sociological" view of inflation relies relatively less on labour market conditions to explain the strength of the workers' stance. At the base of the conflict there would be not so much a strong market position, but rather a political strength, and a new sense of security deriving from the State commitment to full employment.<sup>2)</sup>

#### II.6.1. The "frustration" hypothesis.

One hypothesis of the cost-push variety, that emphasizes side-by-side labour market conditions and social considerations is the so-called "depressive" or "frustration" hypothe-

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1) M. Posner, 1973.

2) This is the starting point of the structuralist views treated later in this chapter.

sis.<sup>1)</sup>

The starting point of this theoretical interpretation is the wage explosion of the Western economies at the end of the 60's. The hypothesis purports that this "explosion" was a reaction to the increasing share of profits following from the European economic boom of the sixties. In the same period, the wage share and the standard of living of the labour force were stagnating and even losing ground in relative terms, causing that frustration that broke out in conflict.

In the different versions of the frustration hypothesis, in general, the economic factors for frustration are specified as 1) the real wage level; 2) the wage share; 3) the work load; 4) working conditions,

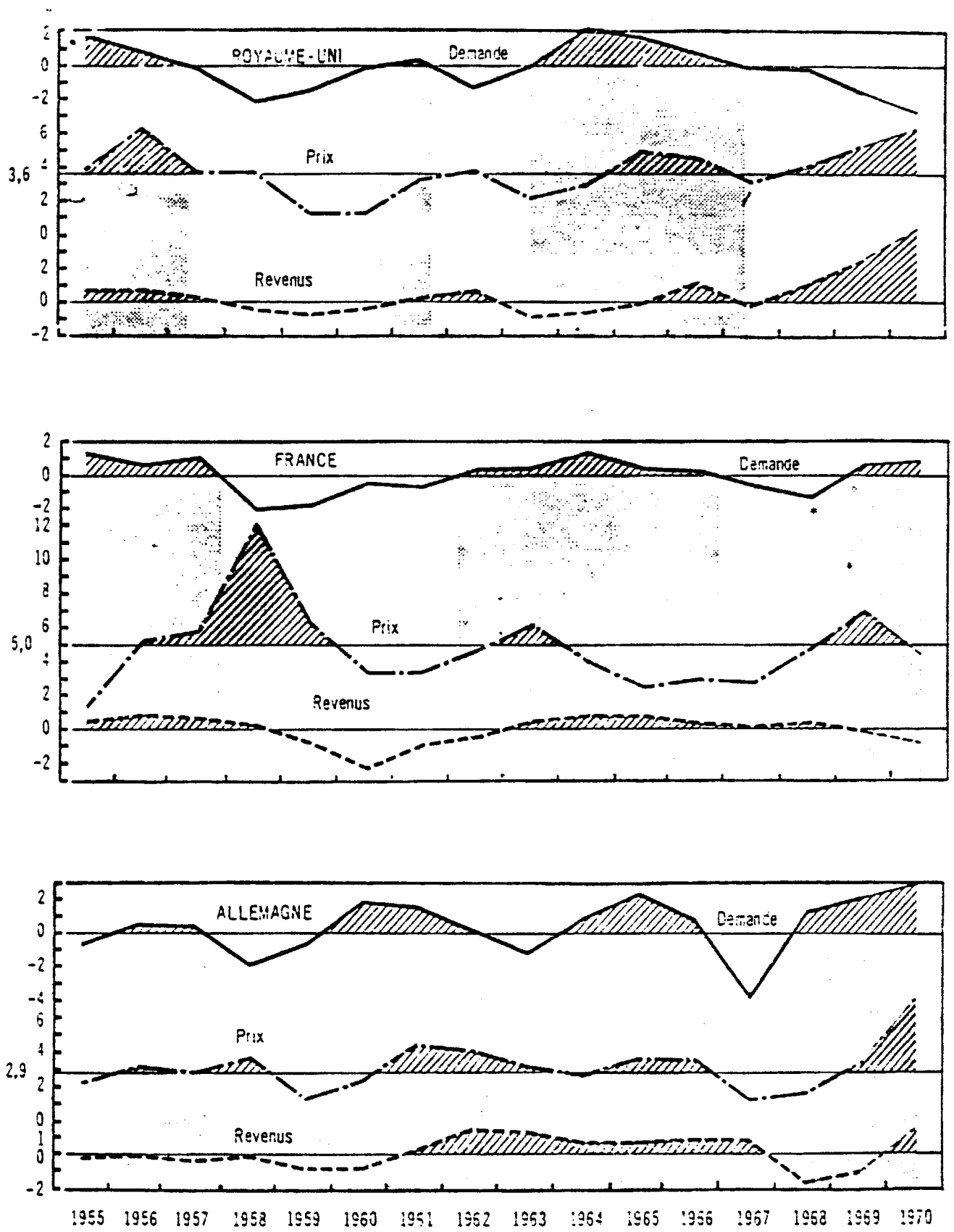
The frustration hypothesis introduces lagged prices in the wage equation as lagged value-added prices, which can be thought of as a combination of costs, most of them wage costs and profits. With costs given, a rise in value-added prices raises profits and the value of the marginal product of labour to the firm. In turn, changes in value-added prices reflect mainly prior changes in wages. Thus, besides the view of wages chasing profits, one can also portray in the frustration hypothesis a wage-wage, as opposed to a price-wage, view of inflation dynamics.<sup>2)</sup>

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1) I follow here the version of the hypothesis originally proposed by Perry (1975) and Soskice (1977) and variously formulated by others: Marris (1972), Jackson, Turner and Wilkinson (1975), Bacon and Eltis (1976). An almost identical approach was taken in OECD, 1970, Inflation: the Present Problem, from which the tables derive. A different version, based on just one variable (consumption), was rejected by Nordhaus (1972).

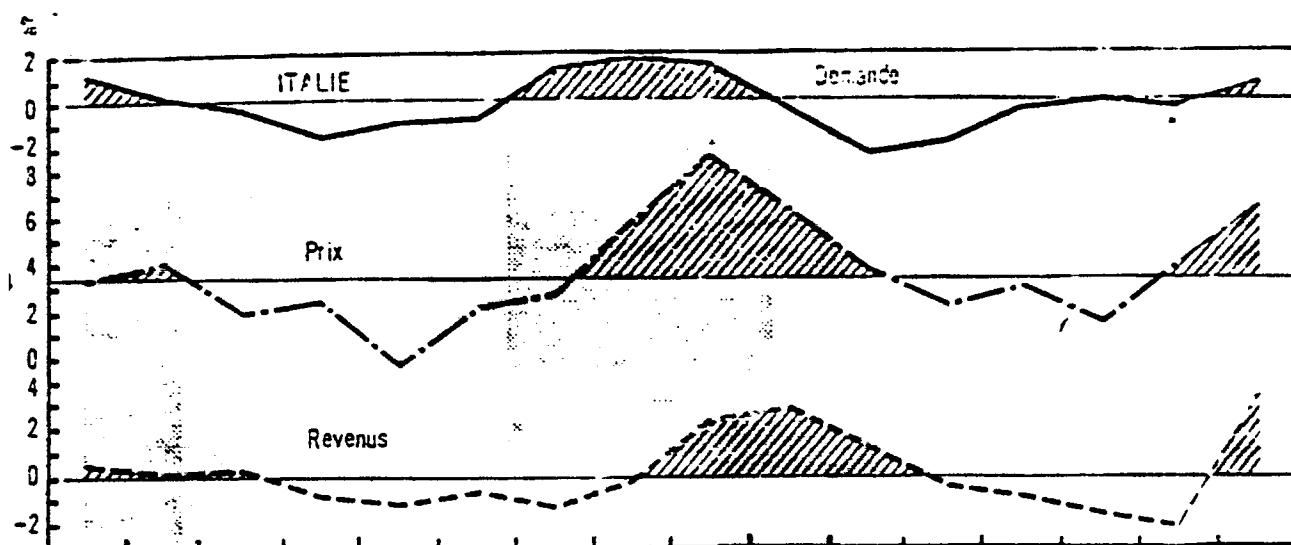
2) I follow here the exposition of Perry (1975).

Chart I: Demand Pressures, Price Increases and Income Shares



+ Major strikes

Chart I (continued)



Notes to Chart I:

Top line: Real GNP percent deviation from trend. Shaded areas are periods when capacity utilization was above average 1955-69. These periods are also shown by light vertical shading.

Middle line: Prices, percentage point deviation from average increase. Shaded areas indicate years in which GNP price deflator rose by more than the average rate over the period 1955-69.

Bottom line: Labour share, percentage point deviation from trend. Shaded areas are periods when share of dependent labour compensation in national income was above its (generally rising) 1955-1969 trend.

Sources: National Accounts of OECD countries and Secretariat estimates for 1970. Reproduced from OECD, 1970.

But this kind of inertia in the wage equation cannot explain why wages suddenly accelerated the way they did and when they did.

An hypothesis of this sort clearly requires national specifications. The OECD report (1970) shows slowdowns in the growth of the compensation share starting a few years before the wage explosions, following above-trend increases in the preceding years (see chart I). In Italy, France, Germany and the U.K., wages and salaries fell below trend around 1969. It would be hard, instead, to define the British situation as one of "rising profitability".

Perry's results confirm the "conflict over shares" part of the hypothesis as a source of wage inflation.

In Soskice's formulation of the hypothesis, additional variables are introduced to give account of the particular features of the industrial conflict of the 60's. According to Soskice, industrial conflict was a reaction to both economic and political factors, at two levels: at the national level, with the role played by official and unofficial income policies in containing the wage shares in several countries. At the plant level, with the repressive policy put into effect in the organization of work (rationalization, automation, etc.) and the cooptation of the Trade Unions within the official decision-making bodies.

This interpretation thus gives account of the (mostly) unofficial character of the industrial conflict of the end of the 60's, and distinguishes the role of the Trade Unions from that of the rank and file.

To the factors for frustration, Soskice adds the erosion of wage differentials and the national patterns of Trade Un-

ions' behaviour, such as, in France, a tradition of class struggle and, in Great Britain, the strong rank-and-file organization in the private sector.<sup>1)</sup> One can say, in this way, that in Great Britain the wages of the private sector were chasing the public sector's wages, and, in Italy, workers were struggling to bring their wages into line with European standards (Soskice, 1977; Perry, 1975; OECD, 1970).

Put in these terms, the frustration hypothesis seems at most capable of explaining the industrial conflict case of four countries, namely, Italy, the U.K., France and the Federal Republic of Germany. The hypothesis however does not explain how, from simple "frustration", the working class was led into militancy.<sup>2)</sup>

The reference to the income distribution aspect of the conflict, nevertheless, permits the frustration hypothesis to be embodied in the broader group of the interpretations that put the social and political structure at the basis of the conflict and of inflation.

#### II.6.2. The structuralist views.

Since Aujac's proposition that ". . . stocks and flows do not exist nor move by themselves, but they are rather manipulated by the pressure of the several social groups",<sup>3)</sup>

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- 1) This can be considered a first hint, in the literature, to Trade Unions' structure and level of bargaining as a determinant of Trade Unions' behaviour. Cf. also p.122
  - 2) To supplement this analysis, the Marxist literature offers some theoretical elaboration on the passage from frustration into consciousness and then into action. See the following chapter, and C. Mironesco, 1979.
  - 3) H. Aujac, 1950. (Our underlining added.)



the theory of inflation as a sociopolitical phenomenon has gradually evolved towards what has been called the "structuralist" position.

In this approach, it is assumed that the conflict arises from a structural imbalance in the economic, social or institutional texture of society, which is then manifested as a conflict over the distribution of income.<sup>1)</sup>

Since the demands of the different groups on the economy inevitably exceed its capacity, inflation is an intrinsic, inevitable process in modern society.<sup>2)</sup> The possibility of controlling inflation depends therefore on the degree of integration and of consensus in the society, and on the political skills of the government. One could argue to that that different levels of inflation seem to correspond to different degrees of economic and political integration.<sup>3)</sup>

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- 1) The "structuralist" views have been in disrepute in academic circles, mostly because they emphasize the sociopolitical rather than the economic aspects of the issue. This situation has been changing in the last few years, and is likely to be reverted with the publication of the volume on The Politics and Sociology of Global Inflation and Recession, C. Maier and L. Lindberg, eds., forthcoming with The Brookings Institution. See also Hirsch and Goldthorpe, 1978, and the recent The Politics of Inflation. A Comparative Analysis, By R. Medley (ed.) for the Committee on Atlantic Studies, 1982.
- 2) Jackson, Turner and Wilkinson, 1975.
- 3) The Latin-American case is a standard example of how sociopolitical instability may cause high rates of inflation. See A.O. Hirschman, in C. Maier and L. Lindberg, cit.

On this point seem to agree many of the schools of thought that we have examined, in particular, those monetarists who admit that the government may expand the money supply to "accommodate" the demands from the different pressure groups; and also the school that emphasizes the "autonomous" (independent from labour market conditions) role of Trade Unions.

The main difference lies in the interpretation of the income distribution conflict, as to whether mere economic factors do or do not have sufficient explanatory power in the analysis of the behaviour of the labour force.

Unfortunately, much of the writing on the social and political roots of inflation has remained in the realm of vague notions: "rising expectations", "faltering social cohesion", "governability crisis". And, as Hirschmann put it, ". . . the explanation of inflation in terms of social conflict between groups, each aspiring to a greater share of the social product, has become the sociologist's platitudinous equivalent of the economist's monotonous stress on the undue expansion of the money supply".<sup>1)</sup>

The question could be asked, as to whether the structuralists have not come forward simply with another economic analysis of inflation. We want to emphasize, however, that "social and political implications grow almost naturally out of the structuralist position" (A. Hirschmann, *ibidem*, p. 5).

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1) A.O. Hirschmann, *op. cit.*, p. 9. The author distinguished at the outset of his paper between "structural" and "tug-of-war" theses, but later he conceded that the distinction between the two has been blurred by the more recent research.

For one, Trade Unions'--or, for that matter, working class--behaviour cannot be explained in purely economic terms. Secondly, the wage-wage spiral, that is the usual outcome of a conflictual mechanism of income distribution, is in itself inherently a phenomenon of sociopolitical origin, although its ultimate motivation is economical. Norms and relativities once accepted are put into question. The relative position becomes more important than the absolute one.<sup>1)</sup>

The traditional income conflict, to summarize, seems to present today some new characteristics. The explanations of the "sociological school" range from "the assertion, in the economic field, of the civil rights that the working class was already enjoying in the political arena" (A. Jones), to a "total breakdown of societal order" or a "dissolution of consensus" (H. Phelps Brown).

But there are several intermediate levels at which one can already speak of "social conflict". It has also been said that, rather than of "frustration" of the working class, one should speak of a "new consciousness of inequality", of "anger over the distribution" (S. Marris). The requests put under the form of wage requests would be instead the monetization of non-monetary requests.

Purely economic considerations, then, do not seem enough to explain the battle over shares. The "sociological" or "structuralist" view of inflation offers an interpretation of the acceleration of inflation and of the intensity of in-

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1) To this line belong workers' characterizations such as implicit in the concept of "relative deprivation" (Runciman, 1966), or explicit in e.g. Panic's formulation of the "aspiration gap", (Panic, in Hirsch and Goldthorpe, cit.)

dustrial conflict as the symptoms and the outcome of a broader social crisis.

The cause of inflation therefore must lie in some fundamental defect of the social and economic structures, which can presumably be removed only through political action. Rates of inflation diverge between countries because of different socio-political backgrounds rather than just economic circumstances.

A broader framework is therefore necessary to explain the all-pervasiveness and the complexity of aspects of the crisis.

### Chapter III: Is There a "New Working Class"?

#### III.1. Introduction.

The different formulations of the "depressive" school emphasize material working conditions as a source of frustration for the labour force;<sup>1)</sup> or, alternatively, they point to macroeconomic aggregates such as the distribution of social consumption expenditure.<sup>2)</sup>

For the "generation leap" hypothesis, instead, the labour force's frustration is better analyzed with reference to the technical and social division of labour. In this sense, ". . . the industrial conflict of the 60's did not stem from an ever more 'exploited' labour force, but from an ever more 'frustrated' labour force. A labour force who has a higher level of education, information and self-consciousness, but who is not more capable than it was yesterday to affect the process of transformation of the sociopolitical and economic systems with methods of direct democracy and plant-level participation".<sup>3)</sup>

The structural change in the composition of the labour force is put at the origin of the contrast between the labour force's expectations and the technical and social division of labour.

According to the "generation-leap" hypothesis, rising levels of education of the labour force imply rising expecta-

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1) Soskice, 1978; Perry, 1975. See Chapter II.

2) Salvati, 1975.

3) Cf. E.U.I. Report, cit., p. 3-4.

tions, both in the social and in the economic spheres. On the one hand, in fact, a higher level of education exerts an influence on the workers' values and attitudes vis-à-vis their place in the social division of labour. On the other hand, the economic aspirations of the workers concern their place in the economic hierarchy, that is, in the wage structure.

The discrepancy between the social and economic aspirations of the workers, based on the (expected) value of education, and their achievements in the social and economic fields, are at the heart of our proposed interpretation of the crisis. It is therefore appropriate to confront our own theoretical framework with the prevalent views on the working class.

The debate on the working class has been in progress now for more than a century. There is no question here to give an exhaustive picture of this debate. I will limit myself to raising a few points to review the main issues and provide a frame for comparison.

In this chapter, therefore, I will discuss the "generation-leap" hypothesis in comparison with other pieces of theory that have been put forward to explain the working class's structure and behaviour.

In the next chapter, I will examine the income distribution implications of the "generation-leap" hypothesis.

### III.2. The "new working class": structure and behaviour.

In the analysis of the relation between the labour force's structure and its behaviour in industrial relations,

the "generation-leap" hypothesis (g.l. hypothesis) finds a few precedents in the economic and the sociological literature.

Theories differ, however, as to the kind of evolution of the structure of the labour force. To give a broad subdivision, among the more well-known theories, the "new working class" hypothesis (nouvelle classe ouvrière) purports that there has been a polarization of the working class in two opposite directions; the literature of orthodox Marxist orientation maintains that the whole working class is in a process of dequalification; the g.l. hypothesis, instead, assumes a qualitative overall improvement in the labour force, due to the impact of mass education in the first place, but also to the evolution of the degree of information and of political consciousness of the labour force.

A precedent to the g.l. hypothesis can be found in H. Phelps Brown, who proposed an explanation of the contemporaneity of the wage explosion based on both demographic and socioeconomic factors.<sup>1)</sup> According to Phelps Brown, the social and economic change of the 60's was reflected in the changed attitude of the workers towards their jobs. In an atmosphere of job security and a favourable economic environment, the new working class--both younger and more conscious than the workers they were replacing--became aware of its bargaining power and therefore more demanding. Phelps Brown introduces the notion of "critical mass", the building up of tensions to the point where society becomes more vulnerable. May 1968 in France was the spark for the protest, that spilled over from country to country.

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1) H. Phelps Brown, 1975.

From the point of view of the sociologist, S. Barkin (1975) viewed the postwar advance in living standards and the rise of the Welfare State as inspiring optimism and "humanistic thinking". The postwar generations felt a need for creativity, realization of the human personality, participation in decision making. Their expectations became the motive force in the search for institutional change. "Their activities catalyzed the new demands among employees and other social groups awakened to the legitimacy of their own aspirations . . . they reflected an awakened social consciousness as well as a striving for personal self-realization,"<sup>1)</sup>

To summarize, both for Barkin and for Phelps Brown the expectations of the new generation of workers are at the origin of the industrial relations crisis. The labour market, however, is just one of the fields where the battle was being fought. One should not forget, in fact, that in the U.S., in France and in other countries the movement of protest was started by the students, it was followed by the racial minorities and spilled over to involve all sorts of discriminated-against groups. The protest took on an anti-authoritarian drive that became its distinguishing feature. The development of a new type of consciousness in many interpretations is put at the basis of this changed behaviour. In this perspective, ". . . seemingly divergent strands--massive discontent among students in most industrial societies--a decrease in the independence of professionals--the "proletarianization" of many technicians and engineers--the increasing militancy of strategically-placed groups of

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1) S. Barkin, 1975, p. 35 and 7, resp.



skilled workers (particularly in Western Europe) are interconnected. They represent an early phase in the developing consciousness of a stratum in modern industrial societies which can be described as a 'new working class'." <sup>1)</sup>

### III.3. La nouvelle classe ouvrière.

The discussion on the new working class cannot leave apart the contributions of Mallet (1963) and Touraine (1966) who first proposed this kind of interpretation.

The basic thesis on the "nouvelle classe ouvrière" refers to the disequilibrium between the progressive homogenization of life styles, interests and consumption patterns across social classes, on the one hand, and the unchanged social stratification in the world of production, on the other.

Against this social background, the new working class hypothesis envisages the upsurge of a workers' elite of highly skilled technicians. The new working class is defined as composed by those workers who are highly integrated professionally and possess a deep knowledge of the productive process; who, however, are nevertheless excluded from control or property of their means of production. Into the new working class converge technicians and young engineers; of the manual workers, the skilled workers of the maintenance services and the foremen in charge of productive units. In the modern productive processes, their skills are often the key to production.

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1) B. Denitch, 1974. In the U.S., similar events had happened with some advance on Western Europe. See e.g. Bakke and Bakke, 19 .

On these grounds, the young professional workers question the authoritarian hierarchies of the world of production. The traditional wage demands give way to a demand for control, expressed in new forms of bargaining and protest (scientific organization of strikes).

On the other hand, the majority of the working class is still composed of unskilled or semiskilled workers. These workers are attached to repetitive jobs with no career prospects; they are formed on the job, often with task-specific instruction. Their integration in the work place depends on their job-security and on the available wage bill. These workers are subjected to a process of degradation and proletarianization. They tend to lose the sense of their participation in the productive process. Thus, they try with their wage demands to secure as consumers what they cannot obtain as producers in the prevailing division of labour.

Out of this process of polarization, Mallet and the other theorists of the new working class assign different roles to the two segments of the working class.

The young "intelligentsia" is the major group potentially committed to social change. Because of its strategic position, its potential weight is greater than its actual numbers and it can often paralyze entire plants. The traditional working class is instead limited to a merely passive role.

"In France in 1968 and Italy 1970, the most militant strikers came from areas with the most advanced technology and the highest proportion of highly skilled or educated workers in electronics, chemistry, auto, aircraft, as well as from previously 'passive' middle class professions--teaching and journalism. Characteristic of these strikers is a stress on democracy at the point of production rather than mere traditional wage demands.

The rationality of factory organization and the legitimacy of discipline are threatened when they seem based not on superior knowledge but on institutional power alone. A sense of powerlessness is not sufficient for revolt; but a sense of powerlessness at work combined with a feeling of power as a social group provides an impetus towards organized militancy. This militancy expresses itself not only in regard to wages and working conditions, but also in regard to problems of workers' control in the work process. The demand for some form of workers' control increasingly characterizes the strikes in Europe--and it is raised by the most skilled workers and technicians, more often than not against the desire of the Union leaders and parties of the left."<sup>1)</sup>

The problems with the new working class approach arise with their definition of working class. It is difficult to see how one can attribute the term of class to the proportion of mental to manual workers that are said to constitute the new working class. It is impossible to determine how to measure the existence and the order of magnitude of such a working class. It is also difficult to avoid the impression that this new working class, rather than as a class, would act as a corporatist body in search of control.

#### III.4. The New Left approach.

The new working class hypothesis can be seen as an elaboration of the orthodox Marxist approach to the working class. The Marxist analysis was developed in Italy by the New Leftists around the end of the 60's<sup>2)</sup> and has been more recently reformulated in the theory of the mass-worker.<sup>3)</sup>

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1) B. Denitch, 1974, p. 177 *passim*.

2) See the Marxist journal Contropiano, 1969, several issues.

3) See Quaderni del territorio, 1976; also the contributions of M. Cacciari.

This approach envisages an overall dequalification of the working class due to technological developments in the direction of an extreme division of labour. More mechanization and more automation imply fractioning the work tasks ever more.<sup>1)</sup> These simplified and routinized work tasks can be assigned to any unskilled worker, with little or no job training. Workers therefore can be easily substituted for one another, since they possess no special skill of their own. In their limited position, they lose the understanding of the production process, of which they know neither the technique nor the aims.

This process of dequalification extends as far as to concern white-collar jobs, threatened by rationalization and mechanization measures. The manual working class and the intellectual proletariat merge into the "massified" working class.

Thus, the Marxist analysis concentrates on the second pole of the working class, and extends it to include the whole of the labour force. As with the "new working class" approach, it is legitimate to question this use of the term of class; in particular, one can wonder whether one can attribute the behaviour of a "class" to a varied mixture of manual and intellectual workers.

Another question concerns the neutrality of technical progress: whether technology follows its own logic, or else whether it can be manipulated at their will by the employ-

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1) On automation as a determinant of the segmented division of labour, see E. Tarantelli, forthcoming. See also below,

ers,<sup>1)</sup> and whether it can be shown that technical progress goes in the sense of a greater dequalification of workers.<sup>2)</sup>

The main difference between the standard theory of the new working class and the orthodox Marxist approach lies in the roles assigned to the two extreme poles of the working class. Contrary to Mallet, the Marxist approach considers the massified working class the main moving force of the proletariat, followed and sustained in this role by the intellectual proletariat.

### III.5. A sociology of industrial conflict.

The question of the "revolutionary potential" of the working class is closely linked to the question of the perception that the workers have of themselves.

Do the workers mainly consider themselves as producers, or rather as consumers?

In support of the first position, the Marxist school emphasizes the importance of the way people relate to each other in the sphere of production,<sup>3)</sup> The focus on the sphere of production draws attention to the inequality of power in capitalist industrial societies, reflected in the subordination of the sellers of labour to its buyers, which is what gives it its political character. "By further stressing the crucial role of the relationship to the means of production for the structure of institutions and the dis-

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1) This position is taken e.g. by the American radicals. See Edwards, Reich and Gordon, 1975.

2) H. Bravermann, 1974.

3) In addition to S. Mallet, op. cit., we can quote a.o. R. Blauner, 1964, .

tribution of power in other spheres of society, the Marxian approach implies that there are intimate ties between political and industrial conflict, something which clearly contrasts with the pluralist insistence of an increasing separation between them."<sup>1)</sup>

The theory of the "embourgeoisement" of the working class, instead, asserts that, through increasing economic affluence, manual workers were giving up their distinctive class appearance, enjoying middle-class ways and consumption patterns. Societies would be moving towards a "pluralistic industrialism", characterized by a widely diffused and roughly equal distribution of power resources between a variety of interest groups.<sup>2)</sup> The working class is thus being fragmented and merging with the middle class.

These different views of the workers' own perception of themselves have a bearing on the assumptions concerning their behavioural patterns.

The notion of the worker "as a producer" implies that his primary interests lie at the work place and that his "world view" will be shaped with reference to a set of expectations concerning his working conditions.

In the other case, the worker-consumer would rather be interested in his position in the society and his set of expectations would refer to the social structure in terms of income and status. The most evident indicator of this structure, namely, the standard of living, could be taken as a measure of the workers' satisfaction. The set of expecta-

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1) W. Korpi and M. Shalev, 1979.

2) Goldthorpe et al., 1969; F. Zweig, 1961.

tions, therefore, could be specified in terms of the worker's absolute and relative income.

Technological development and economic performance are differently judged in the light of these two extreme versions of the theories. On the one hand, in fact, economic progress brings about automation, fragmentation of work tasks, and other changes in the division of labour that could provoke various forms of dissatisfaction and rebellion (Marxist theories of the working class).

On the other hand, the theory of the "embourgeoisement" of the working class positively values economic growth as a means of increasing workers' income in real terms, and thus satisfying their basic demands. The theory, however, allows for other sets of demands in relative terms, that cannot be satisfied by pushing the economic growth.

From the point of view of a theory of the working class, however, one cannot really distinguish the aspect "production" from the aspect of "consumption". The Marxist analysis of class formation and class struggle is based on the objective material working conditions and the prevailing relations in the world of production. Class struggle in the Marxian paradigm derives from increasing workers' exploitation. If we understand "exploitation" as the absolute--or the relative--standard of living<sup>1)</sup> (law of the immiserizing process), the apparent contradiction between the two views of the working class becomes rather a difference in emphasis--either on the production process or in the market for goods. One could argue that the stress on consumption is justified

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1) Which of the two has been and still is the subject of a controversy among the Marxists themselves.

in periods of high growth, when increasing real wages overshadow the problems of functional income distribution. In periods of slow growth, instead, slowing wage increases provoke higher "struggle propensity", both because the working class experiences losses in its standard of living and because it attributes these losses to the (presumably) growing share of profits.

In both cases, a Marxist type of analysis is at the origin of the two apparently diverging approaches.

### III.5.1. Critique of the Marxist approach.

A different way of looking at this is from the point of view of the workers' subjective (as opposed to their objective conditions) perception of themselves, of the importance they assign to different parts of their lives. Growing working class prosperity itself could eventually give rise to a significant increase in discontent and social protest.

Under the stimulus of a period of steadily rising living standards, expectations and aspirations could in fact race ahead, far beyond the rate at which material advance could conceivably continue. In such circumstances, therefore, a more acute sense of deprivation and social injustice might be created than was ever possible while the working class was maintained in its traditional restricted horizons.

Successive critiques of Marx have almost invariably raised important questions concerning the working class. It was among the early Marxists themselves that the problem of the so-called "embourgeoisement" of the working class and



its political implications was initially raised.<sup>1)</sup>

To summarize the more common criticisms to the Marxist theory of the working class, one can recur to the following headings:

- From economic development to the improvement in the standard of living and the "embourgeoisement" of the working class. Delay in the development of working class consciousness, "end of ideology".
- Exaggerated importance of property ownership as a source of social class division and of disruptive conflict.
- Institutionalization of conflict.<sup>2)</sup>

Alternatives that are proposed in the literature are the theory of the progressive integration of the working class, brought about by the modification of the institutional structure of capitalism, or the "natural developments" of the capitalist economy.

In Marx's conception, the development of the forces of production is the ultimate determinant of the pattern of stratification and of the balance of forces within society. The very idea of a working class had been formed in, and in fact belonged to, the infancy of industrial society. But au-

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1) Goldthorpe et al. (1969), p. 3, quotes Engel's concern for the British workers' craving for "respectability" and enhanced social status which led to a willingness to accept bourgeois social values, life-styles and political ideas,

2) See also R. Dahrendorf, 1959.

tomated or process production systems gave rise to conditions of work which, from both a physical and a social point of view, differed markedly from those characteristic of an earlier age of industry: on the production side, changes in the production processes in the sense of better working conditions; on the consumption side, the era of high mass consumption and the "affluent society".

"Neomarxist writers share with proponents of the 'embourgeoisement' thesis a surprising amount of common ground as to the basic processes of change within advanced societies that are of greatest importance for the destiny of the working class. The argument between the two camps in some part concerns the rate and extent of such changes: e.g. as regards the extent of the overlap between manual and nonmanual incomes. The idea of declining differentials has been questioned or qualified by a number of writers."<sup>1)</sup>

It seems therefore that an orthodox Marxist approach cannot be sufficient for the development of an analysis of the working class. The terminology itself can be misleading, because the term of class traditionally refers to the origin of classes in Marx's paradigm--i.e. to the property of the means of production. On the contrary, the idea of the working class today refers to the labour force with no specific political connotation. And also the idea of "social stratification" refers to criteria other than the means of production. "Income, occupation and education have all proved to be further important bases of stratification within capitalist society, and widely accepted status differences have reduced the saliency of purely class divisions."<sup>1)</sup>

Also from a comparison of the theories with even the

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1) Goldthorpe et al., op. cit., p. 5, passim.

most cursory review of the relevant facts emerges the need for a theoretical reassessment of the available theories of working class behaviour and industrial conflict. Blue-collar workers seem to have become unpredictable. To take only the crudest example: in different countries and at different times, in the last twenty years, ". . . peasant immigrants new to industrial work, traditional craftsmen and technically sophisticated workers with recently defined skills have all posed serious and open challenges to management's authority in the factory".<sup>1)</sup> All available records of the continuing crisis of industrial relations prove that the working class has not become simply another group in industrial society.

An explanation of the facts can be found in the substantial segmentation in production and labour markets. The demands made on workers, their security of employment, possibilities of promotion, of acquiring new skills or of exercising old ones vary substantially from one segment to another and from one country to another.

Technological innovation, international competition and the growth of demand work together to advance the division of labour. This progress alters the mix of jobs by creating unskilled work together with demand for various new skills. In the distribution of skills which results, technologically advanced forms of work coexist with archaic ones.

It is our contention that industrial conflict today can be understood by considering the relation between the expectations of work which the worker brings to the job and

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1) Sabel, 1978, p. 2.

what he actually finds there.<sup>1)</sup>

This line of reasoning must be applied to the behaviour of the various work groups. The demands they make on management during strikes throw light on each group's general conception of work. Thus it becomes possible to give an account of the diversity of the sources of opposition to management's authority.

For many a writer, the skilled workers' aim is to render the work-place power they enjoy at any moment more permanent by making it independent of the market, i.e. independent of the accidental actual market value of the skills they possess.<sup>2)</sup> They use the collective strength afforded by their market position and reinforced by their organization, to institutionalize the existing relation between craftsmen and the firm, and to codify their social rights. This means, e.g., that their privileges with respect to other workers become part of their self-definition. Their favoured position in the wage hierarchy becomes a symbol of their social position in the plant. For this reason, skilled workers are often seen to strike in protest of what might be taken for minor changes in the status quo in favour of other groups.

The question that remains to be answered is how to in-

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1) A similar approach is followed in Bassoul, Bernard and Touraine, 1960, p. 315, where they write: "Workers' attitudes cannot simply be transcribed on a scale of satisfaction which would be at the same time a scale of harmony or conflict in the plant. By capturing the results of the meeting between expectations and lived experience, the notion of a system of expectations determines the significance given to a particular work situation, and thereby specifies the meaning of satisfaction in this case."

2) Sabel, 1978.

interpret the relation of the unskilled workers to their jobs as it was manifested in their strike demands. Were they asserting their right to enjoy certain minimal living and working conditions? Or were they rather attempting to advance their position in the industrial order?

It is quite plausible that, through urbanization, education and a wholly different process of socialization, manual workers were made more receptive to the appeals of higher standards and new styles of living: their expectations and aspirations ceased to be defined by traditional norms and values, "In contrast with the class-based solidarity and equalitarian emphases of the old community, a concern with status and with status distinctions emerges."<sup>1)</sup>

The work groups' systems of interpretation determine when and how they oppose management's authority. Their "rules" specify, at least implicitly, situations in which it is legitimate to take action in defense of certain presumed rights.

The categories by which the worker interprets and evaluates all that goes on about him are related to the worker's place in the division of labour.

There might be a good deal of discretion in the organization of the division of labour, but not an unlimited amount.<sup>2)</sup> And, although variable, the ways men experience the division of labour are recognizably similar in different

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1) Goldthorpe et al., 1969,

2) See e.g., in A. Visalberghi, 1973, chap. 9: "Division of Labour: Old and New Models".

cultures. The aim in studying industrial conflict is precisely to point to some of the disappointments inflicted by the present industrial division of labour which are common in spite of the plurality of views about society which can exist within one culture and between cultures.

### III.6. Job satisfaction and workers' behaviour.

The literature on job satisfaction has mostly been concerned with the impact of job satisfaction on workers' performance and on their productivity. In most studies of this line, it is assumed that job satisfaction--via motivation, incentives, etc.--enhances workers' morale and positively influences the intensity and the quality of their performance, thus increasing labour productivity. In this respect, the aspects of a job--both pecuniary and nonpecuniary--that are assumed to determine the degree of workers' job satisfaction have been mainly studied as indirect determinants of productive performance.<sup>1)</sup>

In the literature on industrial relations, instead, job satisfaction is rather seen as one and possibly the main cause affecting workers' behaviour at their work place for what concerns the conduct of industrial relations. In this context, e.g., the uprise of major strikes at the end of the 60's in

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1) On this matter, the economic literature follows the lines of the literature on industrial psychology and the organization of work. Classic examples of the latter type are E. Lawler, 1971, which concentrates on the role of pay in determining satisfaction and performance; among the more properly industrial economists, see V. Vroom, 1964, and Galbraith and Cummings, 1967.

most Western countries has been primarily attributed to job dissatisfaction.<sup>1)</sup> In this type of analysis again, job satisfaction is linked to what are considered to be its ultimate consequences. The determinants of job satisfaction are thus only indirectly taken into consideration.

The hypothesis which gave start to this dissertation assumes job satisfaction to be among the determinants of the industrial relations crisis of the late 60's.. The conditions for the industrial relations crisis lie in ". . . the contradiction between the technical division of labour inherited from the first decade of this century (hierarchical scales, wage and normative differentials of a since then segmented labour force) and the new basic demand of the postwar generation, and, more generally, of the generation born after the Great Depression".<sup>2)</sup>

We cannot embark here on an analysis of the impact of job satisfaction on workers' militancy.<sup>3)</sup> I think instead relevant to undertake an investigation of the possible determinants of workers' satisfaction at their work place, along the lines suggested above.

We are here concerned with the direct causal link between the characteristics of the work and the degree of job satisfaction of the labour force.

The literature on job satisfaction as a determinant of workers' Behaviour--in both the mainstream lines of arguing

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1) See e.g. Flanagan, Strauss and Ullman, 1974.

2) E. Tarantelli, 1980, p. 107, My own translation.

3) For an account of the "state of the art" on this subject, see e.g. J.D. Stephens, 1979.

outlined above--is vast enough to include very different factors under a common heading. The general term "job satisfaction" can thus be specified following different causal interpretations. The major streams of analysis in the socio-economic literature, for example, adhere to one of the following interpretations:

- a. The orthodox Marxist school of thought concerns itself with workers' alienation at the work place, as derived from the extreme technological parcellization of the work tasks. The worker would miss the connection between his own extremely simplified task and the concrete complexity of the production process. He would so lose the sense of his job and find himself reduced to a purely mechanical agent with no participation. The argument thus also justifies the lack of motivation to work and its consequences.
- b. A more developed Marxist approach (e.g. of the American radicals) sees the technological division of labour as a process induced and manipulated by the management, in order to subdivide and submit the labour force. In this approach, a tendentially homogeneous labour force--that is, a labour force that is reaching common denominators of education, information and adaptability--would be artificially segmented and stratified according to the needs for control of the management rather than to those of the production process.<sup>1)</sup>

In this sense, automation would be a cause of alienation not so much in itself, but as the means used to segment the labour force.

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1) See e.g. H. Bravermann, 1974; and K. Stone, "The Origins of Job Structures in the Steel Industry", reprinted in Edwards, Reich and Gordon, 1978.



c. More economic-oriented approaches stress that it is difficult to quantify the degree of division of labour and/or the degree of automation as measures of job satisfaction. It is instead more feasible to point at the pecuniary and non-pecuniary characteristics of the job performed as determinants of the worker's appreciation of it. In this respect, again two broad fields can be distinguished in the literature:

- 1) The one considers non-pecuniary characteristics of a job as the most relevant element after the level of the wage has been fixed. This means that working conditions--riskiness of the job, pollution, work rhythm, etc.--have a value in themselves that often cannot be calculated in money terms. Other aspects of the job--e.g. possibility of participation in decision-making--that definitely cannot be translated in pecuniary terms also play a relevant role in determining workers' satisfaction with their jobs.

This has been the argument more often stressed with respect to the industrial relations crisis of the 60's. The quest for more participation was itself a moving force in the motivation of strikes. However,<sup>1)</sup> it is difficult to attribute strikes to causes, both for statistical reasons (lack of separate series of data), and because a strike is usually called for more than one reason.

- 2) Economic characteristics of a job are more obvious determinants of workers' job satisfaction. These characteristics are summarized in the wage level--whether in real or in nominal terms--and in the sin-

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1) As it is shown e.g. in A. Venturini, 1982.

gle wage rate. Economic aspects of job satisfaction include also those non-pecuniary items in the pay that however can be reconciled with economic motivations.

This is the field proper of the economists who adhere to the cost-push interpretation of the inflation and industrial relations crisis of the end of the 60's. Underlying this interpretation is the--implicit or explicit--assumption that phenomena pertaining to the field of income distribution are at the origin of the push on the cost side of the labour market. The contrast over the functional distribution of income (relative share of the wages and salaries in GNP with respect to the share of profits) is e.g., taken by authors such as Perry (1975) and Soskice (1978) as a fundamental cause of the conflict.<sup>1)</sup>

The argument is that job satisfaction is determined by the workers' own evaluation of their position in the economic and in the social scale--and in turn of the position of the working class in the social system. This reasoning can be extended to hold as well for each single worker (or well-defined group of workers) so that for each of them job satisfaction depends on their relative position in the pay structure and in the social stratification. The argument thus runs both in pecuniary terms--the relative wage--and in non-pecuniary ones, job satisfaction depending on the worker's evaluation of his position in economic and social terms.

The personal distribution of income--and better the individual wage--is taken instead as an indicator of the

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1) See above, Chap. II.

worker's job satisfaction as a single, rather than of all the workers as a class.

This type of approach reconciles the two views of the workers as producers and as consumers (see above). By stressing workers' expectations in terms of working conditions, in fact, it refers to the workers' very position in the productive process; by specifying working conditions in terms of absolute and relative levels of pay, on the other hand, it is concerned both with the standard of living of the worker as a consumer and with the position of the working class in the social structure.

The general framework proposed in this dissertation, which takes as a starting point the consequences of the division of labour, seems particularly suited to give an account of the mismatch between workers' expectations in terms of their working conditions and their evaluation of their achievements.

I have already examined in the introductory chapter a set of possible mismatches between the labour force's expectations and their results as a cause of tensions in the conduct of industrial relations. Now the argument can be taken a step further, having regard to the technical division of labour as a determinant of wages, which is here the central element that could account for most of the enumerated factors affecting job satisfaction.

### III.6.1. Economic aspects of job satisfaction: an operational version.

It is generally admitted that, in the course of the

last decade, the attitude of workers vis-à-vis their jobs has changed. Workers seem to have become ever more critical towards the bureaucratic organization of firms, the lack of possibilities for participation, and other features of the modern industrial organization of work. This has provoked a concern to identify the causes of this phenomenon.

Studies that deal with job satisfaction usually substantiate their conclusions with techniques that pertain to the realm of sociology: these generally include the results of surveys and of personal interviews.

Some studies also embark in quantifying the extent and the pace of technological development as a measure of workers' "alienation".<sup>1)</sup>

It is rare to find pure theoretical economic analysis applied to what Scitovsky calls "that curious borderline case" between economics and psychology, the satisfaction of work.<sup>2)</sup> Even more difficult is to find econometric tests of the hypotheses put forward.<sup>3)</sup>

As Scitovsky puts it,<sup>4)</sup> "work can be pleasant or unpleasant, and its pleasures, comforts and discomforts play an important role in our lives. Those effects of work are completely missing from the economist's numerical index of

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1) For an account of the literature on the subject, see a.o. J. Barbash, 1974.

2) T. Scitovsky, 1976.

3) Flanagan et al. (1974) present a model of how secular changes in the mix of pecuniary and non-pecuniary aspects of a job affect job satisfaction. But it is difficult to see how their model could be estimated.

4) T. Scitovsky, op. cit., p. 90 passim.

economic welfare", since "the satisfaction the worker himself gets out of his work is not an economic good because it does not go through the market and its value is not measurable".

An attempt to test economic aspects of job satisfaction was made by D. Hamermesh.<sup>1)</sup> The model includes pecuniary and non-pecuniary aspects of a job to explain "differential job satisfaction", defined as "the difference in utilities between the sum of wages plus the value of amenities in one's job and the same sum in the next-best alternative".

The model was tested with data for the U.S. in 1969 and 1973, collected by the Institute for Social Research. Considering the results of the job-satisfaction equations, job satisfaction appears to be affected more by the difference between the worker's wage and an objectively determined wage than by the wage itself. Hamermesh's conclusions suggest that much of the differential satisfaction is the result of randomness in the distribution of earnings for individuals with identical characteristics. "Job satisfaction is inherently a relativistic concept: although there need be no interdependence of utility, our results suggest that the workings of the market give the individual opportunities that he takes as comparison for his job and that define his satisfaction with the job. Accordingly, they imply that economy-wide increases in real wages, because they raise the attractiveness of all alternative

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1) D. Hamermesh, "Economic Aspects of Job Satisfaction", in O.A. Ashenfelter and W.C. Oates, eds., Essays in Labour Market Analysis, New York, Wiley and Sons. 1978

jobs, will have no effect on the fraction of workers who profess to be satisfied with their work."<sup>1)</sup>

The results of this model of course are not to be taken as conclusive evidence in favour or against any of the hypotheses that try to explain job satisfaction. They are important, however, to make a case for the impact of relative wage considerations in the job-satisfaction ("welfare") function of the workers.

Furthermore, the factors that Hamermesh retains as significant for his model provide a reasonable approximation to the explanatory factors on which rests the interpretation of this dissertation.

This explains our approach to the study of wage determination in socio-economic terms, that I will develop in the following chapter.

### III.7. Conclusions.

We have been dealing so far, in two separate chapters, with the economic and the sociological approach to the same question, namely, what determines workers' attitude towards their jobs and their subsequent behaviour.

To recall briefly the issues, in the first chapter it was shown how the economic model of the wage-wage spiral--a sophisticated version of the cost-push inflation variety--implies a characterization of workers in "relative" terms. The assumption of "spillover effects" of a first wage push on the other sectors/industries/occupational groups of the same "orbit" is based in fact on the reaction of workers to

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1) Ibidem, p. 71,

defend their relative position on a socially determined scale --be it defined in terms of income, status, prestige, etc.

On the same grounds, the so-called "sociological school of inflation" finds the main impulse to inflationary pressures in the structural struggle among the various interest groups of the society, trying each to obtain a bigger portion of the national income.

The argument on the "structure" of the income distribution is often connected with socio-political issues on the "structure" of the social system.

The sociological literature reaches the same conclusions, although starting from a different point of observation. Workers' discontent and their work-place behaviour are seen as fundamentally determined by the workers' own evaluation of their relative position in the hierarchy of the work place.

The image of the workers that one derives from this sort of conclusions is somewhat puzzling.

Under the influence of a literature of Marxist orientation, one is used to think of workers as a class, acting solidarily with each other. In contrast, from the sociological literature, we get a picture where workers' behaviour appears particularistic to the point of individualism.

The outstanding features of the average worker appear to be his pursuit of self-interest and his competitive, "relativistic" ethos.<sup>1)</sup> His preoccupations lie mainly in his rel-

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1) On this point, see e.g. M. Panic in F. Hirsch and J. Goldthorpe (eds.), 1978.

ative standard of living, relative status, relative power or influence.

It is precisely this characterization that allows for interpretations of social phenomena based on the concept of relativity.

In the theory of consumers' behaviour, for instance, this is already an established principle. The desire to "live up to the Joneses" is a well-accepted foundation for a consumption function.

To account for a similar phenomenon, sociologists have developed the notions of "aspiration gap"<sup>1)</sup> and of "relative deprivation"<sup>2)</sup> that lie at the origin of phenomena of social marginality and frustration.

The hypothesis of fair wage relativities, as expressed e.g. in the wage determination by "wage contours" is thus the economic equivalent of the sociologists' "relativistic ethos" of the workers.

The conclusions from both the economic and the sociological literature emphasize the importance of considerations of relative wage and of relative social position, as defined in connection with one's own occupation.

It must be clear, however, that this characterization of the workers does not imply on my part any ideological commitment, nor any value judgment, on at least two grounds.

Firstly, assumptions on workers' motivations of the

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1) M. Panic, 1976.

2) W.G. Runciman, 1956.



kind outlined above can be found in the literature of any political orientation--from the school of the "end of ideology"<sup>1)</sup> to the Marxist<sup>2)</sup> approach.

Secondly, as I have already pointed out, the motivations attributed to an individual worker can in turn be extended to his work group or to any socio-economic grouping sharing a similar situation. More than that, working conditions as they result from the technical division of labour are shared by the working class as a whole, however internally segmented --thus extending the relativistic principle to the whole functional distribution of income.

The assumption of a "relativistic" ethos and behaviour on the part of the working class clarifies our approach to income distribution in terms of the wage structure. This approach to the wage structure tends to bring together the tools and findings of both economics and sociology, in a broader perspective than is permitted by the limits of an individual discipline.

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1) D. Bell, 1965.

2) M. Aglietta, 1971.

Chapter IV: The Role of Education  
in Wage-Structure Determination

IV.1. Introduction.

In the analysis developed so far, I have put into evidence the importance of the relative position in the wage structure for workers' job satisfaction and the performance of industrial relations. Thus, in Chapter II, I have discussed the role of income distribution issues in the genesis of industrial conflict, and, in Chapter III, I have examined the expectations in economic and in social terms that may have given rise to workers' attitudes and behaviour.

In this chapter, I analyze from the theoretical point of view how the development of mass education may have affected the process of wage-structure determination. More precisely, I investigate the effects of a qualitative change in the supply of labour on relative wages by occupation and by level of education.

The wage structure has been the subject of debates among scholars of economics, sociology, industrial relations and other related disciplines. There exist thus in the literature quite a few interpretations, and some formalized models, of its evolution.<sup>1)</sup> I have selected a few models that can be deemed to represent the mainstream ar-

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1) It must be pointed out, however, that the state of the art on wage differentials is at present rather disappointing. Not much progress has been achieved in this field after the wave of interest which lasted until the 60's.

guments, and examined the predictions of each of them as to the case of a "generation leap" in the composition of the labour force.

To do so, I have analyzed the role assigned to the factor labour and to its qualitative characteristics, and the theoretical predictions of the models in conditions of excess supply of qualified labour.

Economic theories on wage determination essentially differ as to whether market forces prevail over social criteria. In the traditional theory, adjustments in the labour markets take place through the usual market forces (prices and quantities) mechanisms. But other mechanisms of adjustment refer to social criteria of wage determination, allowing for a new set of independent variables in the wage equation--sometimes given "a posteriori" an economic rationale. In this respect, one can broadly distinguish in the literature

- a) theories that appeal to a mechanism of adjustment through variations in prices (models of neoclassical derivation);
- b) models that rely on quantity adjustments (fix-price models with quantity rationing in the neo-Keynesian tradition). To this last category, one could add a third type of models, that rely on
- c) adjustments through the "quality" demanded and offered on the labour market, and that can be solved in terms of quantity adjustment.

Another category is that of

- d) models that attribute the adjustment to institutional

settings assumed--at least partly--independent from economic forces (monopolistic regulation). These models also take into account the social relations that originate and support the established institutions.

In the real world, different adjustment mechanisms can be at work at the same time, and eventually influence each other. The conflict of priority becomes evident with the appearance of events that can (or respectively cannot) be explained in the light of purely economic considerations. In particular, an analysis of the crisis of the 70's from the point of view of income distribution has to take into account the contradictions in the different modes of adjustment that precisely made the crisis come to a head.

#### IV.2. The wage structure.

By wage structure we mean the hierarchical scale of occupations and of the corresponding wage rates as it is socially determined in a specific time and a specific place.

Differentials are defined as the percentage relations between wage rates.<sup>1)</sup> In our context, two types of wage structures are considered: the wage structure by occupation and the wage structure by level of education. Thus, occupational wage differentials are the relative wage levels of the range of different occupational groups: e.g.  $W_s/W_u$ , where  $W_s$  is the wage rate of the skilled workers and  $W_u$  is the rate of the unskilled ones. Equally, educational wage differentials are the relative wage levels of the different levels of education: e.g.  $W_h/W_p$ , where  $W_h$

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1) This is a standard definition in the literature on wage differentials. For an introduction to this practice, see e.g. Reder, 1962.

is the wage rate of workers with higher education and  $W_p$  is the wage of workers with primary education only.

The wage structure is the locus in which coalesce all the aspects and implications--economic, social, psychological--of the distributive mechanism of an economic system. In the wage structure, in fact, the individual wage is not determined in isolation, but it makes up for the relation of the individual worker (or group of workers) with his work environment. This is the sense in which workers' ethos was characterized as "relativistic" in Chapter III, and this is why workers' behaviour must be analyzed in relation to their position in the wage structure.

In principle, one could compare the wage rates of any two kinds of occupations. Empirical studies, however, are often restricted to wage differentials between groups that belong to the same establishment, or at most to the same industry. There are of course statistical and terminological reasons for that.<sup>1)</sup> More important, however, is the choice of the reference groups in terms of their vicinity and of the visibility of the wage determination process. Thus, a currently accepted distinction refers to internal and external wage structures, whereby ". . . the wage structure within a bargaining unit, plant, firm, associa-

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1) A terminological problem arises as to whether "skill level" and "occupation" can be considered synonyms, or rather, whether skill level can be used as a proxy for occupation. This seems to be the case only for manual occupations. On the other hand, there is also the problem of defining an occupation for statistical analysis, and of identifying the corresponding "level of qualification". See, for substance and quotations, J. Vincens, 1972.

tion or other grouping in which wage differentials are set by the same authority must be distinguished from the complex of interfirm or group structures each set by different agencies".<sup>1)</sup>

Dunlop defined a "job cluster" as

"... a stable group of job classifications, or work assignments within a firm (wage determining unit) which are so linked together by a) technology, b) by the administrative organization of the production process, including policies of transfer and promotion, or c) by social custom, that they have in common wage-making characteristics."<sup>2)</sup>

The notion of "job cluster" is a first explanation of the movements around the "key" wage rates in the internal wage structure. Similarly, the concept of "wage contour" is used to analyze "external" wage structures as the complex of interfirm, interindustry and interregional differentials. A "wage contour" is defined as a stable group of wage determining units that have common wage-making characteristics, being linked together by similar product markets, resort to similar sources of labour force or common labour market organization (Dunlop).

The "social" job structure, instead, is the ranking of occupations according to pay, prestige, etc., as it prevails in a certain society at a certain point in time. The ranking of occupations according to either pay or prestige is very similar across countries, with few exceptions.<sup>3)</sup> But, is it pay that determines prestige, or vice

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1) J. Dunlop, 1957, p. 16.

2) Ibidem.

3) See e.g. the statistical findings in H. Phelps-Brown, 1977.

versa? There is at the moment no conclusive evidence of a positive causal relation, nor of an inverse relation, between the distribution of jobs with respect to the variable "social status" and the distribution with respect to their pecuniary characteristics.<sup>1)</sup>

The social ranking of occupations offers a major example of market forces interacting with social custom in shaping the actual distribution of market and non-market rewards. It would be of great interest to analyze movements across time in the wage structure by occupation as "socially" determined. But the definitions of "status" and "prestige" have to be committed to notions of cultural and ethnological derivation, and this goes beyond the scope of our field. From an economic point of view, however, it appears that the "social" and economic ranking of occupations in a country derives from its pattern of economic development.<sup>2)</sup> After the ranking becomes established, it is transmitted from one generation to the other through the force of custom. This explains the importance of "fair relativities" that remain more or less fixed, at least until major changes in the economy intervene. Market forces, in fact, may provoke significant shifts in the ranking of occupations in the long term. In the medium term, instead, it often may happen that some occupations maintain their high social prestige whilst they lose ground in terms of relative pay; or, conversely, some occupations acquire positions as to relative wage, whilst they still rank very low in the scale of prestige.

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1) R.S. Smith, 1979.

2) J. Dunlop, op. cit.

The determination of the wage structure in conditions of disequilibrium in the labour market (excess supply of qualified labour) acquires, in this approach, a new perspective. By referring to it, however, it is not intended to uniquely determine workers' behaviour, nor to give monocausal explanations of such complex phenomena as the industrial conflict of the end of the 60's and the long-lasting crisis of the Western economic systems.

One rather wants to put the emphasis on a nevralgic point of the economic systems, the distribution of earnings, and show how the malfunctioning, or the conflict, are there not only particularly evident, but also they are bound to influence the functioning of the whole economic system.

#### IV.3. The neoclassical approach to wage determination.

An appropriate starting point for the proposed type of analysis seems to be the determination of wage in a framework of general equilibrium. This is simply the application of the traditional neoclassical approach of a competitive equilibrium to the special case of labour markets.<sup>1)</sup> The labour market, in this approach, is similar to the market for any other good: the demand for labour and the supply jointly determine on the market the number of people employed and the equilibrium wage.

In the basic model, no interoccupational, interindustry or interregional wage differentials could ever arise.

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1) For a presentation of the neoclassical approach to the labour market, see e.g. D. Bellante and M. Jackson, 1979.



However, once the assumptions of labour force homogeneity and perfect substitutability are relaxed, differences in the skill level of workers result in differences in their wage rates.

Each worker (or group of workers) identified by his skill, level of education, etc., is treated separately as a different factor of production. If e.g. we decompose the factor "labour" into several ones with different characteristics:  $L = L' + L'' + L''' \dots$ , we can apply to each  $L_i$  the usual wage competition model.

Each group's wage rate will be equal in equilibrium to the value of its marginal physical product. The structure of wages results from a set of microdecisions that match, on the market, the jobs offered to a set of relative wages. These relative wages are such as to balance supply and demand for each job (or job category).

The determination of the wage structure is thus identical, in essence, to the determination of the individual wage.

Long-run wage differentials are accommodated in the framework of the basic model via two sets of considerations:<sup>1)</sup>

- the characteristics of the jobs offered,
- the characteristics (and the preferences) of the workers.

The main factor affecting the differential is the cost of acquiring the skills necessary to an occupation. Persons with higher education/skill level are paid higher

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1) See on this point J.J. Silvestre, 1971.

wages that equal their higher marginal productivity in value.

In equilibrium, there will be strict correspondence between each (precisely described) job and its relative wage rate, as determined by the marginal productivity of the worker in that job.

Taken to the extreme, one can think of a separate market for each type of labour  $L_i$ , i.e. as many markets as there are occupations. Graphically, this case can be exemplified by a square matrix where job tasks and workers' skills are ranked according to some criterion, in our case, in decreasing order of productivity.<sup>1)</sup>

Graph IV.1:

| $L_i^{J_j}$ | $J_1$    | $J_2$    | $J_3$    | $J_4$    | . . . |
|-------------|----------|----------|----------|----------|-------|
| $L_1$       | $W_{11}$ | $W_{12}$ | .        | ,        |       |
| $L_2$       | .        | $W_{22}$ | .        | ,        |       |
| $L_3$       | .        | ,        | $W_{33}$ | .        |       |
| $L_4$       | $W_{41}$ | .        | ,        | $W_{44}$ |       |
| .           | .        | .        | .        | .        |       |
| .           | .        | .        | .        | .        |       |
| .           | .        | .        | .        | .        |       |

where  $L_i$  are different types of labour,  $J_i$  are work tasks (jobs) and  $W_{ij}$  are the corresponding wage rates.

1) For this kind of approach, see Filippini, Tarantelli and Scanlon, 1979.

The only relevant wage rates are the ones along the main diagonal. They are, as a matter of fact, the only existing wage rates in conditions of equilibrium in the labour market.

Any wage rate above the diagonal, in fact, (e.g.  $W_{12}$ ) is the wage that is paid to a worker of higher level of qualification when he performs an "inferior" task, and is therefore lower than the one on the main diagonal. There is no incentive for worker  $L_1$  to seek to obtain job 2.

A wage rate below the main diagonal, instead (e.g.  $W_{41}$ ), is the wage paid to a worker of inferior quality when he is assigned to a higher-level job, and it may be higher than the one on the main diagonal. Whether or not it is higher, depends on the worker's marginal productivity in that job. If the wage rate below the main diagonal is higher than the one along the diagonal, there will be an incentive for worker 4 to try to get into job 1. This will start a wage competition process by which  $W_{41}$  will be depressed below  $W_{44}$  to reach equilibrium.

The adjustment process can be thought of as taking place in a logical time sequence, that is, as being instantaneous.

In conditions of perfect competition, the system converges to equilibrium.

Long-run occupational wage differentials are thus attributed to differences in the productivity of workers and to a variety of non-wage aspects of jobs.

The theory of wage determination in a competitive

market is known in the literature as the "competitive hypothesis". To put it briefly, it is ". . . a hypothesis which states that the behaviour of relative prices and quantities can be explained as though these prices and quantities were equilibrium values in a static economic model".<sup>1)</sup>

The relevant factor for the wage determination of each type of qualification is the influence of labour market conditions. This can be expressed as  $W_i = f(E_i)$ , where  $W_i$  is the wage of group  $i$  and  $E_i$  is an indicator of its market conditions.

This implies a high degree of variability in the wage hierarchy.

Under the wage competition assumption, a change in relative quantities (supply side effect) has the effect of changing relative prices in the opposite direction e.g. an increase in the supply of college-educated workers will drive down their wages relative to the wage of other types of workers (see graph IV.2) (narrowing of the wage structure).<sup>2)</sup>

The outcome of the expansion in the educational systems is thus only a change in the relative quantities of different types of labour.

It is important to observe that this simplified version of the neoclassical model does not distinguish between wage structure by education and wage structure by occupation.

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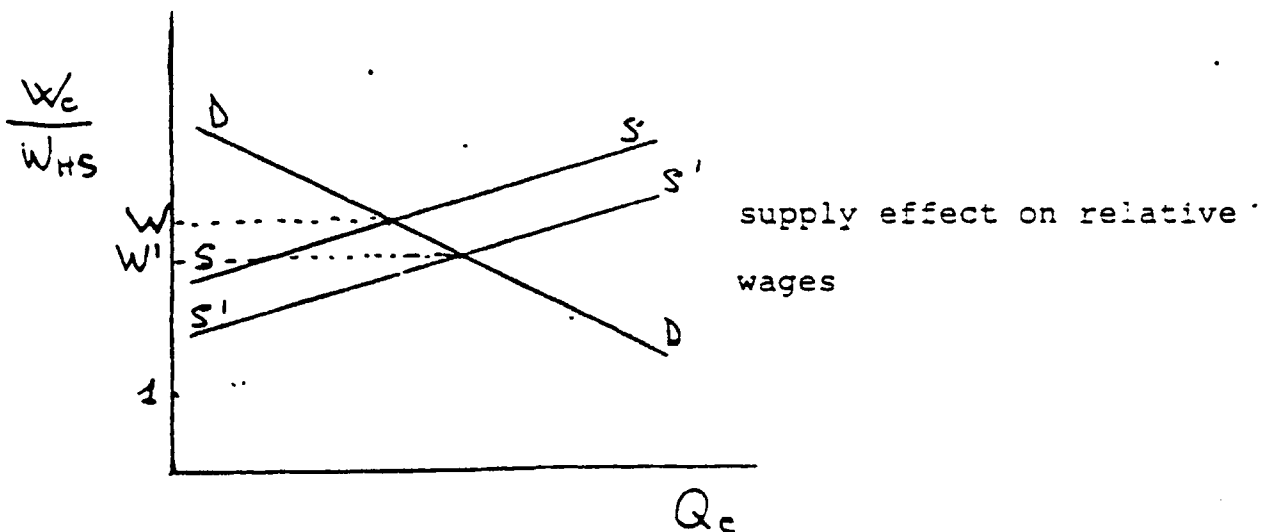
1) M. Reder, 1962: p. 299.

2) For an explanation of the use of these terms, see e.g. J.P. Daubigney. 1971: p. 371.

This depends on the fact that this model always refers to an "optimal" use of factors. i.e. the equalization at the margin of the wage rate and the productivity of labour.

In terms of our subject, this means a strict correspondence between the level of education required and the offered occupation. More than that, in this model one can draw a line of causation running directly from the level of education attained to the corresponding occupation and to the corresponding wage rate.

Graph IV.2:



#### IV.4. The model of "investment in human capital".

This was the starting point for the theory known under the name of "human capital". Human capital theory explains investment in oneself as the result of rational optimizing behaviour. Investment in human capital can be conceived of in various ways, namely "... any spending on persons that enhances their future earning capacity" <sup>1)</sup>

1) G. Sahota. 1978: p. 12. This review article contains a rich bibliography on the subject. It is sufficient here to mention the pioneering work of G. Becker. 1964, and of T. Schultz, 1961.

health care, migration, job-search, nurture. etc. The main aspect, however, in coherence with the neoclassical framework, is investment in education and on-the-job training.

The individual (or his parents) is supposed to invest in post-compulsory education, training programs, etc., on the basis of estimates of the probable present value of alternative life-cycle income streams, discounted at some appropriate rate. In this respect, the theory is similar to any other theory of capital investment.

Human capital theory derives from the marginalist axiom that each factor be paid the value of its physical marginal product. In this sense, an increase in the level of education of an individual works its way to increases in the wage rate through an increase in the factor's productivity.

There is nothing new in the analysis with respect to the traditional marginalist view of the labour market.

The implications, however, are different when one enters the field of wage determination. The individual rate-of-returns calculations are confronted in the market with the aggregate supply of each type of skilled/educated labour. Relative wages will depend on the relative market demand.

As we saw before, in the neoclassical model, to increase the supply of educated workers has the effect of lowering starting salaries, of shifting down the entire age-earnings profiles. of shifting the curve of present values: in sum, of decreasing the private rate of return from investment in education.<sup>1)</sup> With a dynamic process of

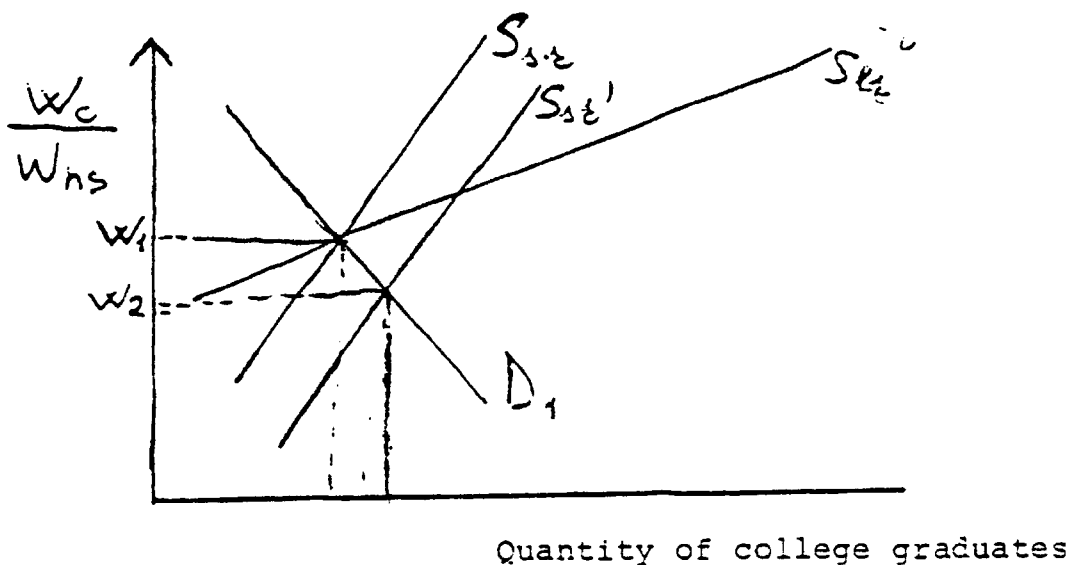
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1) See M. Blaug, 1970, p. 179.

adjustment of prices to changed quantities, long-run equilibrium is possible, but rather as a tendency which is always approached and never actually reached.

To give a theoretical illustration of this point, let's have in graph IV.3 the supply curve of qualified labour in the long run,  $S_{lr}$ , as a positive function of the relative wage, defined as the wage of qualified workers (in our case, e.g. the wage of college graduates), over the wage of less qualified workers (e.g. high-school graduates). With a demand curve  $D_1$ , the relative wage is set at  $w_1$  where the demand curve intersects both the long-run and the short-run supply curves. An increase in the short-run supply of college graduates, with constant demand, actually decreases their relative wage to  $w_2$ , (contrary to the assumption of a positively sloped long-run supply curve).

Graph IV.3:



On the other hand, the demand for highly educated personnel could shift in such a way as to totally or partly offset the effect of increased supply. At the limit, in an

upswing, the demand for labour might concentrate on the more qualified group, thus causing a relative scarcity and an increase in the differential (widening of the wage structure).<sup>1)</sup>

One of the great problems with the rate-of-return approach is indeed that rates of return are calculated on the basis of present demand and supply, while any results are achieved on the basis of future labour market conditions.

Rate-of-return analysis functions as a signal of direction. to invest more or to invest less. But it cannot predict future demand or future supply of educated manpower. On the one hand, in fact, the demand for educated people is a function of their wage (which equals their marginal productivity); in turn, their marginal productivity is a function of the quantity employed, but not of the quantity actually supplied on the market.

On the other hand, the quantity of educated labour supplied on the market is a function of their expected relative wage, based on rate-of-return calculations of the human capital type. This discrepancy in the determinants of labour supply and demand is fundamentally what provokes the theoretical contradiction in the human capital developments with respect to the original neoclassical theory.

In the former, a positive relation is always assumed to exist between the level of educational achievement and

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1) For a critique of the human capital approach, see a.o. the papers of the International Round Table on "Répartition et éducation", IREDU-CNRS, Dijon. 5th and 6th of June, 1975. In particular, see J.C. Eicher, *ibidem*.



the income level. More education for all would thus imply more income for all.

In the orthodox neoclassical theory, instead, an increase in the stock of education corresponds to a lower market price for it, if not counterbalanced by an equal increase in the demand.<sup>1)</sup>

#### IV5. The model of Reder.

The neoclassical theory analyzes workers of different skill levels as if they were different factors of production. But the wage rates paid for some specific jobs are not one and the same thing with factor prices. The skill level and the other characteristics of the workers who are bidding for jobs vary with labour market conditions; therefore the Wage rates may be influenced by changes in the "quality" of the candidates to the vacancy.

An increase in the supply of graduates, for instance, may increase their relative demand by lowering their price; at the same time, it tends to dry up the supply of less qualified people and hence forces employers to hire graduates to fill up jobs which had previously been assigned to secondary-school leavers.

The interdependence of the markets for workers of different skill/educational levels leads to the interde-

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1) Even an otherwise exhaustive report such as M. Carnoy's "Théorie du marché du travail, de l'éducation et de la distribution des revenus" (1975) neglects to put into evidence this internal contradiction of the theory.

pendence of the curves of demand and supply. The whole apparatus of demand and supply price determination needs thus be reexamined.<sup>1)</sup> This provided the starting point for a refined version of the theory that is known in the literature as "Reder's hypothesis".<sup>2)</sup>

The model of Reder is probably the most well-known and the most often tested model of the whole literature on wage differentials.

It is based on the possibility of substituting less specialized workers for the more specialized ones, through a firm-internal process of upgrading. This presumes certain characteristics of the labour markets, namely:

- a) the existence of internal labour markets and established career ladders;<sup>3)</sup>
- b) a positive elasticity of substitution between different types of labour;
- c) adjustment through changes in the recruitment standards, i.e. in the quality demanded rather than the price.

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1) M. Blaug, op. cit., p. 183.

2) What I refer to as "Reder's model" is the hypothesis developed mainly in M. Reder, 1955. The version of the model that I intend to discuss is its limited, essential "core", whilst all the qualifications the author introduced to adapt the model to the available evidence are considered as accessory.

3) The existence of labour markets "internal" to a firm was already recorded and theoretically interpreted by Kerr, Hildebrand and others. It has then been given a dominant position in the framework of labour market studies by Doeringer and Piore (1971).

To introduce the notion of elasticity of substitution means to question the very working of the neoclassical process of price determination. Relative quantities and demand conditions are still at the basis of the dynamics of the wage structure; but hiring standards vary rather than wage rates, so the impact of education on earnings is indirect, and works through the variable "occupation". The elasticity of substitution between different types of labour depends primarily on the level of education of the workers.<sup>1)</sup> This means that workers are more able to acquire new specializations, the higher is their level of education. This refers to general education more than to specific professional instruction: the possession of general education, in fact, permits one to synthesize and apply generic capabilities to a specific job task.<sup>2)</sup>

Reder's model works via the upgrading of workers from low to higher levels of specialization with an increase in the demand for labour. Various institutional factors and rigidities make internal upgrading more profitable for a firm than hiring in the open market.<sup>3)</sup> The upgrading of

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1) Fisher, 1932. See also below.

2) On this point, see also Doeringer and Piore, op. cit.

3) One can think, e.g., of the legal restrictions to lay-off, that make firms reluctant to hire in the external market; the practice of labour hoarding during (temporary) downswings, which provides the firm with internally trained labour force; the segmentation in the labour markets, which makes difficult the recourse to reserves of manpower from different segments. This is partly my own elaboration of Reder's list of causal factors in Reder, 1955.

workers provokes a relative decrease in the demand for skilled labour and a relative increase in the demand for the semiskilled. These can in turn be substituted by the unskilled. At the end of this process, when the reserve of unskilled labour is being depleted, the supply of labour available for the unskilled work tasks (at the initial wage rates) is relatively reduced. Thus, the wage rates of the unskilled workers will tend to increase with respect to those of the semiskilled, and the latter will tend to increase with respect to the wage rates of the skilled workers.

Reder concludes that, in conditions of economic expansion and of tight labour demand, this process will lead to a reduction in the wage differentials (narrowing of the wage structure), which is made possible by an increase in the level of education of the labour force.

#### IV.6. The job-competition model.

Thurow's well-known job-competition model develops one aspect of Reder's model that had been left almost unnoticed: that is, the process of adjustment in the labour markets via modifications in recruitment standards rather than changes in the wage rates.<sup>1)</sup> Thurow's model is still rather close to the neoclassical position, insofar as "... wage competition and job competition are not mutually exclusive. Both could, and probably do, co-exist as alternative mechanisms for clearing the labour

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1) L. Thurow, 1975.

markets".<sup>1)</sup> However, the basic assumption of the model is a greater flexibility of quality standards over wage rates in response to changes in labour market conditions.

The labour market itself is defined as "a place where labour is allocated to on-the-job training slots rather than a place where existing job skills are auctioned off to the highest job bidder".<sup>2)</sup> The demand for labour and the supply have certain peculiar characteristics (see graph IV.4, parts a and b).

The demand curve for labour is represented by the job distribution, i.e. the number and type of available job slots, which is exogenous to the model. It is influenced by technological factors. by the distribution of the training costs and by sociological factors that affect wage determination. In turn, the distribution of job opportunities determines the distribution of earnings. Thus, wage rates are based on the characteristics of jobs, irrespective of the "quality" of the applicants to the post; that is, marginal products are inherent in jobs and not in individuals. Given the job distribution, wages are rigid and the wage differentials are fixed.<sup>3)</sup>

Workers' "quality" differences are meant to match the existing wage differentials.

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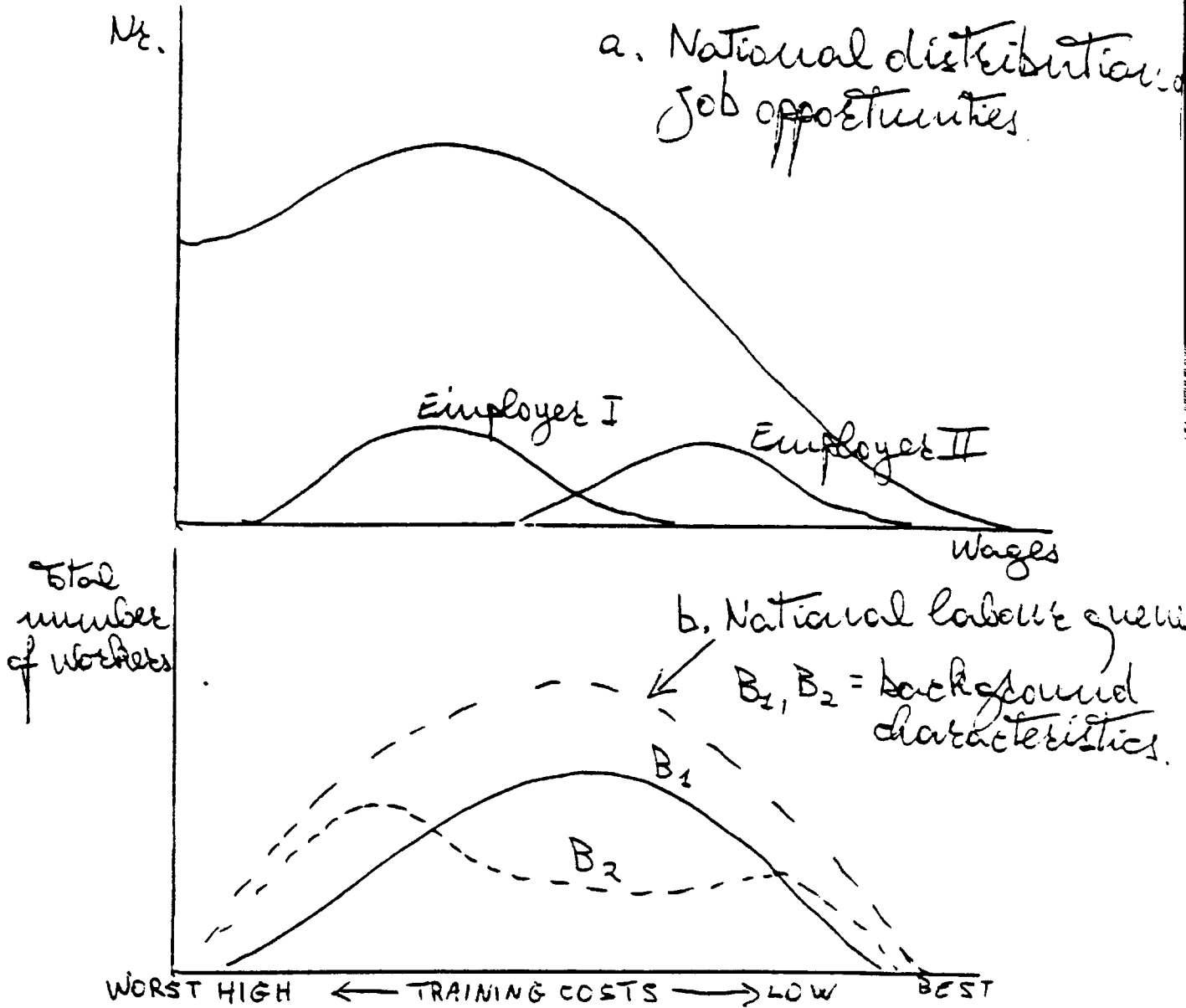
1) Ibid., p. 76.

2) Ibid.: Introduction. Cfr. also C. Holt, 1980.

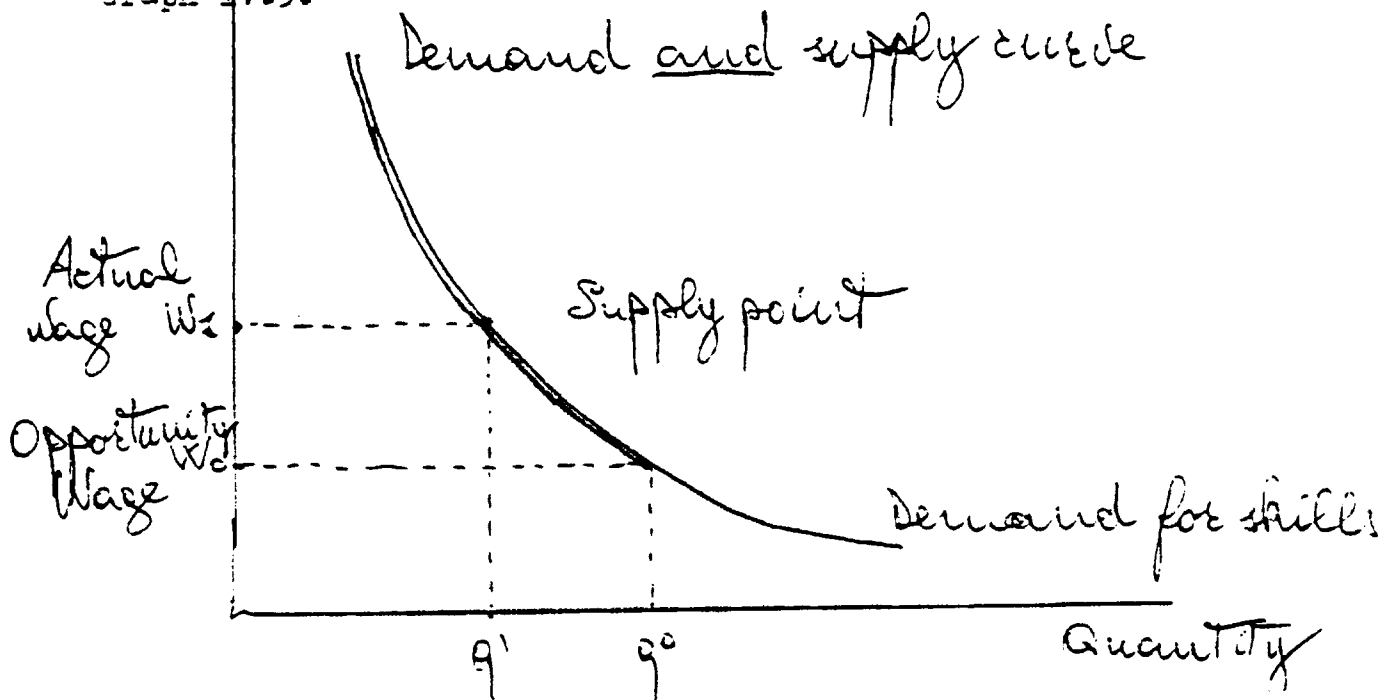
3) Thurow puts forward a set of considerations of a "sociological" type to explain the rigidity of the wage structures; see L. Thurow, op. cit., p. 104.

The job-competition model.

Graph IV.4.



Graph IV.5.



The supply of labour is represented by the "labour queue", that is, a ranking of workers on the basis of certain background characteristics. Education is one of the personal characteristics that determine an individual's relative position on the labour queue. Those characteristics, however, have a relevance only insofar as they influence the relative training costs of workers. Changes in the distribution of training costs imply changes in the distribution of job opportunities, and, through that, in the distribution of earnings.

The supply curve of labour in the model directly depends upon the demand, since ". . . skills are only created when there is a demand for labour with that skill". The supply and demand curves for different types of labour not only depend on each other, but they actually coincide at least above some "opportunity" wage rate (see graph IV.5).

Individuals queue at the (limited) ports of entry into the internal labour markets. Employers hire the best prospective workers, starting from the top of the labour queue, reaching down only if aggregate demand (and the demand for labour) is high.

When less labour is needed, the supply curve is reduced by increasing the requirements for eligibility. Thus, supply and demand curves shift to clear the labour markets: for every exogenously given wage, the demand (and supply) curve determines how many job openings will exist and how many workers will be trained. There is no possibility of an excess supply of labour in this model, and this is true for every exogenously determined wage rate.

The distribution of factor payments is left exogenous to the model, wage differentials are fixed and the elasticity of substitution between different types of labour is exceedingly low.<sup>1)</sup>

In terms of the matrix of jobs and workers that exemplified the "neoclassical" labour market in paragraph 3, we can think of the ranking of workers as of a labour queue, and the ranking of jobs as of a distribution of job opportunities (irrespective of the frequencies in each job category) (see graph IV.1 on p. 91).

The main diagonal represents now the demand-and-supply curve. When the demand for labour expands, employers increase their hiring down towards the  $n^{\text{th}}$  worker, and vice versa for a contraction in the demand for labour, without altering the structure of wages. In this model, only the main diagonal of the matrix exists and is exogenously determined, with no reference to the quality of the labour supply.

#### IV.7. The elasticity of substitution

The prevalence attributed to changes in quality standards over wage rates as adjustment factors makes for the difference of Thurow's and Reder's models with respect to an orthodox neoclassical model. A discrepancy between Reder's model and Thurow's, instead, concerns the value attributed to the elasticity of substitution between different types of labour.

In both models, a reduction in the demand for labour

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1) This is based on empirical grounds in Thurow, 1974.



has the same effects as an excessive expansion of the stock of education: they create excess supply at the upper levels of the occupational scale. However, in the presence of a labour queue, this would only provoke a retraction of the demand for labour upwards the ranking of workers, and would not necessarily affect the structure of wages by occupation (although it would actually affect relative wages by level of education).

Following Reder's model in its reverse, one would instead expect a downgrading of workers at each level of occupation, so that each level of education would correspond to a lower level of education, and both the wage structure by occupation and by level of education would be affected. The working of the model is conditional upon the possibility of actually substituting workers of different levels of qualification for each other. Thus, it is conditional upon the existence of a positive elasticity of substitution.

If we take a usual Cobb-Douglas production function, and we introduce different types of labour separately, we can define the elasticity of substitution,  $\underline{e}$ , as the percentage change in the ratio of two inputs (their relative quantities) associated with a one percent change in the ratio of their marginal products, for a given level of output.

$$(1) \quad Y = C (\phi_{11} + \pi_{21} \phi_{21})^{e_1} (\phi_{22} + \pi_{32} \phi_{32})^{e_2} \phi_{33}^{e_3}$$

where  $\phi_{sv}$  is the proportion of employees working on a job for which education of level  $\underline{s}$  is required, but for which people with level  $\underline{v}$  are being used;

$\pi_{21}$  is the productivity ratio between individuals with education 1 on jobs requiring education 2 and 1; similarly

$\pi_{32}$  is the ratio of the productivity of persons with education 2 on jobs 3 and 2. Both ratios are assumed to be  $>1$ , i.e. people are (although slightly) more productive if they perform superior jobs.

The sum total of the  $\rho$  s equals the proportion of GNP to be attributed to labour.<sup>1)</sup>

It is assumed here that for each job one can define (roughly) the level of education required: but education required and the level of education of the person actually on the job are not necessarily the same thing.<sup>2)</sup>

So e.g. in our function  $v$  will be less or at most equal to  $s$  in conditions of scarcity of qualified manpower;  $v$  always equal to  $s$  implies no (or a very low) degree of substitution possibility i.e. a fixed mix of the types of labour as characterized by their level of education.

Following this distinction, we can identify two types of substitution. The "education substitution elasticity" is ". . . the substitution, for a given job, of a person with one type of education for a person with another type of education".<sup>3)</sup> This may be the consequence of a change in relative prices. One can argue that a change in relative prices will cause a change in the relative numbers in employment in the opposite direction, e.g. the proportion of qualified workers employed will,

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1) For several countries, this portion usually oscillates around .8.

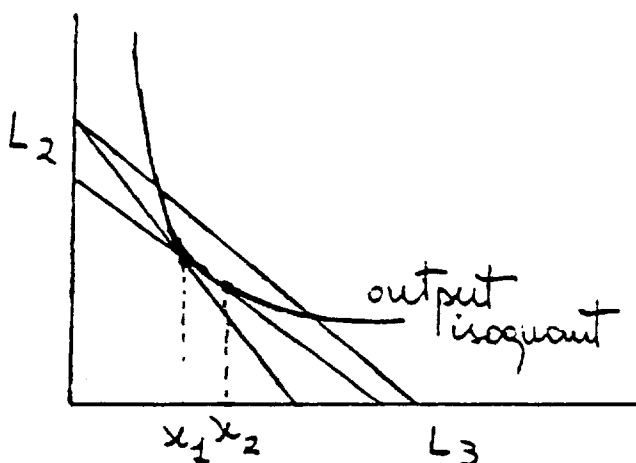
2) See on this point Blaug, Peston and Zidermann, 1967. See also below.

3) J. Tinbergen, 1975: p. 85.

ceteris paribus, vary inversely to the wage of qualified manpower relative to the general wage level. This type of elasticity is therefore expected to be negative.

The case of "education substitution" is shown in graph IV.6 under the assumption that a) the firm minimizes costs and b) the choice of factors' proportions is determined by relative factors' prices.

Graph IV.6:



$L_3$  has become relatively cheaper.  $x_1 - x_2$  is the substitution effect on the same isoquant (i.e. the level of output is kept constant).

One can e.g. hypothesize a sequence where there is first an (exogenous: i.e. not induced by the demand for labour) increase in the supply of more educated workers (in our notation:  $L_c$ , labour with college education). Relative prices would change making  $L_c$  relatively cheaper:  $L_c$  is then substituted for  $L_{hs}$  (labour with high school education). As effect of this shift in supply, this process gives a narrowing of the wage differentials by level of education ( $W' < W$  in graph IV.2.). The demand effect results in a shift away from the relatively more expensive factor, and its substitution: but no effect need necessarily be induced on the structure of wag-

es by occupation. Jobs requiring lower levels of education are now allocated to people having higher levels of education.

A negative "education elasticity" of substitution in itself implies the working of the Thurow-Reder type of mechanism, as far as wage differentials by education are concerned. The value of this elasticity measures the strength of the price effect (i.e. the effect of relative wages on relative numbers in employment).

This is necessarily a short-run analysis because in the longer run technology and the factor mix can conceivably adjust to (or rather be planned on the basis of) available factor quantities.

We talk of "job substitution elasticity" when a person with a certain level of education is upgraded to a job requiring a higher level of education, following a scarcity of more educated manpower. This elasticity is expected to be positive, because the workers who have been upgraded will be earning more in their new job than in their previous one. The productivity ratios are considered constant in the short term by the individual production organizer.

The sequence envisaged in the previous case would, in this case, start from an increase in the demand for labour, and through the process of upgrading it would lead to a narrowing of the wage structure by education as a consequence of a relative decrease in the number of uneducated, unskilled workers.

Thus, the "job substitution" elasticity applies to

the demand side of Reder's model; while the "education elasticity" measures the reaction to a supply effect of the "competitive hypothesis" type.

#### IV.7.1. Estimates of the elasticities of substitution

The empirically estimated values of the elasticities of substitution provide a first test of the "competitive hypothesis" in the version proposed by Reder.

Layard et al.<sup>1)</sup> found that high elasticities of substitution between different types of labour are likely to exist, but they could not say anything definite about their value. In particular, for what concerns the education elasticity (relative prices effect), their results show that, when taken on their own, relative wages for qualified manpower are only weakly (and negatively) correlated with the proportions employed on total labour force. Furthermore, when relative wages are included in the multiple regression analysis, their effect disappears.<sup>2)</sup>

These results imply a (partial) rejection of the existence of a negative education elasticity, insofar as the effect of relative prices on relative quantities was found to be weak. On the other hand, their conclusions seem to warrant the existence of a positive elasticity of job substitution at least in the short run.

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1) Layard, Sargan, Ager and Jones, 1971.

2) The study, as a matter of fact, aimed at identifying the determinants of the absorption of qualified manpower in different sectors. Relative prices are of course just one of many determinants, especially so in the short run.

Tinbergen<sup>1)</sup> estimated, for the numerical values for the Netherlands around 1962, the elasticities reproduced below:

Table VI: Short-term and long-term education and job substitution elasticities.

|             | <u>levels of substitution</u> |          |                  |         |
|-------------|-------------------------------|----------|------------------|---------|
|             | <u>short term</u>             |          | <u>long term</u> |         |
|             | 1 vs. 2                       | 2 vs. 3  | 1 vs. 2          | 2 vs. 3 |
| Education e | -6.3                          | -1.9     | 50               | -2.1    |
| Job e       | $\infty$                      | $\infty$ | 15               | 7.7     |

Source: J. Tinbergen, 1975, p. 89.

The negative values found for the education elasticity in the short run are as expected in the competitive hypothesis; the same holds for the values estimated for the job substitution elasticities. These results contrast the neo-classical assumption of different types of labour as distinct factors of production.

The long-term values are affected by the increase in productivity that follows from the upgrading process: in this sense, a positive education elasticity is interpreted as the effect on the wage level of an increase in productivity. However, the lower values of the job substitution elasticity in the long run seem to indicate an adjustment process (e.g. in the technology employed) to the available factor mix.

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1) J. Tinbergen, 1975.

Tinbergen also tested the generalized Cobb-Douglas production function proposed above for the demand elasticity of substitution between graduate labour and other labour.

His conclusions confirm the possibility, in the short run, to substitute one type of labour for another one if the necessity (relative prices) arises. This seems to confirm the adjustment process via the upgrading of workers envisaged by Reder.

#### IV.7.2. Measures of "overeducation"

Blaug, Peston and Ziderman<sup>1)</sup> made use of a requirements/attainments matrix of educational qualifications to measure the existence and the order of magnitude of the phenomenon of "overqualification" in industry.<sup>2)</sup> Their results are summarized in Table VII.

Table VII: Required vs. achieved years of schooling (%)

|       | A     | B     |
|-------|-------|-------|
| R > A | 68.8% | 46.7% |
| R < A | 10.6% | 16.8% |
| R = A | 20.6% | 36.5% |

A = all employees; B = employees having been with the same firm for less than ten years.

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1) Blaug, Peston and Ziderman, 1967. This book investigates the determinants of the utilization of educated manpower in industry with an empirical research conducted in the electrical engineering industry around the middle of the 60's.

2) This in essence corresponds to Tinbergen's definition of s (required) and v (achieved) levels of schooling.

The last row shows the percentage number of cases which lay along the main diagonal. In the second column, this result shows a greater consistency and, along with the first figure in the column (decrease in the proportion of those whose requirements for the job are higher than their actual qualifications) reflected the present state of demand and supply. However, this matrix shows also a much higher proportion of cases where the attainments are higher than the level of education required. This supports the conviction in a measure of "overqualification" in industry, in the sense of qualified people being employed in jobs requiring little education.<sup>1)</sup>

An empirical test of the possibility of workers being overeducated was attempted by Lucas<sup>2)</sup> for the U.S. He estimated the difference between the actual number of years of schooling of a person and the General Education Development (GED) required by that person's occupation.<sup>3)</sup> This gives a measure of the overeducation of a person relative to the occupation performed. The following picture shows Lucas' results for the U.S. on sample data referring to the end of the 60's.

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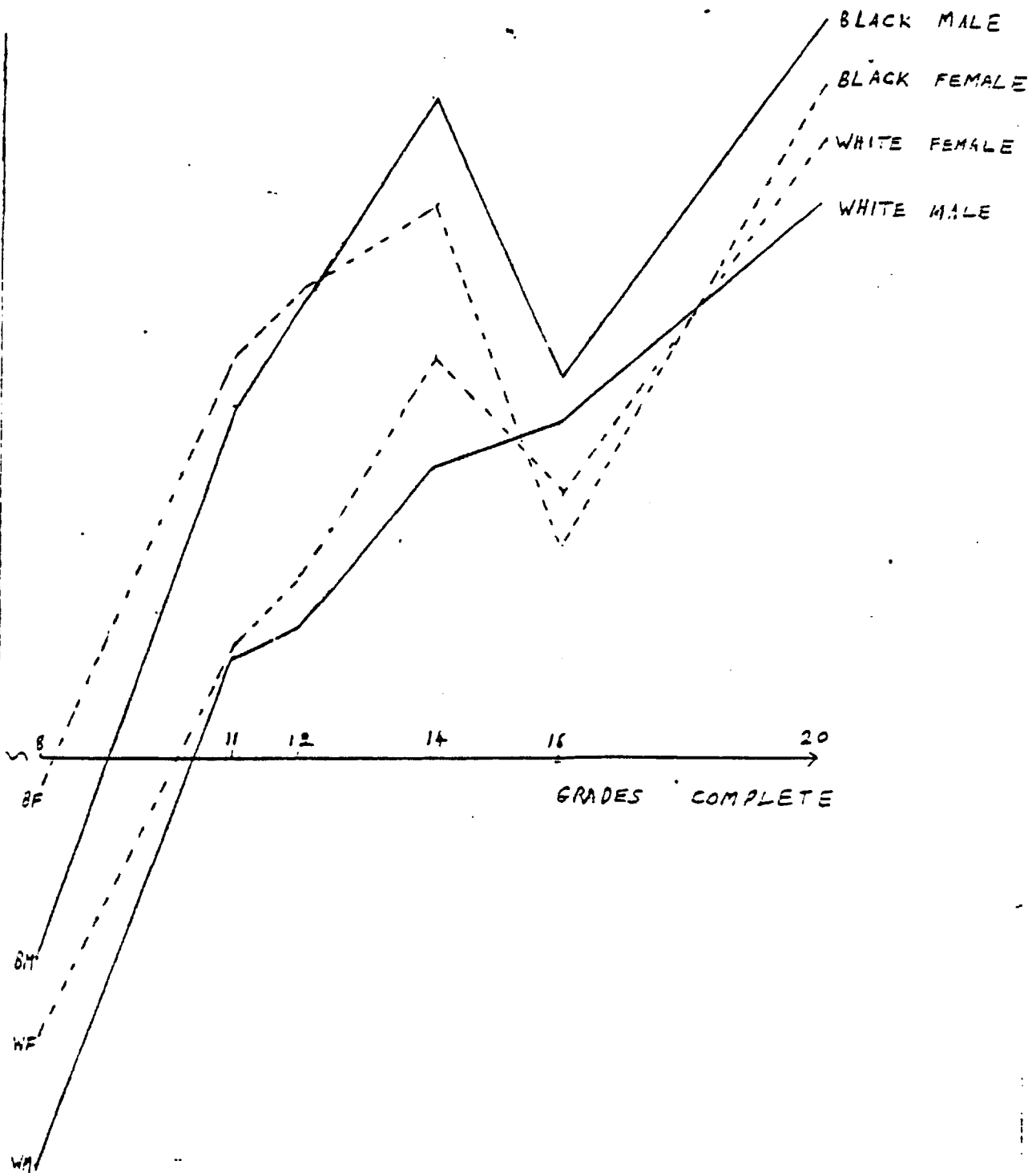
1) This is, however, my own interpretation of these results, which does not coincide with the authors' own.

2) R.E. Lucas, 1972.

3) The GED was first proposed by Eckhaus, 1964



Chart II: "Overeducation" in years



IV.8. A formalization of Reder's model.

Econometric tests of the competitive hypothesis to date have mainly focused on the cyclical pattern of variation in wage differentials, and on the supply factors affecting the long-term trend.

It is surprising for me that, in the literature, this kind of test has been indifferently applied to the competitive hypothesis in its neoclassical version and to its more refined version proposed by Reder.

As a matter of fact, a test of Reder's hypothesis would also require an estimate of the possibility for substitution between different types of labour, that is the basic condition for the working of his model. Such a test has never, to my knowledge, been explicitly performed in connection with Reder's hypothesis.

A model to formalize a Reder's type of hypothesis would thus have to include: a) a neoclassical mechanism of relative price changes in response to changes in relative quantities; b) a demand function for labour where the conditions for the substitutability of one type of labour for another are explicitly assumed. This basic model could then be modified to allow for lags in the adjustment, rigidities, etc.: in sum, to account for a dynamic rather than instantaneous, process of adjustment.

One such model would basically consist of:

- 1) A function where price changes are made to depend on the excess of demand over supply for each type of labour;

- 2) A demand function where the demand for one type of labour would depend not only on its price, but also on the price of its potential substitutes;
- 3) A supply function of the usual linear form; to this one could add a trend term to account for the autonomous increase in the supply of labour of each type (level of education, etc.).

The model I present below is similar to the one that Arrow and Capron used to study the dynamics of price adjustment in a case of shortage of a certain type of manpower.<sup>1)</sup>

With the opposite case, i.e. a surplus (excess supply) of certain types of labour, the basic reasoning remains the same, as well as the assumptions on the working of the adjustment process. The original model included a demand function of the usual linear form: the demand function I propose instead takes into account the interrelation of factor markets to allow for the possibility of substitution.<sup>2)</sup> Another difference with Arrow's model is that his interest lies in the speed of adjustment of the shortage to price rises (which are also for him the indicator of the shortage); whilst here the main concern is the reaction of prices to changes in the conditions of supply. With this model it is possible to show how, within the neoclassical framework à la Reder, the adjustment

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1) K.J. Arrow and M.W. Capron in Arrow and Hurwicz, eds., 1977.

2) This demand function is derived, although with modifications, from K.S. Arrow in Arrow and Hurwicz, cit.

of prices to the supply conditions leads to results that contradict the human capital assumptions.

### The model

$$(1.) \quad dp_i/dt = k_i(D_i - S_i) \quad \text{where } p_i = w_i, \text{ the wage of occupation } i; t = \text{time}; D_i, S_i = \text{demand and supply of } i; k_i = \text{reaction speed, i.e. the ratio of the rate of price change to the difference between demand and supply}$$

This equation expresses the assumption in the text about the relation between wage increases and the difference between demand and supply.

$$(2.) \quad D_i = D_i(p_i \dots p_n) \quad \text{with } dD_i/p_i = < 0; \\ dD_i/p_j = \geq 0 \text{ for } i \neq j$$

This equation expresses the demand for one type of labour as a negative function of its price and a positive function of the price of its substitutes: as a linear approximation, we can write

$$(2.bis) \quad D_i = \sum_{j=1}^n b_{ij}p_j + d_i \quad \text{with } b_{ii} < 0, b_{ij} \geq 0, i \neq j$$

where  $b$  represents the price elasticity of demand. The higher  $b_{ij}$ , the higher the "propensity" to substitute: in turn,  $b_{ij}$  depends on technical factors that make substitution feasible, and on the eventual rationalization process.

$$(3.) \quad S_i = bp_i + d$$

This is the usual linear approximation to a supply function. In our context,  $p_i$  is the expected relative wage, as derived from the human capital model, based on a rate-of-return cal-

culatation. Additionally, if we want to express the condition that at each point in time the supply is exogenously determined by the output of the school system (dynamic excess supply), we can add a trend term, so that

(3.bis)  $S_i = bp_i + et$  where  $e$  is the rate of increase of supply with time for any given price;  $d$  can be eliminated, and (3.bis) expresses a steady upward shift in the supply function that depends on  $e$

Call  $D_i - S_i = X_i$ ; so we have

$$(4.) \quad dp_i/d_t = k_i X_i$$

that is the reduced form of the model.

With this model (but with a simpler demand function, i.e.  $D = -ap + c$ ) Arrow was able to show that, in the presence of a shortage of manpower, market prices converge towards equilibrium, with lags due to the dynamics of the process.  $K_i$  measures the speed of reaction. Arrow also showed, most importantly, that the adjustment process may be in continuous disequilibrium, since a steady increase in demand may continuously offset the adjustment in prices.

The model includes a parameter to account for the price elasticity of demand for each type of labour ( $b_{ij}$ ). The higher  $b_{ij}$ , the higher the "propensity" to substitute. that is, this parameter accounts for the economic rationale of the substitution. In turn, technical factors determine the value of the parameter.

If we call  $\hat{p}$  the market clearing price, and let  $q = \hat{p} - p$ , this expression will always be positive in the

case of a dynamic shortage in the sense expressed above; it will always be negative in the case of a steady upward shift in the supply that does not depend on prices, since a steady shift in the supply may continuously offset the adjustment of prices.  $\bar{p}$  is the price that satisfies the equilibrium condition  $D_1 - S_1 = 0$ .

In the context of a "generation leap" in the level of education of the labour force,  $X_1$  is tendentially always negative (excess supply). Let

$dp_1/dt = p'_1$  (first derivative), then

$$(5.) \quad dp'_1/dt = k_1 dX_1/dt \text{ (second derivative)}$$

With negative  $X_1$ ,  $dp'_1/dt$  is also negative, i.e. with a dynamic adjustment of prices to relative quantities, a change in the sense of a steady increase in the supply of qualified labour provokes a steady deterioration of its relative position.

For every  $X_1 \neq 0$ ,  $k_1$  is the relevant parameter of the model.  $k_1$  is defined as the reaction speed in the market, on which depends the adjustment of prices to quantities. In turn, the speed of reaction depends on the length of the term of the contract, and on lags in the adjustment which may also derive from the dynamic disequilibrium process outlined above.

In the short run, due to the process of adjustment,  $0 < k_1 < \infty$ . In the long run,  $k_1$  must tend to infinity if equilibrium is to be reached.

A low speed of reaction would show instead that the adjustment is delayed by some kind of rigidity; at the

extreme,  $k_i = 0$  implies no influence whatsoever of quantities on prices.

#### IV.9. Models of "institutional" wage determination.

Thus, existing earnings differentials in favour of educated people would reflect long-established social conventions<sup>1)</sup> in an inherently imperfect labour market.

There isn't any precisely formalized model that could give quantitative account of these social determinants. It is current practice in the literature, instead,<sup>2)</sup> to give a demonstration "a contrario" of the existence of this kind of factor. If an institutional ("monopolistic" as opposed to "competitive") apparatus is set to formalize wage determination, one has to disprove the competitive hypothesis to verify the effectiveness of the institutional regulation.<sup>3)</sup>

So e.g. a (nearly) complete rigidity of the wage structure by occupation would reveal the existence of forces that go beyond the market mechanism. It would be the case of relative wages determination by social custom, power, or other kinds of non-market criteria.

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1) I am using here this term in a very broad sense. "Social" determinants in an economic problem (as generally economists consider them) are simply non-economic explanatory variables deriving from the field proper of other social sciences.

2) See e.g. J.J. Silvestre, 1971.

3) This gives a "residual" type of explanation: one recurs to extraeconomic variables when the economic factors have insufficient explanatory power.

For conceptual reference, one can interpret a model of exogenously determined wage structures as a fix-price model with quantity rationing which represents a third, alternative adjustment process in our selection.

This kind of model follows the Keynesian trace of adjusting quantities rather than prices.

The imperfect flexibility of wages, which gives rise to quantity adjustments, is variously interpreted in the models of Keynesian derivation: as an institutional rigidity (Malinvaud, 1977), as a delayed response of prices to changes in demand (Barro and Grossman, 1976).<sup>1)</sup>

There remains the problem of identifying which institutional factors have an influence on wage determination, and in particular on the dynamics of the wage structure. These factors could include the effects of monopolies of different sorts, barriers to entry into occupations, legislation effects, etc.

Under a theoretical point of view, these factors could in principle be incorporated in the first (neoclassical) type of model under the label of "rigidities" and the predictions of the model modified accordingly.

This complicates the empirical work, making it more difficult to tell one adjustment mechanism from another.

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1) To quote a predecessor: "The laws and conditions of the production of wealth have the character of physical truth. . . It is not the same with the distribution of wealth: this is solely a question of human institutions." J.S. Mill, Principles of Political Economy, book 11, chapter 1.



Of all the possible types of rigidities, some are more easily detectable than others. It is e.g. the case of the trade unions' effect on wage differentials (see below).

It is instead nearly impossible to ascertain the existence of barriers to entry into certain occupations, since they may be shown to correspond to an economic rationale. They may therefore be explained in terms of the neoclassical model.<sup>1)</sup>

To stick to an "institutional" model, therefore, it is necessary to define precisely which are the institutional factors one wants to refer to--thus in practice excluding the possibility of recurring to a "market imperfection/rigidity" type of explanation.

In the current institutional approach,<sup>2)</sup> one generally refers to a) the institutional form of wage determination and the system of industrial relations, and b) the influence of social norms of several sorts, among which "fair relativities" and "custom" have a determinant role to play.

The first element can be incorporated in the analysis through a comparative study of industrial relations patterns in different countries, centering around the level of centralization of wage bargaining and on the structure of the organization (e.g. craft unions as opposed to branch representation; rank-and-file organiza-

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1) See e.g. G. Psacharopoulos, 1975.

2) See e.g. R. Boyer, 1978

tion or vertical structures).<sup>1)</sup>

The second element may be tested econometrically, as well as observed from the sociological point of view, with the phenomenon of the "transmission" of wage increases through a form of solidarity between socioeconomic groups.<sup>2)</sup>

This implies that wage differentials that persist over long periods should be analyzed as social phenomena. "The economic approach needs be complemented by two others, one based on the sociology of organizations, institutions and social stratification, and the other on the industrial relations system prevailing in each country."<sup>3)</sup> This is why in this kind of analysis one cannot stick to mere empirical observation and needs rather to adopt a more "interpretative" approach.

To give a formalization of the "institutional" argument, one can recur again to the matrix of jobs and workers that represented the stylized neoclassical model of the labour market.

The institutional model implies that, at any moment in time, the structure of wages inherited from the past is maintained by virtue of custom and/or of Trade Unions' activity. If one starts from a disequilibrium situation, where the wages along the main diagonal are not the equilibrium values that derive from a competitive bidding

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1) E. Tarantelli, forthcoming.

2) See a.o. J. Lecaillon, 1976.

3) J.J. Silvestre, 1981,

process, but are rather arbitrarily set in accordance with non-market criteria, there must be in the system some factors that prevent the structure from evolving towards equilibrium. These factors (in our assumptions, the role of Trade Unions and/or the pattern of social stratification), can be represented in the matrix by a set of zeros in the place of the wage rates below the main diagonal. They indicate that, whatever the possible (technically feasible) elasticity of substitution (and therefore, whatever the marginal productivity of the worker who might be upgraded to that job) there exist in the system repressive forces that prevent the access to the job and the competitive bidding (see graph IV.7).

With a rigid wage structure in an institutional framework, the question is: how long can this situation persist? what are the conditions for stability or for the change?

There are reasons to believe that the labour market crisis starting with the end of the 60's was precisely a consequence of the inconsistency between the prevailing mechanisms of adjustment.

One has to consider, firstly, that the technical feasibility of substitution had increased, to a sensible extent, over the more recent period. Two main factors support this conclusion:

- the increased process of mechanization and automation of the productive processes in industry;
- the increased level of education of the labour force.

Graph IV.7.:

Matrix of the institutional model

| $L_i^{J_i}$ | $J_1$    | $J_2$    | $J_3$    | $J_4$    | ..... |
|-------------|----------|----------|----------|----------|-------|
| $L_1$       | $W_{11}$ | 0        | 0        | 0        |       |
| $L_2$       | 0        | $W_{22}$ | 0        | 0        |       |
| $L_3$       | 0        | 0        | $W_{33}$ | 0        |       |
| $L_4$       | 0        | 0        | 0        | $W_{44}$ |       |
| .           |          |          |          |          | .     |
| .           |          |          |          |          | .     |
| .           |          |          |          |          | .     |

The higher level of education of the labour force permits the acquisition of new skills on the job and thus a higher productivity (Reder and Fisher, Doeringer and Piore).

On the contrary, the adjustment mechanisms prevailing on the labour markets around the middle of the 60's reacted to the inflow of new graduates by a systematic downgrading of their educational credentials, ranking the workers in a labour queue (L. Thurow). Thus, while the wage structures by occupation remained fairly rigid (the main diagonal), wage rates by level of education tended to be depressed, contrary to the human capital predictions.

Access to the more sought-after jobs was prevented by mechanisms such as closed number, legal restrictions, etc. The new generations in the labour force were forcedly stratified according to the prevailing old-fashioned division of labour.

But a higher level of education had inspired new values and attitudes in the younger generations, together with economic expectations connected with their place in the social division of labour. They were not prepared to accept any more the frustrations and constraints their parents had had to cope with, nor to delegate authority and representation entirely to the official institutions.

This is fundamentally what provoked, in our interpretation, the breakdown in the traditional pattern of industrial relations.



PART II: THE STRUCTURE OF THE LABOUR FORCE

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BY LEVEL OF EDUCATION.

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EMPIRICAL ANALYSIS FOR THREE COUNTRIES.

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Chapter V: The Structure of the Labour Force  
by Level of Education

1. Introduction.

The central element that characterizes my research is the assumption that the qualitative features of the labour force, alongside with the objective economic conditions prevailing on the labour markets, exert a major influence on workers' behaviour and on the conduct of industrial relations. The more recent results of sociological and economic research have identified in the level of education of the labour force the main determinant of workers' behaviour at the work place.<sup>1)</sup>

In this perspective, the uprise of workers' movements in the Western countries, starting from May '68 in France and later involving even traditionally "quiet" systems of industrial relations like Sweden and Japan, is interpreted as a consequence of the demographic movements and the expansion in the systems of education which had given a start, twenty years earlier, to the "educational explosion" of the 50's and 60's.

The first part of the study examined and compared several different hypotheses on the structure of the labour force, which attempted to establish theoretical links be-

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1) Among the sociologists, see: M. Mann, 1973; R. Inglehart, 1978. Among the economists, see Denitch, 1974; Tarantelli, 1978; for an interdisciplinary approach, see Bravermann, 1976 and Barkin, 1975. See also Chapter III.

tween a structural factor in the labour market--the composition of the labour force--and a behavioural phenomenon: the performance of the industrial relations system.

The point of convergence of the different hypotheses is thus the impact of a changed labour force on the conduct--and, eventually, the breakdown--of industrial relations.

Their point of divergence appears instead to be the type of evolution of the labour force composition in terms of education: whether a "polarization" of the working class (new working class hypothesis) or a "massification" and "proletarianization" of the working class (Marxist theories of the mass-worker); or rather a qualitative overall change in the labour force, due to the impact of mass education, but also to the evolution of the degree of information and of socio-political self-consciousness of the labour force (generation-leap hypothesis). In order to give a quantitative assessment of these different hypotheses, this part of the study presents an empirical analysis of the structure of the labour force by levels of education, and of its evolution through the 60's and the 70's.

The kind of analysis proposed, however, does not represent, strictly speaking, a "test" of the hypotheses. One should in fact also be able to show that the structural elements (composition of the labour force by level of education) played a relevant role in the conduct and breakdown of industrial relations.

It is not my intention here to investigate empiri-

cally the causes and the evolution of the industrial conflict at the end of the 60's. The discussion in Chapters III and IV has provided some insight into the theoretical implications of the "generation-leap" hypothesis in the labour markets and in the field of industrial relations.

The empirical analysis is limited to testing the hypothesis that, following the "educational explosion", the composition of the labour force by level of education had changed so as to justify a different attitude of the workers with respect to their working conditions.

The issues at stake in this second part may be so specified in operational terms:

- a statistical analysis of the baby-boom and of the school-boom;
- the impact on the "educational profiles" of the labour force of the educational expansion of the 50's and 60's; more specifically
- the changes in the distribution by level of education of different socio-economic and/or occupational groupings.

The analysis proper of the structure of the labour force will be performed, following a procedure already established in the literature, as a piece of comparative statics, i.e. comparing distributions of the labour force by age and by level of education at different points in time. The generation leap hypothesis holds that these distributions should display a major shift, a real "leap" when the younger age groups are considered. The leap should mainly concern secondary levels of education (given

compulsory attendance of primary education), and be less pronounced at higher levels of education. Further, this leap should be observed, with different intensity, at different levels of disaggregation: by sex, by socio-economic grouping, etc.

Taking account of the variety of experiences among the Western countries, the same pattern of evolution is to be expected in those countries which showed a change in the pattern of industrial relations (new emphasis on new issues, new demands) around the same time; whilst a different industrial relations behaviour should correspond to a different structural evolution of the labour force.

In some countries, the behaviour of the younger age cohorts was imitated and supported by the immediately precedent age groups. These generations, whose age specification varies from one country to another, had undergone a similar, but more limited process of change in the course of their formative years. According to the generation leap hypothesis, their educational profiles should approach rather closely the ones of the younger groups. It follows that one can identify, in each country, three broad generational groups: the oldest one, born before the expansion of the educational systems; the middle-aged group; and the "new generation" i.e. the age group that was most concerned with the educational boom.

As a matter of fact, the increase that occurred in the stock of education of the labour force depends only partly upon changes in the education of the young that took place during the same period.

What affects the figures is the difference between the education of those who entered and those who left the labour force during the 60's, and this depends upon changes in the education of the young that took place over some half a century.<sup>1)</sup>

Accordingly, to analyze the impact of the educational expansion on the educational composition of the labour force I will also briefly examine the historical evolution of the educational systems and their results in the countries of this study (the FRG, the UK and France).

The educational systems are the product of political developments which determine the features--public or private provision, coverage, duration, etc.--of the education provided.<sup>2)</sup> In countries e.g. where education is traditionally provided by the State, one is likely to find a relatively homogeneous labour force, with a common denominator at the legally required level of education. Where the history of the

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1) See Denison, 1967: p. 102.

2) A different set of problems is the one concerning the economic and political reasons for the expansion of the educational systems on the part of the State. Some economic reasoning for that has been briefly presented above. The political aspects range from the concern for equal opportunities--as expressed mainly by socialist movements in the early phases of the history of education (see B. Simon, 1965),--to the concern of the ruling classes for increasing youth unemployment and the subsequent need to absorb discontent and to create new "parking zones". For a comprehensive analysis of the political aspects of the question in a context of "mature capitalism", see C. Offe, 1977.

system of education shows somewhat erratic developments, wide gaps are likely to intervene between the levels of education of a generation and the following one.

Germany seems to be an example of the first type, France and the U.K. rather of the second one.

Legislation has obviously a lot to do with this evolution, and especially with the way "generations" are defined: this concerns primary education insofar as legal requirements have enforced successively older terminal education ages; but also secondary and higher education, since State-provided schooling opportunities form the bulk of the supply of education in most Western countries. It is thus possible to observe how major changes in the legislation correspond in due time to major changes in the composition by level of education of the age-group concerned.

It is obvious that there is no question of finding homogeneous results in different countries. National systems of education in Europe have evolved in a parallel way, but following each their own economic and political rationale.

National sources also differ as to the quality of the data and the level of disaggregation at which they are provided.

However, to repeat, the generation-leap hypothesis is based on a comparison of levels of education between age groups within the same country. The analysis of the structure of the labour force will therefore be conducted

at the national level. Of course, whenever possible, I have utilized the same kind of statistical material and followed the same order of presentation of the data in each country chapter; and I have paid special attention to the comparative aspect of the analysis.

## 2. Analysis of demographic movements.

In most European countries from the beginning of the 50's a wide-reaching expansion took place both in the educational systems (the supply of education) and in the social demand for it. The theoretical connection envisaged in the literature between economic growth and higher levels of education<sup>1)</sup> served as a propellant for the governments' increased expenditure on education. This "manpower requirement" approach on the supply side was confronted with a mounting social demand for education, which grew out of both economic and social determinants.<sup>2)</sup>

Demographic factors also had an impact on the education boom of the 60's, although the importance of this factor is often overstated in the literature. The idea rests on the so-called baby boom of the post World War II period, followed by the entrance of the new generations in the educational systems by the beginning of the 60's and their first access into the labour markets around the end of that decade.

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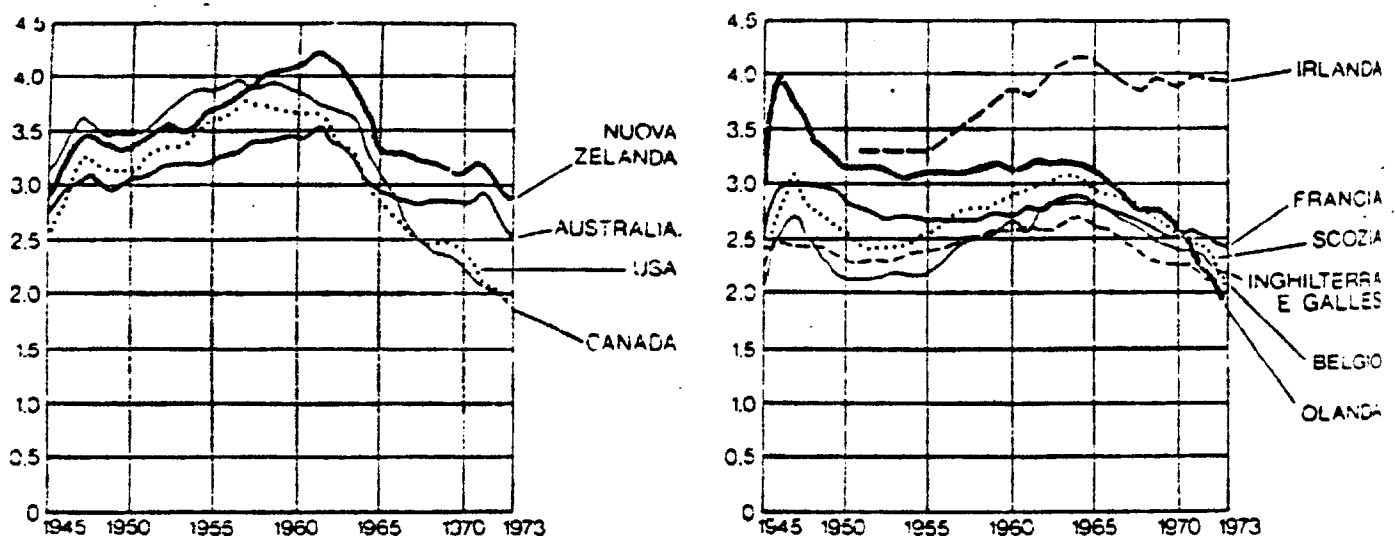
1) The classical reference for this kind of approach is E.F. Denison, 1967. See also G. Sahota, 1978.

2) On the determinants of the demand for education, see M. Blaug, 1976.

As a matter of fact, and to the surprise of the experts, the upheaval of birth rates started in all industrialized countries at the beginning of the 40's, that is in the very midst of the war years; by the end of the 50's the phenomenon had come to an end, and fertility returned to low levels.<sup>1)</sup>

But one can properly speak of a baby boom only in the case of the U.S., Canada, Australia and New Zealand, where it lasted up to the 60's. For countries such as Italy, the U.K., France and the Netherlands, the increase was very temporary, followed by oscillations and then a decline (see fig. V.1). Germany shows instead some increase at the end of the 40's. A true baby boom only occurred in Germany around the mid 60's, to decline thereafter (observe in fig. V.2 the decrease in births in 1950-55).

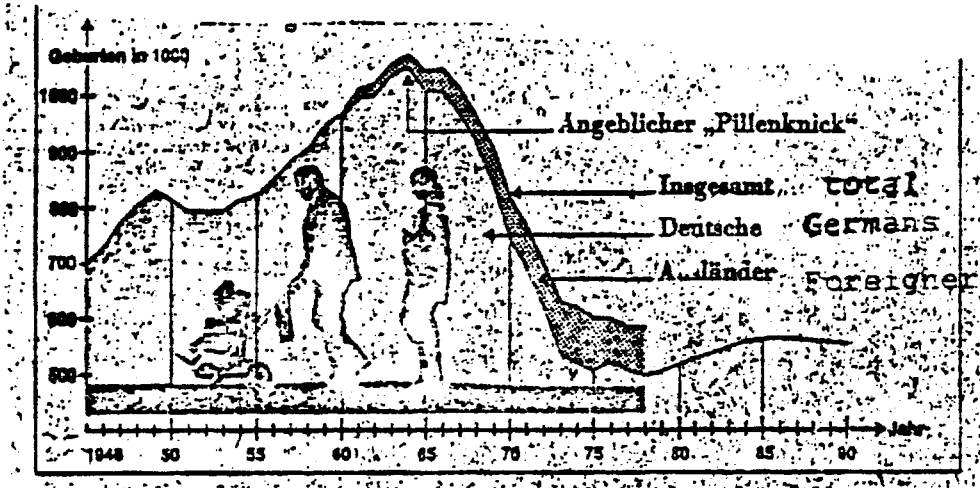
Figure V.1: Fertility Index (average number of births per woman)



1) For the analysis of demographic changes, I rely upon M. Livi Bacci, 1978, which is also the source of figure V.1.



Figure V.2: German National and Foreign Live Births  
in the F.R.G.



Source: Die Zeit, nr. 2, 5. Januar 1979.

Birth rates over the decades indicate that one cannot speak of an upsurge of births. The index varies considerably from one group of countries to another, but altogether the rates for Europe in the postwar remain lower than those of the preceding decades and continue to decline.

These movements influence the structure of the population by age groups; in particular, they affect the number of people potentially entering or potentially leaving the labour force.

Table V.1 gives a synthetic picture of the demographic movements in the three countries of interest here.<sup>1)</sup>

1) The case of Italy is treated in E. Tarantelli, forthcoming. We refer to the Italian (and the U.S.) cases here whenever it seems useful for a comparison.

As it appears from the table, European countries are far from having followed a common pattern of demographic development. Two patterns seem to emerge: on the one hand, Italy and France with an increasingly younger population; and the U.K. following the same trend, although less markedly so: on the other hand, the F.R.G., where the demographic developments result in a decline, up to the mid 60's, of the ratio of the younger to the older age groups.

Table V.1: Trends in Numbers of Persons Potentially Eligible for Entering (age group 15-24) and Leaving (age group 55-64) the Labour Force, 1950/70.

|                             | 1950(1)      | 1955         | 1960(2)      | 1965         | 1970         |
|-----------------------------|--------------|--------------|--------------|--------------|--------------|
| <b>Germany</b>              |              |              |              |              |              |
| 15-24 years : numbers and % | 6.700 (14.0) | 7.858 (15.8) | 8.620 (16.2) | 7.922 (12.4) | 7.920 (13.0) |
| 55-64 years : numbers and % | 4.700 (9.8)  | 5.302 (10.7) | 6.406 (12.1) | 7.528 (12.8) | 7.310 (12.0) |
| Ratio 15-24/55-64           | 1.43         | 1.48         | 1.35         | 1.05         | 1.08         |
| <b>United Kingdom</b>       |              |              |              |              |              |
| 15-24 years : numbers and % | 6.823 (13.6) | 6.463 (12.7) | 6.990 (13.3) | 7.968 (14.6) | 8.098 (14.6) |
| 55-64 years : numbers and % | 5.166 (10.2) | 5.457 (10.7) | 6.014 (10.7) | 6.476 (11.9) | 6.628 (11.9) |
| Ratio 15-24/55-64           | 1.33         | 1.18         | 1.16         | 1.23         | 1.22         |
| <b>France</b>               |              |              |              |              |              |
| 15-24 years : numbers and % | 6.390 (15.3) | 6.033 (14.0) | 5.655 (12.4) | 6.305 (14.2) | 8.228 (16.3) |
| 55-64 years : numbers and % | 4.253 (10.2) | 4.528 (10.5) | 5.097 (11.2) | 5.756 (11.2) | 5.430 (10.7) |
| Ratio 15-24/55-64           | 1.50         | 1.33         | 1.11         | 1.20         | 1.52         |
| <b>Italy</b>                |              |              |              |              |              |
| 15-24 years : numbers and % | 8.141 (17.1) | ...          | 7.851 (15.5) | ...          | 7.994 (19.8) |
| 55-64 years : numbers and % | 4.008 (8.5)  | ...          | 4.870 (9.5)  | ...          | 5.914 (10.9) |
| Ratio 15-24/55-64           | 2.03         | ...          | 1.61         | ...          | 1.35         |

(1) 1951 for Italy; (2) 1961 for Italy.

Source: OECD, based on national Censuses.

The age structure in turn influences the distribution of the population between labour force and non-active persons.

Activity rates are fairly similar across countries for the prime-age groups (broadly speaking: 30-34 up to

55-59); for the younger and the older age groups, as well as for the female population, they vary considerably because of economic and institutional factors.

By 1968, of all EEC countries,<sup>1)</sup> Italy had the highest percentage of the employed labour force in two of the core-age groups--namely, from the age of 35 to 54--alongside with the lowest percentage of older workers.<sup>2)</sup>

For what concerns dependent workers in industry, instead, Italy and France employed a relatively high proportion of young workers aged 14 to 24,<sup>3)</sup> while in Germany the higher percentages were in the core-age groups.

Table V.2: Distribution by Age Groups of Employed Work Force: a) all sectors: b) dependent workers in industry

| age   | Germany |      | France |      | Italy |      | EEC  |      |
|-------|---------|------|--------|------|-------|------|------|------|
|       | a       | b    | a      | b    | a     | b    | a    | b    |
| 14-24 | 15.2    | 15.9 | 19.0   | 24.0 | 17.3  | 27.4 | 17.6 | 21.8 |
| 25/34 | 26.3    | 30.0 | 21.0   | 23.4 | 22.8  | 26.2 | 23.2 | 26.6 |
| 35/44 | 22.0    | 23.3 | 23.4   | 24.0 | 25.1  | 23.5 | 23.3 | 23.3 |
| 45/54 | 17.5    | 15.7 | 17.7   | 15.5 | 19.1  | 15.0 | 18.2 | 15.7 |
| 55/64 | 16.1    | 13.8 | 15.1   | 12.0 | 12.9  | 7.6  | 14.7 | 11.8 |
| 65+   | 2.9     | 1.1  | 3.7    | 1.3  | 2.7   | 0.4  | 3.1  | 1.0  |

1) See EEC, 1969. Data for the U.K. are not included in this survey, that was conducted before the U.K. joined the E.C.

2) For a "Ricardian" interpretation of this phenomenon, see M. De Cecco, 1973; also, on the same line, U. Colombino in A. Graziani, 1975.

3) One can argue that this was due to the migration flows in Italy and France from agriculture into industry. This well-known phenomenon has led many scholars (a.o. Pizzorno et al., 1978; Sabel, 1978) to hypothesize

### 3. Developments in the systems of education.

Demographic factors influenced enrolments especially in the '55-'65 period. Greater participation in school attendance, however, did much to swell enrolments, and it was the most important factor in many European countries.<sup>1)</sup>

Table V.5 shows the share of school population as a percentage of population aged 5 to 24 years in several European countries.

The data show for every country a more or less marked expansion in the educational systems, to which the female population contributed in some countries above the average (Table V.3 disaggregates the data further by sex).

Table V.3: School Population as a Percentage of Population Aged 5 to 24 Years

| Year  | FRG  |      | France |      | Italy |      | U.K. |      |
|-------|------|------|--------|------|-------|------|------|------|
|       | M    | F    | M      | F    | M     | F    | M    | F    |
| 65/66 | 49.7 | 48.9 | 58.2   | 62.3 | 53.8  | 46.3 | 59.1 | 57.8 |
| 70/71 | 56.3 | 53.5 | 59.6   | 65.5 | 59.8  | 52.9 | 62.3 | 60.7 |
| 74/75 | 61.6 | 59.0 | 62.3   | 66.2 | 64.1  | 55.2 | 65.2 | 63.4 |

To give an account of the changes provoked by demographic developments on the distribution of the school pop-

that these flows of young people were mainly composed of uneducated, unskilled, mainly manual workers. This question clearly has a bearing on the subsequent interpretation of industrial conflict.

1) See OECD, 1969.

ulation by level of education, Table V.4 shows the average compound yearly rate of growth of school population, by level. It appears that the expansion of education has followed different patterns in different countries. On the assumption that legal enforcement had achieved attendance of compulsory education for one hundred percent of the relevant age group, it is the growth of post-compulsory education that deserves the greatest attention.

Of the countries considered, Italy shows the speediest pace of increase in secondary education, and France for third-level education.

The extraordinary development of third-level education is also shown in Table V.6 and in Table V.7.

Table V.4: Average Compound Rate of Yearly Growth of School Population, by Level: 1960-70.

|                     | primary | secondary | third lev. | compulsory | post compuls. |
|---------------------|---------|-----------|------------|------------|---------------|
| Italy               | 1.1     | 5.7       | 9.5        | 2.0        | 8.5           |
| France <sup>a</sup> | -0.2    | 2.9       | 11.2       | 1.0        | 10.1          |
| Frg                 | 1.6     | 3.8       | 7.3        | 2.6        | 5.0           |
| U.K.                | 1.6     | 1.2       | 10.0       | nd         | nd            |

<sup>a</sup> '60-'69

Source: OECD

The first table shows the changes in the proportion of students in third-level education in the age group 20 to 24 from 1960 to '77, separately for men and for women. The second table shows, for several age groups, the proportion of people having completed the third level of education.

Table V.5. Share of school population as a percentage of population aged 5 to 24 years.

|                               | 1960/61 | 1965/66 | 1970/71 | 1971/72 | 1972/73 | 1973/74 | 1974/75 | 1975/76 | 1976/77 |
|-------------------------------|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| Bundesrepublik Deutschland    | 45,9    | 49,3    | 56,5    | 57,5    | 58,4    | 59,1    | 60,3    | 61,7    | 62,2    |
| Frankreich                    | 61,1    | 60,2    | 60,2    | 61,0    | 62,1    | 62,5    | 62,7    | 63,3    | 63,8    |
| Italien                       | 43,0    | 49,4    | 56,6    | 58,5    | 59,9    | 61,0    | 61,3    | 62,5    | 63,0    |
| Niederlande                   | 57,4    | 55,8    | 58,3    | 59,7    | 60,9    | 62,0    | 62,4    | 64,0    | 65,1    |
| Belgien                       | 59,0    | 61,4    | 63,1    | 63,8    | 63,8    | 63,8    | 63,7    | 63,4    | 64,5    |
| Großbritannien und Nordirland |         | 58,5    | 62,0    | 63,3    | 64,2    | 66,4    | 66,8    | 67,1    | 67,3    |
| Irland                        |         | 56,8    | 57,8    | 58,0    | 59,0    | 59,1    | 59,8    | 60,4    | 60,9    |
| Dänemark                      |         | 49,7    | 54,9    | 56,6    | 59,0    | 61,3    | 62,0    | 63,0    | 62,8    |

Source:  
Eurostat

Education Statistics 1978, Social Statistics 6/72, 5/73.

Table V.6. Proportion of students in third level education in the age group 20 to 24. 1960-1977. In percentage.

|                               | 1960/61 | 1965/66     | 1970/71      | 1971/72      | 1972/73      | 1973/74      | 1974/75      | 1975/76      | 1976/77      |
|-------------------------------|---------|-------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| Bundesrepublik Deutschland    | 8,8     | 12,8<br>8,7 | 17,4<br>12,5 | 18,0<br>13,0 | 19,8<br>13,8 | 21,4<br>16,2 | 23,2<br>18,1 | 24,6<br>19,1 | 24,7<br>19,3 |
| Frankreich                    | 10,1    | 13,9        | 16,9         | 17,9         | 19,4<br>18,2 | 20,2<br>18,8 | 20,9<br>19,1 | 22,2<br>21,0 | 22,5<br>21,3 |
| Italien                       | 6,6     | 10,3<br>7,0 | 17,7<br>13,6 | 18,7<br>14,4 | 20,2<br>15,8 | 21,7<br>17,3 | 22,9<br>18,6 | 24,5<br>19,6 | 25,1<br>20,4 |
| Niederlande                   | 10,3    | 13,0<br>6,8 | 14,6<br>7,6  | 16,6<br>9,3  | 17,2<br>10,4 | 18,0<br>10,9 | 18,3<br>11,3 | 20,3<br>13,2 | 21,6<br>14,4 |
| Belgien                       | 9,2     | 14,6<br>9,8 | 17,4<br>12,4 | 18,2<br>13,7 | 19,4<br>15,4 | 20,3<br>16,7 | 20,6<br>17,3 | 21,0<br>17,9 | 21,5<br>18,5 |
| Großbritannien und Nordirland |         | 8,4<br>6,5  | 10,5<br>8,3  | 11,3<br>9,2  | 12,0<br>10,0 | 12,6<br>10,5 | 12,7<br>10,8 | 13,3<br>11,3 | 13,5<br>11,5 |
| Irland                        |         | 10,5<br>6,4 | 12,0<br>8,1  | 12,6<br>9,3  | 12,6<br>9,5  | 12,9<br>9,8  | 13,2<br>10,0 | 13,7<br>10,8 |              |
| Dänemark                      |         | 13,2        | 18,7         | 20,8         | 24,0<br>19,5 | 25,8<br>21,1 | 26,2<br>22,3 | 27,4<br>23,4 | 27,8<br>24,5 |

Table V.7: People Having Reached the Third Level as a Percentage of the Same Age Group (Men and Women) 1971.

| Age   | FRG | France | Italy | Europe |
|-------|-----|--------|-------|--------|
| 18-24 | 1.6 | 4.1    | 0.3   | 1.9    |
| 25-34 | 7.8 | 9.8    | 3.2   | 6.9    |
| 35-49 | 6.3 | 4.7    | 2.8   | 4.7    |
| 50 +  | 4.8 | 3.1    | 2.1   | 3.4    |

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Source: General and Vocational Training. Eurostat Social Statistics, 1973.

The proportion of the overall population and of the total male population having attained the secondary level decreases steadily with age: this is valid for the populations of all the Community countries.

With the exception of the 18-24 age group, in which many were still undergoing training, the number of persons having completed the higher level also decreases as a function of advancing age. In the 25-34 age group, almost 7% of the corresponding population attained the higher level, compared with only half that percentage in the 50 and over age group.

### 3.1. Educational attainments 1950-1970

In the 50's the dominant feature of countries such as the U.K. and France was the extreme concentration of the distribution at a level of school achievement governed by past legal attendance requirements: e.g. in the U.K. around 72 percent of the labour force had 8 or



9 years of education in 1951.<sup>1)</sup>

To get an indication of the longer-run outlook, Denison calculated the average time spent in school by students in 1957-58 and the amount by which the average years of schooling being provided in 1957-58 exceeded the average years of education of the labour force of 1963. His results suggested that Italy, the U.S. and Belgium could anticipate the largest increase in the education of the labour force in the future, while Germany could expect the smallest. It was particularly noteworthy that the younger age groups in Germany had but little more education than the older age groups soon to leave the labour force--in Germany only 39 percent in 1960 and 37 percent in 1963 were continuing full-time schooling beyond the eight or nine required years.<sup>2)</sup>

Table V.8 shows the average years of education of total population around 1970. As Denison had forecasted, through the developments of the last 10-20 years Italy has decreased the gap with respect to other countries (as the figures referring to the age group 25-34 demonstrate). Germany, instead, has only slightly improved its average level of education.

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1) To compare the level of education of the population at the end of the 60's with that at the end of the 50's I rely on Denison's (1967) calculations.

2) Denison, 1967: p. 81. See also Katona et al., 1971: p. 154.

Table V.8: Mean Years of Education, Total Population

| year      | 25-64 | 25-34 |
|-----------|-------|-------|
| Italy 71  | 6.4   | 7.9   |
| France 68 | 9.1   | 10.1  |
| FRG 70    | 9.2   | 9.4   |
| U.K. 71   | 10.2  | 11.0  |

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Source: General and vocational training. Eurostat Social Statistics, 1973

#### 4. The indicators.

The ideal indicators for an analysis of the kind proposed would be flow data showing entrants (inflow) into the labour force by level of education, to be compared with the distribution by level of education of those leaving the labour force (outflow). Unfortunately, the availability of these data is very scarce and limited to just some countries and some sectors (or professional groupings) in the economy. Therefore an analysis of this kind has been only performed, whenever possible, as an additional and supplementary analysis to the main procedure adopted.

The analysis will proceed instead in terms of stocks of education, more precisely, in terms of a comparison between stocks of education of the labour force at different points in time.

Stock data generally consist of i) row data, and/or ii) distributions. Commonly used in the literature are the average levels of education attained by the labour force as a whole, measured by the mean years of formal

schooling, for the first type of data; and the distribution of the labour force by amount of education (the "educational profile").

Both indicators are adequate to test the hypothesis of an increase in the overall level of education of the labour force, and they are generally available for a number of countries. However, for our purposes these indicators are by far at too high a level of aggregation, in that they cannot reveal differences in the distribution of education by age group. The phenomenon of rising levels of education, as portrayed in the generation leap hypothesis, is best revealed in a matrix disaggregating the population considered by age group and by level of education at the same time.

In turn, the highest level of education can be measured by a) the highest level of diploma achieved or b) the terminal educational age.

The first criterion appears at first sight the more precise: on the other hand, it causes a number of problems, such as problems of comparability of the same level of diploma, whose requirements might have changed over time ; further and foremost, this indicator cannot include persons who, having failed the final exam for the diploma, appear in the group of non qualified, whilst they have in fact followed a complete course of studies. This case is apparently rather common in some countries (e.g. in France) and it complicates the interpretation of the data.

The second criterion (i.e. terminal educational age) involves the same problem of comparability between types of education (e.g. general education versus vocational ed-

ucation); in addition, the data are distorted by the possibility of individuals having had to repeat the same class twice or more. Different countries have used different statistics at different times.<sup>1)</sup> It is difficult to establish a correspondence between the two criteria; in some cases, however, I could make use of existing tables of correspondence.

A test of the new working class hypothesis, instead, requires a more specific indicator, such as the density of qualified manpower, i.e. the ratio of qualified manpower (defined according to census categories) to total manpower, disaggregated e.g. by branch of industry. This indicator should measure the existence and the order of magnitude of the group of qualified manpower and technicians which constitute the new working class in the different sectors of the economy.

All these indicators are unavoidably in quantitative terms and do not distinguish with respect to quality of schooling, subject, etc.

The stock data are presented for each country in tabulations and graphs that illustrate the composition of the labour force by age group and by highest level of diploma achieved (with all the qualifications discussed above) at several levels of disaggregation.

The graphs are intended to give the visual impression of the qualitative change in the composition of the labour force by level of education. Naturally, the finer the level of disaggregation (i.e. graphs that refer to specif-

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1) See for details the chapters by country.

ic socio-economic groupings or branches of industry) the more precise the picture of the order of magnitude of the changes that have intervened.

Diplomas achieved are not strictly comparable across countries either.<sup>1)</sup> However, the comparison "strictu sensu" required by the hypothesis is not so much between levels of education in different countries, but rather between different age groups for the same country.

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1) There are however international systems of classification of education for purposes of international comparison. See e.g. the O.E.C.D. Classification of Educational Systems (several country studies), Paris, 1972-75; and UNESCO International Standard Classification of Education, Paris, 1976.

Chapter VI: Changes in the Structure of the Labour Force  
by Level of Education. The Case of Great  
Britain

1. The British system of education.

The characteristics of the school system in England and Wales<sup>1)</sup> are the coexistence of public and private schools, the extreme independence of Universities and Colleges, and the strong decentralization of control, which are the product of developments starting from centuries ago.

Great Britain was in the lead of Europe for education until the XVth century; later, the educational system could not keep pace with the social changes intervening with the industrial revolution and the process of urbanization.

The first reform of primary education dates from 1870, and it was followed by a rapid expansion of primary education; in the same period, industrial competition from the continental countries fostered the improvement of vocational education.

The pre-1944 system provided for nine years of compulsory education. In 1902 secondary education was reformed: between 1902 and 1944 a rapid expansion and a stepwise unification of secondary education took place.

The Education Act of 1944, which established the system as it appears today, laid the basis for the greatest expansion in the British educational system. The minimum school-

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1) As is well known, Scotland has its own independent system of education which follows closely the British one.

leaving age was raised to 15 in 1947 and provision was made to raise it to 16 in 1973. During the 50's, the change from the pre-war system was considered a triumph for liberal reform. By abolishing fees in the secondary schools, an attempt had been made to free educational opportunity from its historical connection with parental wealth.

The numbers completing secondary education rose steadily after 1950, as did the numbers staying on beyond the minimum school-leaving age and those taking the main examinations at 16 (the GCE-O level and the new Certificate of Secondary Education--CSE--which was initiated in 1965).<sup>1)</sup>

The rapid growth of higher education in the 60's is the most obvious fruit of the first postwar reform of secondary education.

Between 1936 and 1969 the number of Universities tripled and the number of University students almost quadrupled. A major feature of the decade from 1963 to '72, however, was the development of the non-University sector of higher education.

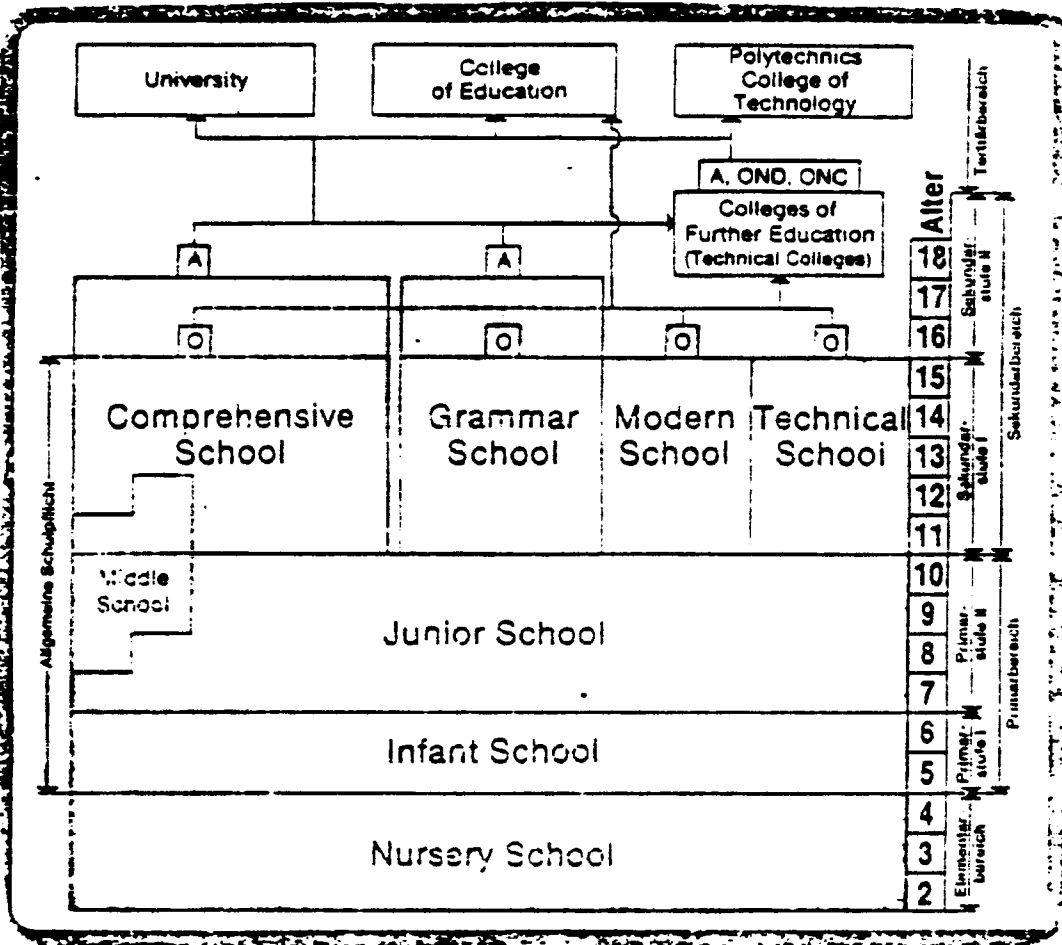
The British system of education includes a wide range of educational qualifications and courses of study.

For the purpose of clarification, I list here and briefly define the more commonly found academic qualifications. Chart VI.1 further shows the main routes leading to different types and levels of qualification.

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1) See S. MacLure, 1979

Figure VI.1: The Structure of the Educational System in Great Britain



Legenda: A=GCE Advanced level; O=GCE Ordinary level;  
OND= Ordinary National Diploma; ONC=Ordinary National Certificate.

Source: P. Flora, 1975.

#### Academic qualifications

- Certificate awarded by the Royal Society of Arts.  
Taken mainly by pupils at secondary modern schools.  
Also, commercial and technical certificates designed chiefly for students at technical colleges.
- General Certificate of Education (GCE).  
The main examinations are at Ordinary (O) level and

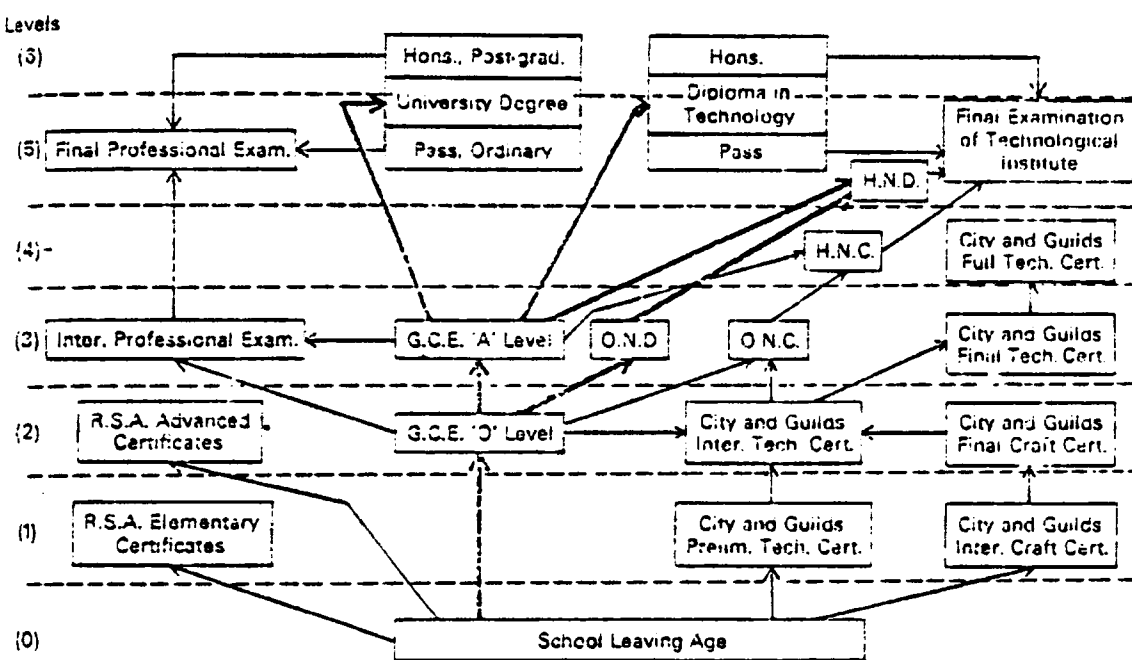


Advanced (A) level, introduced in 1951. Passes in two or three A level subjects are usually required for admission to universities.

c. University degrees.

The typical degree course lasts three years.

Chart VI.1



Types and Levels of Educational Qualifications

Note: Arrows show alternative routes through the system. Thick-line arrows indicate full-time study; thin-line arrows indicate part-time study.

Source: M. Blaug, 1967

## 2. The structure of the British labour force.

### 2.1. An overview of the main findings

The study of the evolution of the British labour force must necessarily be restricted to the 60's and the 70's, due to the lack of adequate data for the 50's.

From Denison's well-known study, however, we can get an overall picture of the stock of education of the British labour force in 1951 (Table VI.1).

Table VI.1

Great Britain: percentage distributions of the labour force by sex and years of school completed, 1951.

| Years of school completed | Distributions derived from the census |         | Adjusted distributions used in this study |         |
|---------------------------|---------------------------------------|---------|-------------------------------------------|---------|
|                           | Males                                 | Females | Males                                     | Females |
| 0 <sup>a</sup>            | .2                                    | .1      | .2                                        | .1      |
| 1-4 <sup>a</sup>          | .2                                    | .1      | .2                                        | .1      |
| 5-7 <sup>a</sup>          | 2.0                                   | 1.0     | 4.3                                       | 2.9     |
| 8                         | 8.4                                   | 5.7     | 27.2                                      | 23.5    |
| 9                         | 64.3                                  | 59.2    | 45.1                                      | 42.3    |
| 10                        | 10.5                                  | 16.1    | 8.4                                       | 12.9    |
| 11                        | 7.3                                   | 8.9     | 7.3                                       | 8.9     |
| 12                        | 2.5                                   | 3.4     | 2.5                                       | 3.4     |
| 13                        | 1.4                                   | 1.9     | 1.4                                       | 1.9     |
| 14                        | .4                                    | .6      | .4                                        | .6      |
| 15                        | .4                                    | 1.1     | .4                                        | 1.1     |
| 16                        | .4                                    | .9      | .4                                        | .9      |
| 17 or more                | 1.5                                   | 1.0     | 1.7                                       | 1.4     |

Source: E.G. Denison, 1967

The British distribution by level of education at the beginning of the 50's, as it was the case for many other countries, clustered very closely around the eight or nine legally required years of education.

In the course of the 60's, mainly as a consequence of the Education Act of 1944, which raised the minimum school-leaving age to 15, the younger generations began to stay on at school longer than their parents. This appears from the results of the 1961, 1966 and 1971 Censuses. In particular, one can observe, beginning with the 1966 Census, an inverse relation between age and the level of education. This mainly concerns secondary education (as an effect of

the reform of secondary education) but it is also noticeable at higher levels of education.

In the 1966 Census, it is most interesting to observe the percentage increase in the numbers qualified from one age group to another. There appears to be a true leap in the increase between the women's age group 35-39 and the preceding one (33 percent increase). For the men's group, the phenomenon appears to have started slightly earlier (age groups 40-44 and 35-39).

In the 1971 Census, the highest percentage qualified was amongst those aged 25 to 29, and it declined for each successive age group.

These results confirm the hypothesis of a generation leap in the level of education of the British labour force. The generation born between 1942 and 1946 is the first one who benefited from the expansion of mass education. The process of change, however, appears to have started, although on a lower tune, at least ten years before that. The existence of a continuous process of change in the structure of the employed labour force--aside from possible bottlenecks due to market or institutional mechanisms--gives the possibility of studying the effects of education upon the conduct of industrial relations over a whole period and not only at a particular stage.

In the younger generations, women appear to have surpassed men in the qualifications of higher level.

Unfortunately, the Census data are only provided for the higher levels of education. They can be useful, nevertheless, to give a quantitative assessment of what we have called the "new working class" in Great Britain.

Qualified manpower, as defined according to the "new working class" theorists (measured following the Census categories), represented during the whole of the 60's but a small minority of the population. Also the analysis by occupational groupings of the educational levels of the labour force reveals that the density of qualified manpower has remained within narrow limits.

However, the general trend between Censuses is one of increasing density of qualified manpower employed in all manufacturing industries, although with wide variations in the size of the increase. The data on some specific technical qualifications further reveal the existence of some downgrading of educational credentials in the more recent period.

To supplement the Census data at a better level of disaggregation (i.e. at lower levels of education), I could make use of the unpublished tables of the 1971 Census of the Population and of the 1971 and 1977 General Household Survey.

From these data appears an acceleration in the increase in the level of education for the age groups under 40 in 1971. The percentage qualified at the GCE (O level) is highest in the youngest age groups, and it declines progressively with age.

We cannot embark here in a detailed analysis of the factors that governed the absolute and the relative movements in the composition of the labour force by age and by level of education. However, one cannot fail to take an even brief account of factors such as the economic cycle, the demographic trends and the labour market legislation.

In the case of Great Britain, the decline in births in the early war years resulted in a shortage of trained apprentices and graduates in the early 60's. The birth increase in 1942-44 provoked an easier availability of trained labour force in 1962-64, which was eagerly employed to augment previous shortages.

By 1965, however, the excess supply had been absorbed and in 1966 it was unlikely that firms could cope with the increased supply because of the intervening cyclical downswing.

Since 1966, one has witnessed a steady decline of the working population in the face of an increase in the labour supply.

Newly qualified labour could not be easily substituted for older, more experienced ones except in occupations where skills were very low. The 1969 legislation reduced the incentive to fire old workers, thus further fostering the removal of the younger ones.

One can observe thus through the period an excess supply of inexperienced, although formally "qualified" manpower, and an excess demand for more experienced workers, which led to a shift in the relationship between unemployment and vacancies in Great Britain since 1966.<sup>1)</sup>

This can also explain why the change in the composition of the employed labour force by level of education has not been more pronounced in the face of the educational expansion and the rising level of education of the population as a whole.

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1) J. Foster, 1974.

The generation leap was a more evident phenomenon in the output of the educational system and in the Universities. The students' activities then had a catalyzing effect on the workers' movements. This gave a start to the following period of strife in industry, which lasted long after the alliance between students and workers had broken off.

## 2.2. Statistical analysis<sup>1)</sup>

A question on the qualifications held was included for the first time in a British Census in a 10 percent sample of households in 1961. The question concerned the terminal education age. The data were given by socio-economic group and by occupation, each classified by age and six terminal education age groups. Table I (see Annex) shows the distribution (proportions per thousands) of the population aged 15 and over by age and by terminal education age. To give a visual impression of the data, I have plotted the distribution on a graph (graph no. 1).

The data for 1961 broadly confirm the previous findings and calculations of Denison's. They show a concentration of the frequencies around the legally required education levels. The younger age groups, however, already show a propensity to a longer duration of studies. For the age groups concerned (20-24, 25-29, 30-34), this results from the Education Act of 1944, which raised the minimum school-leaving age to 15. The distribution in fact, for the younger age groups, clusters around the school-leaving age of 15.

The same kind of results obtain when considering the economically active population by occupation. I have se-

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1) The tables and graphs quoted in the text refer to the Annex to this chapter.

lected a few occupations, each representative of a certain level of qualification, and plotted the distributions by level of education on a series of graphs.

Graphs no. II, III, and IV consider respectively skilled, semiskilled and unskilled manual workers; graph no. V further concerns metal workers. The age groups are rather more aggregated (there is only one group for the years 25-44), but the pattern they display is the same as before: the older age groups gather around school-leaving age under 15; the younger ones around the age of 15.

Graph no. VI concerns clerical workers and it also disaggregates by sex. This is the only socio-economic group where the level of education is on average more elevated and the frequencies are more uniformly distributed, especially for the younger age groups, around terminal ages 15, 16, and 17-19 (although this is much more the case for males than for females).

In 1966 a sample Census was held, and the question was extended to cover all qualifications obtained beyond the age of 18. The classification of occupations used for the 1966 Census is entirely comparable with that of the 1961 Census (based on the International Standard Classification of Occupations, ILO, 1958).

Qualifications were divided in three levels:

- a - higher University degrees.
- b - first degrees and all other qualifications of the same standard or higher standard, other than a.
- c - qualifications obtained at 18 or over, above GCE A

level or SCE but below first degree level.<sup>1)</sup>

As it appears, the classification retained in the 1966 Census is very restrictive, in that it only includes the upper section of the stock of educated manpower, which is only a small percentage of the population.

Table VI.2 shows the percentage of the whole population qualified (according to the Census classification), by age.

The data show an inverse relation between age and level of education, as one had come to expect, but the proportion is small in every age group. Much more interesting is to observe the percentage increase from age group to age group, showing clearly the effect of the Reform of secondary education. The increase is not at all uniform nor is it steady: one can observe in particular the marked increase for the women's age group 35-39 and the earlier acceleration of the men's groups 40-44 and 35-39 (therefore born between 1922 and 1931).

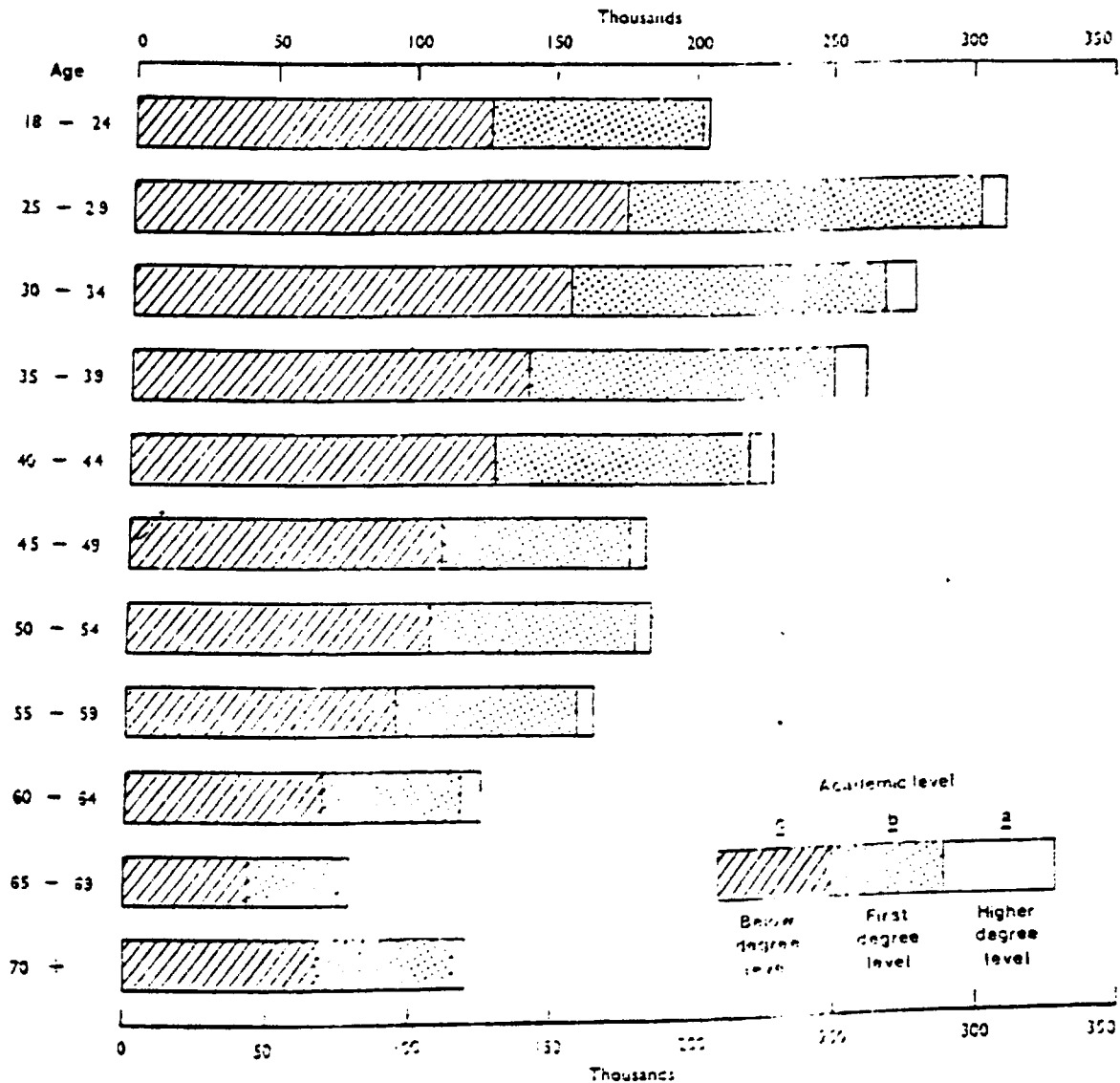
Table VI.2: Percentage of the Whole Population Qualified at Ages 25-29 and Over, 1966

| Age groups | Percentage qualified |      |       | Percentage increases from age group to age group |     |       |
|------------|----------------------|------|-------|--------------------------------------------------|-----|-------|
|            | Men and women        | Men  | Women | Men and women                                    | Men | Women |
| 70         | 3.0                  | 3.8  | 2.5   |                                                  |     |       |
| 65-69      | 3.3                  | 4.0  | 2.8   | 10                                               | 5   | 12    |
| 60-64      | 4.1                  | 4.8  | 3.6   | 26                                               | 20  | 29    |
| 55-59      | 4.9                  | 5.7  | 4.1   | 18                                               | 19  | 14    |
| 50-54      | 5.4                  | 6.4  | 4.5   | 11                                               | 12  | 10    |
| 45-49      | 5.7                  | 6.9  | 4.6   | 5                                                | 8   | 2     |
| 40-44      | 6.5                  | 8.1  | 4.9   | 14                                               | 17  | 7     |
| 35-39      | 8.0                  | 9.6  | 6.5   | 24                                               | 19  | 33    |
| 30-34      | 9.0                  | 10.3 | 7.7   | 12                                               | 7   | 13    |
| 25-29      | 9.9                  | 10.9 | 8.8   | 10                                               | 6   | 14    |

1) See Sample Census 1966 in Great Britain: Qualified Manpower Tables, HMSO, 1971. The Report noted that there had been evidence of under-recording of qualifications, especially at c level, when not relevant to the person's occupation.



Figure VI.2: Qualified Manpower 1966



Source: Qualified Manpower in Great Britain, cit.

Qualified manpower so defined represented 6.7 percent of the employed population. Fig. VI.2 disaggregates the total stock of economically active qualified manpower by age and by level of education. As it was the case for the whole population (cf. Table VI.2), also within the labour force qualifications are inversely related to age, also abstracting from the incidence of each age group on total manpower,

and leaving aside the youngest group. This case is especially strong for level c of education.

The data of the 1966 Census do not allow for any further breakdown by age and by occupation of the qualified manpower. They show instead the percentage qualified in particular occupations and industries, regardless of the age of the employed (what I earlier called the "density" of qualified manpower). This indicator appears useful to test a "new working class" type of hypothesis.<sup>1)</sup>

In 1966, the percentage qualified in particular occupations was high only among Professional and Technical Workers (53.5%) and next among Administrators and Managers (18.7%). Table VI.3 shows how low the percentage qualified was in certain occupations, whilst the percentage qualified among professional workers ranged from over 99% in University teachers and medical practitioners down to 10% in painters and other artists.

Table VI.3: Percentages Qualified in Certain Occupations

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|                           |                                                                     |
|---------------------------|---------------------------------------------------------------------|
| 2 and over                | Sales workers, Clerical workers                                     |
| 1 and under 2             | Farmers, Electrical, Transport and communications workers           |
| $\frac{1}{2}$ and under 1 | Gas, coke and chemicals, Engineering, Construction, Service workers |
| less than $\frac{1}{2}$   | Remainder                                                           |

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Source: Qualified Manpower in Great Britain. The 1966 Census of Population. Studies in Official Statistics no.

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1) For the definition of the terms and a discussion of the indicators, see above Chapters III and V.

The figures for industries relate to the numbers in employment only. Since occupations are dispersed through industry, the percentages qualified in industry were neither so low nor so high as described above for occupations (see Table II in the Annex). As far as one can judge from the table, the sectors employing a higher percentage of qualified manpower are mainly those where:

- either there is a strong prevalence of professional and technical workers, or
- the presence of technical personnel is required by the technology employed, plus
- the Public Administration, including the Defence (which employed a mere 4.8% qualified).

The 1966 Census was the first one to ask a comprehensive question about qualifications. In 1971, the question was reworded to overcome the problem of under-recording of qualifications. 2,612,000 qualified people aged 18-69 were counted, representing 7.6 percent of the whole population of this age.

As it was the case in 1966, the overwhelming majority of qualifications were at level c, and only a small percentage (3.7%) at level a.

The 1971 Census gives a lot more information than the 1966 Census. Five levels of educational attainment were identified, these were as follows:

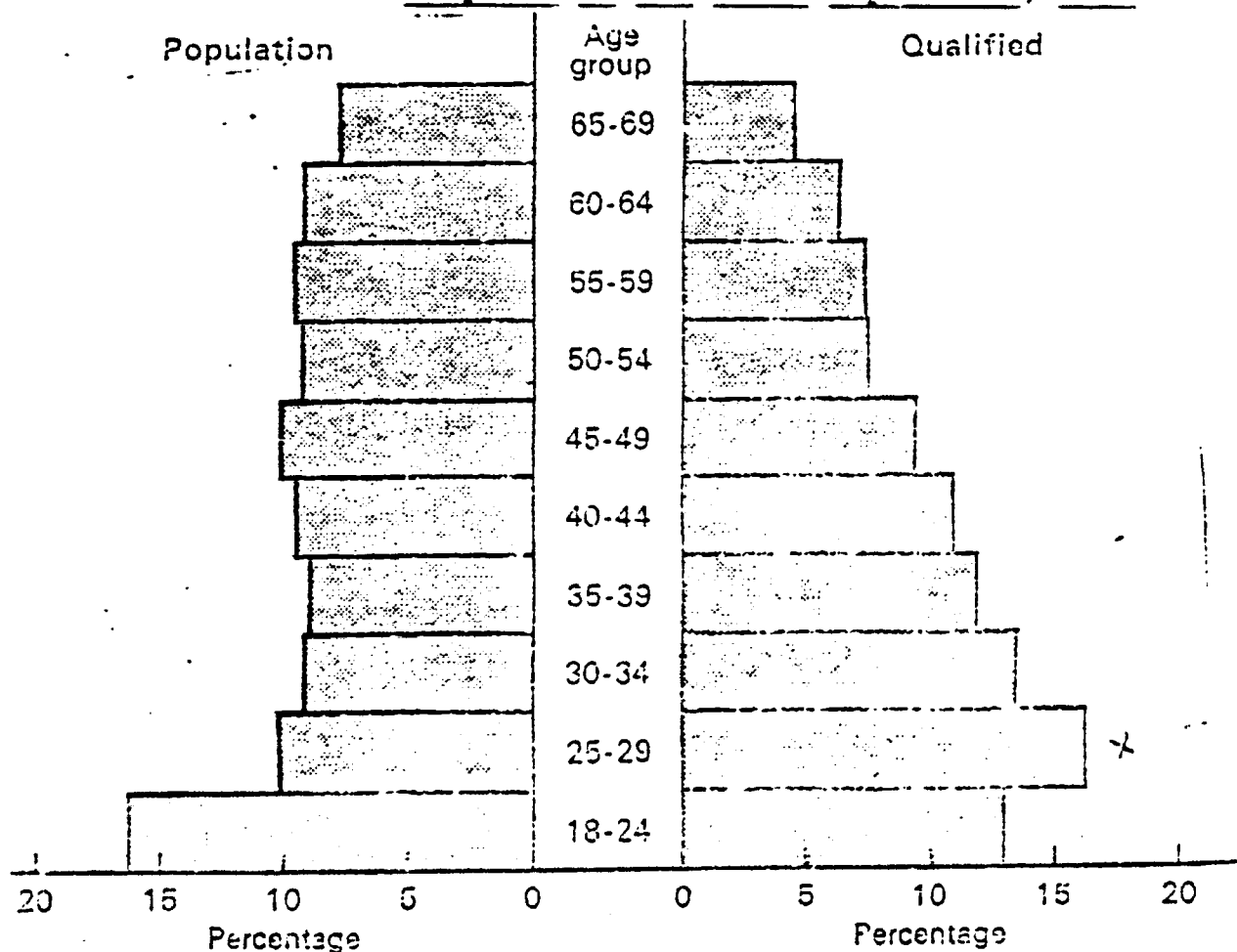
- A - higher University degrees
- B - qualifications of first degree standard
- C - qualifications of above GCE A level standard
- D - GCE A level or equivalent
- E - below GCE A level standard.

The qualified manpower tables were derived from processing a ten percent sample of the Census form.

As one could expect, the qualified population in 1971 was predominantly a young one. Despite differences between age groups due to demographic factors, there were more qualified people in the age group 25-29 than in each successive older age group.

Figure VI.3 illustrates the age structure of the qualified population as compared with the whole population. Whilst 36 percent of the population were below the age of 35, some 42 percent of the qualified population had the same age.

Figure VI.3: Percentage Age Distribution of the Qualified Compared to the Whole Population, 1971



Source: Qualified Manpower in Great Britain: the 1971 Census of Population. Studies in Official Statistics no. 29.

The percentage distributions are given in Table IV and graph 7 in the Annex to this chapter. It appears that the highest percentage qualified is amongst those aged 25 to 29, and that it declines for each successive age group.

As it was the case in 1966, of the stock of the economically active qualified manpower, the overwhelming majority (74.7 percent) belonged to the occupational order including professionals, technical workers and artists. 9.5 percent were administrators and managers, the rest (4.7 and 3.7 respectively) were clerical and sales workers. 7.3 percent is what remains for all the other occupational orders.

Also the density of qualified manpower in an occupation varies with age: as one would expect, a higher proportion of younger than of older members of each occupation are qualified and highly qualified.

Table VI.4: Qualified and Highly Qualified as Percentages of Various Occupations, by Age

|                                          | 18-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 |
|------------------------------------------|-------|-------|-------|-------|-------|-------|
| <i>Percentage highly qualified</i>       |       |       |       |       |       |       |
| Clerical workers                         | 0.0   | 1.3   | 1.8   | 1.6   | 1.1   | 1.0   |
| Sales workers                            | 0.0   | 1.5   | 2.1   | 2.0   | 1.7   | 1.5   |
| Administrators and managers              | 0.0   | 13.9  | 15.0  | 15.0  | 14.4  | 13.9  |
| Professional, technical workers, artists | 0.0   | 17.6  | 34.1  | 33.9  | 30.5  | 30.4  |
| <i>Percentage qualified</i>              |       |       |       |       |       |       |
| Clerical workers                         | 0.0   | 2.4   | 4.8   | 4.8   | 3.8   | 2.9   |
| Sales workers                            | 0.0   | 3.0   | 5.7   | 5.9   | 4.8   | 4.0   |
| Administrators and managers              | 0.4   | 21.5  | 26.2  | 27.3  | 26.1  | 24.4  |
| Professional, technical workers, artists | 0.9   | 49.9  | 67.7  | 66.5  | 64.6  | 62.4  |

| 45-49 | 50-54 | 55-59 | 60-64 | 65-69 | 70 & over |
|-------|-------|-------|-------|-------|-----------|
| 0.6   | 0.7   | 0.9   | 1.1   | 1.7   | 0.9       |
| 1.2   | 1.0   | 1.3   | 1.2   | 1.4   | 0.8       |
| 11.4  | 9.5   | 10.0  | 9.5   | 11.8  | 6.3       |
| 27.2  | 24.3  | 26.6  | 31.3  | 38.0  | 27.6      |
| 2.5   | 2.4   | 3.2   | 3.9   | 4.6   | 1.8       |
| 3.1   | 3.0   | 3.2   | 3.0   | 2.8   | 1.6       |
| 20.9  | 18.0  | 19.5  | 16.2  | 15.8  | 9.2       |
| 57.7  | 55.8  | 58.2  | 55.1  | 56.3  | 35.9      |

Source: Qualified Manpower in Great Britain: the 1971 Census of Population.

On the other hand, this evidence has to be taken with caution, given the small overall proportion of qualified over the whole population.

Turning to the figures relating to those in employment, I analyze them by industry as I did for 1966. The industry orders used in 1971 are those of the 1968 Standard Industrial Classification, a fact that makes direct comparison difficult. Moreover data refer now to qualified manpower over 18 and not over 15 as it was the case in 1966.

Still, wherever the comparison is possible, one observes a general increase in the density of qualified manpower in each order of industry, which follows closely the pattern already observed in 1966 (see Table 3 and, for comparison, Table 2, of the Annex).

Thus the increase, though generalized, is small and hardly perceivable in many production orders, which altogether account for a mere 21.8 percent of all qualified manpower in employment. The industry order employing the largest numbers is "Professional and Scientific Services" (about 40 percent), where "Educational Services" and "Medical and Dental Services" account for the bulk of the qualified. Service industries as a whole account for three quarters of all qualified people in employment. The proportions in the whole labour force are 8.7 percent qualified (6.8 in 1966) and 4 percent highly qualified.

#### 2.2.1. Unpublished statistics

The published qualified manpower tables of the 1971 Census present the same disadvantage as those of the 1966 Census, i.e. they do not allow for any further disaggrega-

tion of the economically active population by age, sex and occupation below education level c which, as we saw, is by far too high to encompass more than a small minority of the population.

In the unpublished tables of the Census a further breakdown by age, within occupational categories, of education levels d and e is provided.<sup>1)</sup>

Unfortunately, the disaggregation of the data is not what one could hope it to be: group e assembles every qualification below GCE A level (and eventually also non qualified persons), group d is itself still too high a level of qualification (two or more GCE A level granting access to University).

I examined the series of data for broad occupational categories and for more detailed occupations. The latter often include small absolute numbers of persons in employment: therefore, the percentage distributions are often misleading. However, even when considering broad occupational categories, the percentage qualified at least at level d of education in any age group is nowhere higher than 10% in any of the occupational categories I-XVIII, which include the majority of blue-collar workers. Within each occupational category, the percentage qualified is higher for the age group 25-29 and it declines with age. However, given the small absolute numbers involved, I did not consider it useful to present here the statistical distributions for these occupational categories.

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1) These statistics were courteously provided by the British Central Statistical Office.

The exception to this rule is the category of Transport and Communication workers, where many occupations require a relatively high level of qualification.

But one needs examine the categories of white-collar workers to find out a real massive increase in the level of qualifications.

Graphs 8 and 9 in the Annex derive from the percentage distributions of the unpublished tables of the 1971 Census. They display the educational profiles, by age group, of a few selected occupations which I have found to have been sensibly affected by rising levels of education. The respective percentage distributions are given in the Tables 5 to 7.

The acceleration in the increase in the qualification level is evident in the groups below the age of 40 in 1971. It is surprising to note how, at the highest levels of education, young women civil servants are more qualified than the average of both sexes.<sup>1)</sup>

To know more about the qualifications of the British labour force at levels lower than the GCE A level, one has to recur to the data collected by the General Household Survey.<sup>2)</sup>

The accompanying explanatory notes give details of the data and should be read in conjunction with Tables 8 and 9. The data are provided for seven classes of quali-

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- 1) Thus indirectly confirming the existence of statistical discrimination against women in the civil service jobs.
- 2) I have to acknowledge here the courtesy of the Social Survey Division of the Office of Population Censuses and Surveys, for supplying me with the unpublished information from the 1971 and 1977 General Household Surveys, from which the tables derive.



fication and a class for no qualifications.

However, my graphs only display the profiles of the more representative levels of education, leaving aside the cases where the percentages or the base of the data are too small to be reliable.

The results confirm the preceding conclusions. Also d level qualifications (which, in the case of the GHS, correspond to the GCE O level) follow the pattern of higher level education, i.e. the percentage qualified at d level is highest in the youngest age groups and decreases progressively with age.

The widening gap, after the age group 20-24, between those with no qualifications at all (proportion increasing with age) and those with d level qualifications (decreasing with age) gives instead a measure of the gap between generations envisaged in the generation leap hypothesis.

### 2.3. Recent developments in the structure of the British labour force

The General Household Survey is by its very nature rather limited. The numbers surveyed are so small that it would be meaningless to disaggregate the data any further.

However, a recently published GHS Report, based on figures for both 1976 and 1977, provides data by socio-economic group of the economically active persons by broad age group and by highest qualification level attained (see Table 10).

Over a five-year period changes in the educational qualifications are unlikely to be marked. Nevertheless

there is evidence of some increase in the proportions of men and women holding qualifications above GCE A level.

The main increase naturally occurred in the youngest age groups shown, those between 20 and 29, and was only slightly greater among men than women.

The increase among men aged 50-59 may be connected with the fact that this age group includes the first generation of post-war adult students to enter the universities.

Increases in the proportions qualified took place predominantly in higher level qualifications among professional workers, mainly in school qualifications among manual and junior non-manual workers, and at both levels among employers and managers. An exception is the generally higher level of qualification of women in intermediate non-manual occupations (such as teaching, nursing and social work). Also, there does appear to be a tendency for women in the professions to be more highly qualified than their male counterparts, in terms of degrees or equivalent qualifications. Although the number of women in this group is small, the result is one consistently shown in every GHS Report, and in the results of the previous analysis; and the differential between men and women has in fact widened over the period.<sup>1)</sup>

### 3. Is there a "new working class" in Great Britain?

The type of analysis performed permits an assessment of the "new working class" and the "generation leap" hy-

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1) See General Household Survey Report, 1978, p. 65; also Tables 2.50 and 2.51.

potheses at the same time.

The "density" of qualified manpower, in fact, measures the existence and the order of magnitude of the group of technicians, skilled workers and intellectuals that are at the base of the "new working class" hypothesis.

At the same time, the age dimension of the level of education, i.e. the distribution of the stock of education to age groups, gives a measure of the "generation leap" envisaged in our hypothesis.

On the other hand, while the generation leap is in itself readily identifiable, if not rigorously measurable, the new working class hypothesis leaves a degree of uncertainty as to what is really to be measured, and, more than that, whether measurement is relevant at all.

Saying, as the new working class theorists do, that ". . . a simple quantitative relation does not reflect the difference in the force of attraction, in the influence on public opinion, and on political and not only financial forces"<sup>1)</sup> explicitly excludes the possibility, or the usefulness, of quantitative accounts.

To adhere to the definition that the new working class theorists themselves have given of it, one should apply the analysis to the evolution of the group of draughtsmen, technicians and laboratory assistants as a proxy for the new working class, rather than extending it to the whole of the labour force.

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1) Leonardi, Progresso tecnico e rapporti di lavoro. Einaudi, 1960: my own translation from the quotation in S. Mallet, 1963, p. 67.

This can be done, in the case of Great Britain, with the help of the data from the Censuses 1961, 1966 and 1971 and the triennial Surveys in Industry held in 1959, 1962, 1965 and 1968, adjusted by the General Register Office.<sup>1)</sup>

These data concern graduates in the fields of engineering, technology and science (QSEs) (qualification level coded a); associates of educational institutions, such as technical colleges (qualification level b); graduates or corporate members of institutes and institutions (level c).

Chart VI.2 shows the total stock of persons with degrees or equivalent qualifications in Great Britain more than doubling between 1959 and 1976 (it rose from 255,000 to 585,000); the growth was nearly 60 percent between 1959 and 1968.

Among new QSEs in Engineering and Technology, up to 1965 nongraduates with professional qualifications were the most numerous. After 1964, those with University degree increased rapidly until 1971, and by 1966 they were more numerous than those with first professional qualifications. The number of nongraduates declined after 1970 associated with changes in the qualifications required for corporate membership of a professional charter.

During the same period, there was a decline in the

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1) See "Persons with Qualifications in Engineering, Technology and Science, 1958 to 1968". London, 1971, Department of Trade and Industry; also "Changes in the Population of Persons with Qualifications in Engineering, Technology and Science, 1959-76". London, HMSO, 1977. Studies in Technological Manpower no. 6.

proportion of QSEs who were economically active, due to the sizeable increases in the number of those who were students and of those who had retired. The number of retired QSEs increased much more between 1966-71 than between 1961-66.<sup>1)</sup>

Owing to the large increase in the new supply during the 60's, the age structure modified in the sense of an increase in the share of the QSEs below the age of 30: by 1971 about half of the QSEs in Engineering and 60 percent of those in Science were under 40.

In spite of the big percentage increase, as a proportion of the employed work force QSEs so defined only rose from 0.93 percent in 1959 to 1.38 percent in 1968 to around 1.6 percent in 1971. The density of QSEs in employment by industry at the three selected dates is shown in Table VI.5. Density is very low in almost every industry except Scientific and Technical Services and Research and Development Services.

This indicator gives a quantitative measure of the order of magnitude, in relative terms, of the "new working class", as above defined, in the different industries and services.

In absolute terms, the largest area of employment for QSEs is the manufacturing sector; the next largest groups were in educational services, followed by government and research (see Table VI.6).

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1) This is consistent with the analysis of J. Foster (in Laidler and Purdy, 1974) of the effects of the social security legislation passed in Great Britain in 1965-66, which encouraged the shakeout of the very old and the very young workers.

Chart VI.2

Total stock of QSEs 1959 to 1976

Thousands

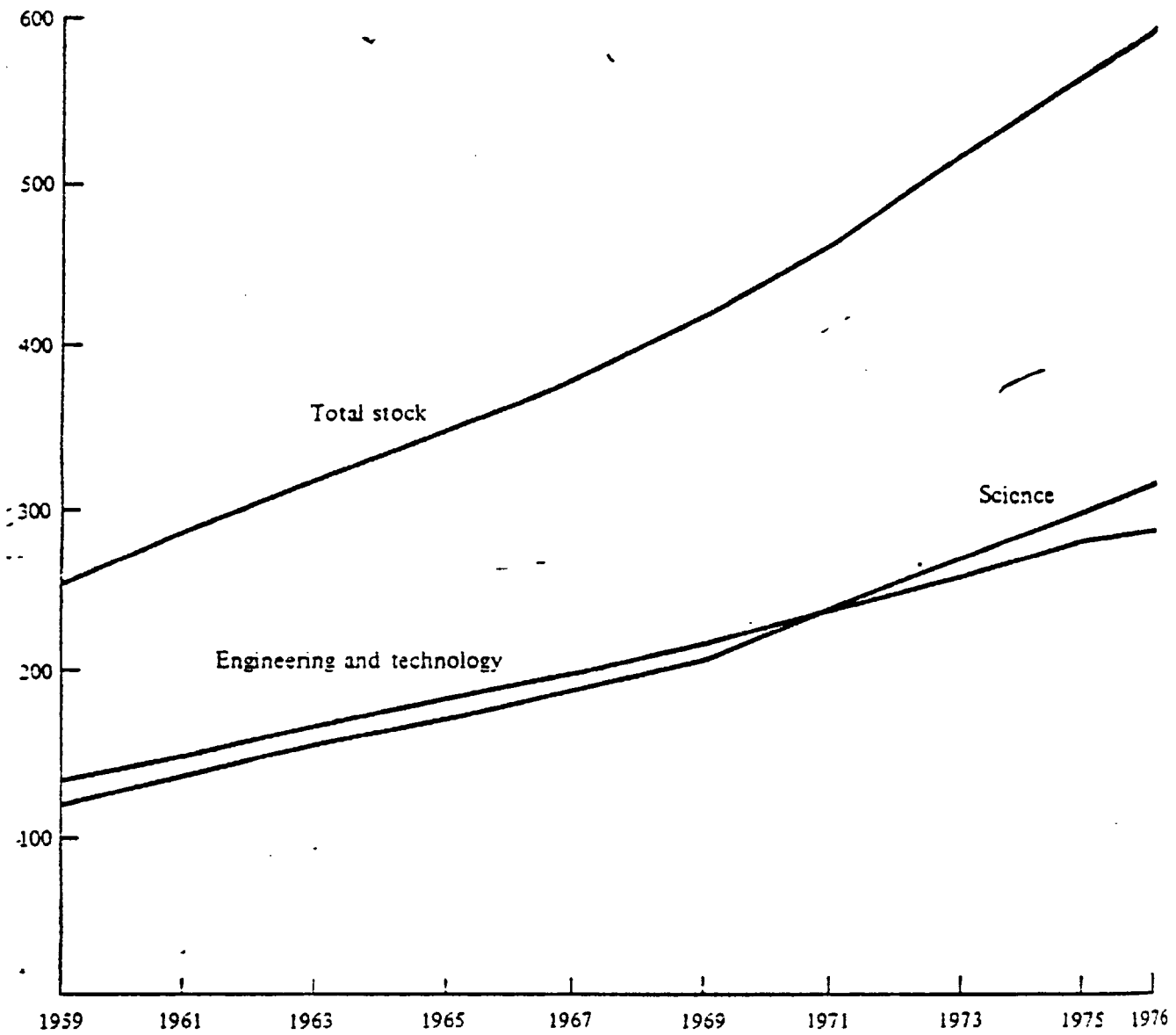


Table VI.5

Employment of QSEs by industry 1961, 1966 and 1971

Density of QSEs in employment

|                                           | 1961 | 1966<br>Number of QSEs per 100 employees | 1971  |
|-------------------------------------------|------|------------------------------------------|-------|
| <b>Engineering and technology</b>         |      |                                          |       |
| All industries                            | 0.58 | 0.68                                     | 0.85  |
| Agriculture, forestry and fishing         | 0.07 | 0.09                                     | 0.08  |
| Mining and quarrying                      | 0.48 | 0.64                                     | 0.80  |
| Manufacturing                             | 0.77 | 0.87                                     | 1.09  |
| Construction                              | 0.54 | 0.75                                     | 0.98  |
| Public utilities                          | 0.76 | 0.91                                     | 1.14  |
| Distribution, insurance, banking, finance | 0.10 | 0.13                                     | 0.17  |
| Accountancy and legal services            | 0.05 | 0.13                                     | 0.12  |
| Educational services                      | 0.91 | 1.18                                     | 1.20  |
| Medical and dental services               | 0.05 | 0.07                                     | 0.10  |
| Scientific and technical services         | 8.96 | 7.94                                     | 9.22  |
| Research and development services         | 7.61 | 7.36                                     | 6.99  |
| National government service               | 0.83 | 1.07                                     | 1.32  |
| Local government services                 | 0.97 | 0.85                                     | 1.21  |
| Other                                     | 0.18 | 0.24                                     | 0.29  |
| <b>Science</b>                            |      |                                          |       |
| All industries                            | 0.47 | 0.58                                     | 0.76  |
| Agriculture, forestry and fishing         | 0.48 | 0.39                                     | 0.46  |
| Mining and quarrying                      | 0.07 | 0.09                                     | 0.20  |
| Manufacturing                             | 0.36 | 0.43                                     | 0.62  |
| Construction                              | 0.02 | 0.04                                     | 0.05  |
| Public utilities                          | 0.07 | 0.14                                     | 0.24  |
| Distribution, insurance, banking, finance | 0.08 | 0.11                                     | 0.18  |
| Accountancy and legal services            | 0.28 | 0.40                                     | 0.65  |
| Educational services                      | 4.83 | 4.98                                     | 4.76  |
| Medical and dental services               | 0.98 | 0.97                                     | 1.03  |
| Scientific and technical services         | 1.13 | 1.13                                     | 1.63  |
| Research and development services         | 9.25 | 11.01                                    | 11.51 |
| National government service               | 0.63 | 0.84                                     | 1.15  |
| Local government services                 | 0.09 | 0.14                                     | 0.25  |
| Other                                     | 0.27 | 0.38                                     | 0.46  |

Table VI.6: Employment of QSEs by Industry (in 000s)

|                                                                       | Thousands                  |       |       |         |       |       |
|-----------------------------------------------------------------------|----------------------------|-------|-------|---------|-------|-------|
|                                                                       | Engineering and technology |       |       | Science |       |       |
|                                                                       | 1961                       | 1966  | 1971  | 1961    | 1966  | 1971  |
| Total                                                                 | 135.6                      | 164.2 | 200.7 | 110.7   | 139.6 | 179.5 |
| Manufacturing                                                         | 64.1                       | 73.5  | 83.4  | 30.0    | 36.3  | 50.3  |
| Public utilities                                                      | 15.5                       | 18.3  | 22.0  | 1.4     | 2.9   | 4.7   |
| Educational services                                                  | 7.9                        | 12.3  | 16.5  | 42.3    | 54.2  | 65.2  |
| Scientific and technical, and<br>research and development<br>services | 13.8                       | 14.8  | 17.8  | 3.3     | 10.2  | 12.1  |
| National and local govern-<br>ment services                           | 12.7                       | 13.6  | 19.9  | 5.6     | 7.2   | 11.2  |
| All other industries                                                  | 21.5                       | 31.1  | 36.0  | 23.0    | 28.8  | 36.0  |

Table VI.7

Density of QSEs in employment by industry within manufacturing, 1961, 1966 and 1971

|                                     | 1961                                   | 1966 | 1971 |
|-------------------------------------|----------------------------------------|------|------|
|                                     | Number of QSEs per 100 total employees |      |      |
| <b>Engineering and technology</b>   |                                        |      |      |
| All manufacturing                   | 0.77                                   | 0.87 | 1.09 |
| Food, drink and tobacco             | 0.15                                   | 0.19 | 0.26 |
| Chemicals and allied industries     | 1.35                                   | 1.52 | 2.17 |
| Metal manufacture                   | 0.82                                   | 1.03 | 1.22 |
| Machine tools                       | 1.02                                   | 1.30 | 1.19 |
| Other mechanical engineering        | 1.02                                   | 1.11 | 1.31 |
| Instrument engineering              | 1.05                                   | 1.13 | 1.91 |
| Electrical engineering              | 1.86                                   | 1.86 | 1.79 |
| Electronics                         | 1.99                                   | 2.38 | 3.05 |
| Shipbuilding and marine engineering | 0.67                                   | 0.97 | 1.16 |
| Aerospace                           | 2.65                                   | 2.77 | 3.66 |
| Motor vehicles                      | 0.59                                   | 0.64 | 0.78 |
| Railway equipment                   | 0.68                                   | 0.91 | 0.95 |
| Textiles, clothing, etc             | 0.17                                   | 0.20 | 0.27 |
| Other manufacturing                 | 0.24                                   | 0.30 | 0.38 |
| <b>Science</b>                      |                                        |      |      |
| All manufacturing                   | 0.36                                   | 0.43 | 0.62 |
| Food, drink and tobacco             | 0.32                                   | 0.41 | 0.56 |
| Chemicals and allied industries     | 2.49                                   | 2.84 | 3.80 |
| Metal manufacture                   | 0.20                                   | 0.24 | 0.38 |
| Machine tools                       | 0.06                                   | 0.07 | 0.09 |
| Other mechanical engineering        | 0.14                                   | 0.15 | 0.20 |
| Instrument engineering              | 0.71                                   | 0.69 | 0.99 |
| Electrical engineering              | 0.30                                   | 0.36 | 0.41 |
| Electronics                         | 1.10                                   | 1.35 | 1.86 |
| Shipbuilding and marine engineering | 0.02                                   | 0.10 | 0.08 |
| Aerospace                           | 0.53                                   | 0.58 | 0.82 |
| Motor vehicles                      | 0.03                                   | 0.07 | 0.14 |
| Railway equipment                   | 0.04                                   | 0.16 | 0.15 |
| Textiles, clothing, etc             | 0.13                                   | 0.15 | 0.18 |
| Other manufacturing                 | 0.19                                   | 0.22 | 0.33 |

Data for individual industries within manufacturing are shown in Table VI.7. It will be seen that, with few exceptions, the individual manufacturing industries have increased the number of QSEs in their employment at each successive year shown in the tables. In terms of shares, mechanical engineering is the largest employer of QSEs qualified in Engineering and Technology, followed by the chemical and allied industries. Also Electronics increased its share, at the expense of the electrical engi-



neering and aerospace industries.

The general trend from the table is one of increasing density of QSEs employed in all manufacturing industries, although with wide variations in the size of the increase. Altogether however density remains very low within manufacturing industries (with the exception of the chemicals and allied industries).

### 3.1. Qualification versus occupation among QSEs

It is possible in this context to examine the issue of qualification versus occupation: e.g. persons qualified as QSEs whose occupation is manager, technical director or technician; or, conversely, persons working as scientists and technologists who do not hold qualifications which group them as QSEs under the Census of Population or Manpower Surveys.

Substitutability may appear from the QSEs data in three possible ways:

- spread of persons holding a qualification appropriate to a particular occupation to occupations outside this range, i.e. which appear to demand different qualifications;
- spread of persons holding degrees in what might be called "career progression" occupations, such as manager, administrator;
- QSEs may also be said to become substitutable with the acquisition, "on-the-job", of a further qualification other than that of their first degree.

A discrepancy between the qualifications and the post

held may reveal rigidities in the working of the labour markets, in the form e.g. of a non-adjustment of prices to relative quantities; of a different selective mechanism for job applicants; or of a different functioning of the labour markets altogether. For that, this discrepancy has also been identified as a possible measure of job dissatisfaction.<sup>1)</sup>

In the chemical and allied industries, for example, the total number of QSEs is greater than the total number of scientists and technologists in the occupation statistics (Department of Employment and Productivity, DEP), despite the inclusion in the latter of persons without QSEs qualifications.

This would seem to suggest that the number of QSEs employed outside the scientists and technologists occupations, for example as managers, are more than sufficient to counterbalance the non-qualified persons employed as scientists and technologists.

For employed QSEs qualified in science, whose number increased by over 60 percent, there were rather more marked changes in the occupational distribution. The proportion employed as scientists and teachers decreased relatively, whilst proportions employed as draughtsmen, technicians, technical and related workers and other professional and other occupations increased.

It can be argued from these data that there has been a large degree of "substitution", among QSEs, of another

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1) See above, Part I, Chapters III and IV.

job skill for the one that matched their scientific or en-  
gineering qualifications.



## Annex to Chapter VI

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Table 1: Population aged 15 and over by age and terminal education age. Proportions per 000s.

| age<br>last birthday | terminal<br>education age<br>not stated | under 13 | 13  | 13  | 14  | 15  | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 and over |
|----------------------|-----------------------------------------|----------|-----|-----|-----|-----|----|----|----|----|----|----|----|----|----|-------------|
| MALES                |                                         |          |     |     |     |     |    |    |    |    |    |    |    |    |    |             |
| 15 and over          | 62                                      | 26       | 66  | 487 | 202 | 93  | 33 | 20 | 6  | 5  | 7  | 6  | 6  | 6  | 4  | 9           |
| 15-19                | 47                                      | 1        | 1   | 18  | 563 | 119 | 35 | 13 | 1  |    |    |    |    |    |    |             |
| 20-24                | 55                                      | 4        | 2   | 62  | 591 | 150 | 56 | 35 | 12 | 7  | 11 | 8  |    | 5  | 1  |             |
| 25-29                | 49                                      | 6        | 3   | 263 | 433 | 139 | 45 | 29 | 8  | 6  | 11 | 12 | 13 | 13 | 11 | 10          |
| 30-34                | 48                                      | 5        | 6   | 619 | 129 | 106 | 38 | 25 | 8  | 7  | 9  | 9  | 11 | 11 | 9  | 15          |
| 35-44                | 51                                      | 4        | 7   | 685 | 102 | 98  | 35 | 20 | 6  | 6  | 6  | 4  | 4  | 4  | 4  | 18          |
| 45-54                | 58                                      | 7        | 41  | 702 | 75  | 81  | 31 | 20 | 5  | 5  | 8  | 7  | 7  | 6  | 3  | 8           |
| 55-64                | 72                                      | 34       | 192 | 592 | 60  | 54  | 20 | 15 | 4  | 4  | 6  | 5  | 5  | 5  | 3  | 7           |
| 65-74                | 97                                      | 95       | 239 | 501 | 55  | 46  | 17 | 14 | 5  | 5  | 6  | 4  | 4  | 4  | 2  | 7           |
| 75 and over          | 128                                     | 273      | 245 | 332 | 48  | 41  | 16 | 15 | 5  | 4  | 6  | 5  | 5  | 4  | 2  | 6           |
| FEMALES              |                                         |          |     |     |     |     |    |    |    |    |    |    |    |    |    |             |
| 15 and over          | 68                                      | 30       | 72  | 495 | 192 | 92  | 39 | 23 | 6  | 10 | 8  | 4  | 4  | 2  | 1  | 2           |
| 15-19                | 44                                      | 1        | 1   | 18  | 561 | 126 | 40 | 12 | 1  |    |    |    |    |    |    |             |
| 20-24                | 46                                      | 4        | 2   | 54  | 598 | 158 | 68 | 36 | 12 | 23 | 12 | 5  | 5  | 1  | 0  |             |
| 25-29                | 44                                      | 7        | 4   | 282 | 424 | 141 | 52 | 26 | 8  | 22 | 15 | 8  | 8  | 4  | 2  | 2           |
| 30-34                | 45                                      | 5        | 5   | 633 | 134 | 106 | 40 | 22 | 10 | 17 | 12 | 7  | 7  | 4  | 2  | 2           |
| 35-44                | 50                                      | 3        | 6   | 687 | 107 | 104 | 40 | 19 | 5  | 10 | 7  | 4  | 4  | 2  | 2  | 4           |
| 45-54                | 61                                      | 7        | 41  | 697 | 80  | 81  | 38 | 24 | 5  | 9  | 7  | 4  | 4  | 2  | 1  | 3           |
| 55-64                | 80                                      | 25       | 168 | 608 | 65  | 56  | 28 | 22 | 5  | 8  | 7  | 4  | 4  | 2  | 1  | 2           |
| 65-74                | 106                                     | 87       | 223 | 514 | 56  | 46  | 26 | 24 | 5  | 7  | 6  | 3  | 3  | 1  | 1  | 2           |
| 75 and over          | 156                                     | 239      | 239 | 351 | 53  | 47  | 27 | 25 | 4  | 5  | 5  | 3  | 3  | 2  | 1  | 2           |

Source: General Registrar Office. Census 1961 - England and Wales.

Table 2: Qualified people in employment by industry and academic level. Census 1966.

| Industry orders (SIC 1958)           | Industry                             | Total (1) | Academic level |         |         | Total in industry or over age 15 and over (5) | QM as percentage of industry or over age 15 and over (col. 5) (6) |
|--------------------------------------|--------------------------------------|-----------|----------------|---------|---------|-----------------------------------------------|-------------------------------------------------------------------|
|                                      |                                      |           | a (2)          | b (3)   | c (4)   |                                               |                                                                   |
| I                                    | Agriculture, forestry, fishing       | 12,580    | 420            | 5,450   | 8,710   | 761,930                                       | 1.65                                                              |
| II                                   | Mining and quarrying                 | 13,230    | 170            | 6,520   | 6,540   | 560,660                                       | 2.36                                                              |
| III                                  | Food, drink and tobacco              | 14,730    | 480            | 7,840   | 6,410   | 743,070                                       | 1.93                                                              |
| IV                                   | Chemicals and allied industries      | 40,080    | 3,520          | 24,190  | 12,370  | 492,830                                       | 8.13                                                              |
| V                                    | Metal manufacture                    | 18,180    | 370            | 9,590   | 8,220   | 538,200                                       | 3.09                                                              |
| VI                                   | Engineering and electrical goods     | 104,010   | 2,280          | 56,190  | 45,540  | 2,134,670                                     | 4.75                                                              |
| VII                                  | Shipbuilding and marine engineering  | 4,310     | 100            | 2,150   | 2,060   | 178,250                                       | 2.42                                                              |
| VIII                                 | Vehicles                             | 23,840    | 330            | 14,420  | 14,030  | 803,920                                       | 3.57                                                              |
| IX                                   | Metal goods n.e.c.                   | 10,440    | 170            | 5,320   | 4,950   | 562,300                                       | 1.86                                                              |
| X                                    | Textiles                             | 12,430    | 530            | 5,850   | 6,050   | 721,130                                       | 1.72                                                              |
| XI                                   | Leather, leather goods, fur          | 570       | 20             | 300     | 250     | 53,520                                        | 0.97                                                              |
| XII                                  | Clothing and footwear                | 3,660     | 50             | 1,350   | 2,260   | 514,900                                       | 0.71                                                              |
| XIII                                 | Bricks, pottery, glass, cement, etc. | 7,390     | 160            | 4,030   | 3,700   | 323,730                                       | 2.10                                                              |
| XIV                                  | Timber, furniture, etc.              | 2,550     | 30             | 950     | 1,570   | 233,450                                       | 0.66                                                              |
| XV                                   | Paper, printing and publishing       | 13,350    | 450            | 7,730   | 5,170   | 616,500                                       | 2.17                                                              |
| XVI                                  | Other manufacturing industries       | 7,600     | 170            | 4,100   | 3,330   | 327,380                                       | 2.32                                                              |
| XVII                                 | Construction                         | 45,050    | 500            | 23,120  | 21,430  | 1,379,830                                     | 2.40                                                              |
| XVIII                                | Gas, electricity, water              | 29,490    | 470            | 16,350  | 11,170  | 410,330                                       | 6.93                                                              |
| XIX                                  | Transport and communication          | 34,830    | 360            | 11,520  | 22,950  | 1,608,170                                     | 2.17                                                              |
| XX                                   | Distributive trades                  | 52,530    | 720            | 29,430  | 22,390  | 3,245,100                                     | 1.62                                                              |
| XXI                                  | Insurance, banking, finance          | 71,750    | 430            | 15,520  | 55,730  | 655,530                                       | 10.95                                                             |
| XXII                                 | Professional and scientific services | 941,430   | 44,550         | 356,730 | 540,100 | 2,499,420                                     | 37.67                                                             |
| XXIII                                | Miscellaneous services               | 65,830    | 2,090          | 30,240  | 33,500  | 2,648,290                                     | 2.49                                                              |
| XXIV                                 | Public administration and defence    | 92,270    | 2,790          | 54,430  | 35,050  | 1,407,710                                     | 6.65                                                              |
| XXV                                  | Industry inadequately described      | 7,930     | 1,200          | 4,290   | 2,440   | 66,330                                        | 11.95                                                             |
| Total in employment                  |                                      | 1,634,660 | 62,480         | 698,220 | 373,960 | 24,163,320                                    | 6.75                                                              |
| As percentage of economically active |                                      | 98.36     | 98.80          | 98.60   | 98.14   | 97.23                                         | —                                                                 |



Table IV

Percentages of the economically active population by educational attainment, sex and age group

| Age   | Level of qualification |      |      |      |
|-------|------------------------|------|------|------|
|       | abc                    |      | d    |      |
|       | M+F                    | F    | M+F  | F    |
| 18-19 | 0.1                    | 0.2  | 11.7 | 12.0 |
| 20-24 | 8.8                    | 11.2 | 11.2 | 10.2 |
| 25-29 | 14.0                   | 15.6 | 7.7  | 6.6  |
| 30-34 | 12.4                   | 12.1 | 6.5  | 4.8  |
| 35-39 | 11.2                   | 10.6 | 5.7  | 4.2  |
| 40-44 | 9.8                    | 8.7  | 4.8  | 3.5  |
| 45-49 | 7.9                    | 6.8  | 4.3  | 3.3  |
| 50-54 | 7.1                    | 6.7  | 4.4  | 3.4  |
| 55-59 | 6.9                    | 6.8  | 3.5  | 2.8  |
| 60-64 | 5.7                    | 5.7  | 2.8  | 2.4  |
| 65-69 | 5.7                    | 5.1  | 2.1  | 1.8  |
| 70+   | 3.8                    | 3.0  | 1.3  | 1.1  |

Source: Great Britain - Census 1971.

Table V

Great Britain 1971. Percentage qualified by sex, by age and by level of education

| Age   | <u>Civil service executive officers</u> |      |      |                   |
|-------|-----------------------------------------|------|------|-------------------|
|       | Level of education                      |      |      |                   |
|       | abc                                     |      | d    |                   |
|       | M+F                                     | F    | M+F  | F                 |
| 18-19 | 0.7                                     | 1.4  | 81.9 | 81.9              |
| 20-24 | 10.4                                    | 18.1 | 64.6 | 62.5              |
| 25-29 | 10.8                                    | 13.6 | 43.7 | 49.1              |
| 30-34 | 7.2                                     | 11.3 | 33.5 | 30.0              |
| 35-39 | 4.1                                     | 4.9  | 23.6 | 26.2              |
| 40-44 | 2.6                                     | 1.0  | 17.3 | 14.9              |
| 45-49 | 2.1                                     | 1.6  | 15.0 | 17.7              |
| 50-54 | 2.2                                     | 1.5  | 13.7 | 15.1              |
| 55-59 | 3.8                                     | 3.8  | 13.4 | 12.7              |
| 60-64 | 5.9                                     | 3.2  | 12.1 | 19.4 <sup>α</sup> |
| 65-69 | 16.0 <sup>α</sup>                       | -    | 4.0  | -                 |
| 70+   | 12.5 <sup>α</sup>                       | -    | 12.5 | -                 |

<sup>α</sup> absolute number too low for the percentage to be reliable

Table VI

Great Britain 1971. Percentage qualified by sex, by age  
and by level of education

| Age   | <u>Clerical workers</u> |     |      |      |
|-------|-------------------------|-----|------|------|
|       | Level of education      |     |      |      |
|       | abc                     |     | d    |      |
|       | M+F                     | F   | M+F  | F    |
| 18-19 | 2.4                     | 1.5 | 18.3 | 15.9 |
| 20-24 | 4.8                     | 2.4 | 17.4 | 13.7 |
| 25-29 | 4.8                     | 2.2 | 13.4 | 10.4 |
| 30-34 | 3.8                     | 1.9 | 10.5 | 8.3  |
| 35-39 | 2.9                     | 1.6 | 9.2  | 7.7  |
| 40-44 | 2.5                     | 1.5 | 7.6  | 6.5  |
| 45-49 | 2.4                     | 1.5 | 7.1  | 6.3  |
| 50-54 | 3.2                     | 2.0 | 7.6  | 6.9  |
| 55-59 | 3.9                     | 2.2 | 6.9  | 6.3  |
| 60-64 | 4.6                     | 3.7 | 6.2  | 6.1  |
| 65-69 | 1.8                     | 1.5 | 4.8  | 4.8  |
| 70+   | -                       | -   | 2.3  | 2.3  |

## Notes for Tables:

1. Qualification levels. The letters A, B, C etc used in the tables have the following meanings:
  - A = Higher or first degrees; university/college of technology etc. diplomas and certificates and professional qualifications including teaching, of degree standard.
  - B = Non-graduate teachers; HNC/HND; City and Guilds full technological certificate; nursing qualifications; University/college of technology etc diplomas and certificates and professional qualifications below degree standard but above GCE 'A' level.
  - C = City and Guilds advanced/final level; ONC/OND; 1 or more subjects at GCE 'A' level; Scottish Certificate of Education/SUPE Higher; and/or High School Certificate; and/or Scottish Leaving Certificate Higher; and/or Certificate of Sixth Year Studies.
  - D = 1 or more subjects at GCE 'O' level/SCE ordinary/CSE grade 1, and/or School Certificate; and/or SLC Lower/SUPE Lower or Ordinary; and/or City and Guilds Craft/Ordinary level.
  - E = Clerical or commercial qualifications; CSE other grades/unknown grade/ungraded
  - F = Apprenticeships
  - G = Foreign qualifications (outside UK) or other qualifications not specified in A to F
  - H = No qualifications.
2. School leaving age. Note that this was raised from 15 to 16 in 1973. The age bands in tables for 1971 start at 15 and those for 1977 start at 16.
3. No Answer. This refers to people who when interviewed, did not reply to the questions about qualifications. The numbers of such people are shown in the tables, but they are excluded from the totals and therefore the base on which percentages were calculated.
4. Due to rounding, percentages in the tables may not sum exactly to 100%. (Percentages are shown to the nearest whole number) Ø means less than 0.5%
5. \* appears in the tables when the base is less than 50. In such cases, the base is too small for the percentages to be reliable.
6. Source of data The information was taken from tables SO EMP. 15 A to D (Program GE02) of the General Household Survey 1971 and 1977.

TABLE 7

GENERAL HOUSEHOLD SURVEY

GREAT BRITAIN 1971

HIGHEST EDUCATIONAL QUALIFICATION OBTAINED BY AGE

POPULATION : All persons 15 and over, at work or unemployed  
excluding full-time students

LEVELS OF EDUCATIONAL QUALIFICATION

| AGE/SEX   |   | A | B  | C  | D  | E  | F  | G | H  | Total<br>= 100% | No<br>Answer |
|-----------|---|---|----|----|----|----|----|---|----|-----------------|--------------|
| MALES     |   |   |    |    |    |    |    |   |    |                 |              |
| 15-19     | % | 0 | Ø  | 4  | 28 | 9  | Ø  | 2 | 56 | 655             | 78           |
| 20-24     | % | 3 | 4  | 12 | 26 | 3  | 5  | 4 | 44 | 942             | 82           |
| 25-29     | % | 7 | 7  | 8  | 18 | 1  | 8  | 5 | 46 | 911             | 73           |
| 30-39     | % | 7 | 7  | 6  | 13 | 1  | 9  | 3 | 53 | 1924            | 132          |
| 40-49     | % | 6 | 5  | 3  | 8  | 1  | 10 | 4 | 63 | 1995            | 131          |
| 50-59     | % | 3 | 3  | 2  | 8  | 2  | 11 | 3 | 69 | 1772            | 96           |
| 60 & over | % | 4 | 3  | 1  | 4  | 1  | 13 | 3 | 71 | 979             | 51           |
| Total     | % | 5 | 4  | 5  | 13 | 2  | 9  | 4 | 59 | 9178            | 643          |
| FEMALES   |   |   |    |    |    |    |    |   |    |                 |              |
| 15-19     | % | 0 | Ø  | 4  | 25 | 12 | Ø  | 2 | 58 | 589             | 30           |
| 20-24     | % | 3 | 6  | 5  | 27 | 10 | 1  | 3 | 44 | 674             | 28           |
| 25-29     | % | 3 | 12 | 3  | 17 | 10 | 1  | 5 | 50 | 459             | 11           |
| 30-39     | % | 3 | 10 | 2  | 11 | 9  | 1  | 3 | 62 | 1081            | 18           |
| 40-49     | % | 1 | 6  | 1  | 6  | 8  | 1  | 2 | 75 | 1369            | 28           |
| 50-59     | % | 1 | 5  | 1  | 5  | 5  | 2  | 3 | 79 | 1171            | 26           |
| 60 & over | % | 1 | 4  | Ø  | 3  | 3  | Ø  | 4 | 85 | 422             | 13           |
| Total     | % | 2 | 6  | 2  | 12 | 8  | 1  | 3 | 67 | 5765            | 154          |

TABLE 8

GENERAL HOUSEHOLD SURVEY.

GREAT BRITAIN 1977

## HIGHEST EDUCATIONAL QUALIFICATION OBTAINED BY AGE

POPULATION : All persons 16 and over, at work or unemployed excluding full-time students.

## LEVELS OF EDUCATIONAL QUALIFICATION

| AGE/SEX        |   | A  | B  | C  | D  | E  | F  | G | H  | Total<br>=100% | No<br>Answer |
|----------------|---|----|----|----|----|----|----|---|----|----------------|--------------|
| <b>MALES</b>   |   |    |    |    |    |    |    |   |    |                |              |
| 16-19          | % | 0  | Ø  | 7  | 35 | 21 | 0  | 1 | 35 | 580            | 26           |
| 20-24          | % | 7  | 9  | 21 | 21 | 4  | 5  | 1 | 32 | 842            | 37           |
| 25-29          | % | 10 | 11 | 14 | 19 | 2  | 7  | 4 | 34 | 1073           | 42           |
| 30-39          | % | 10 | 10 | 8  | 15 | Ø  | 10 | 5 | 42 | 1948           | 84           |
| 40-49          | % | 7  | 8  | 5  | 9  | 1  | 14 | 5 | 51 | 1656           | 78           |
| 50-59          | % | 6  | 6  | 2  | 7  | 1  | 14 | 4 | 61 | 1655           | 54           |
| 60 & over      | % | 5  | 3  | 2  | 5  | 2  | 15 | 5 | 64 | 752            | 134          |
| Total          | % | 7  | 8  | 8  | 14 | 3  | 10 | 4 | 47 | 8506           | 455          |
| <b>FEMALES</b> |   |    |    |    |    |    |    |   |    |                |              |
| 16-19          | % | 0  | Ø  | 3  | 45 | 23 | Ø  | 1 | 28 | 501            | 16           |
| 20-24          | % | 4  | 8  | 8  | 30 | 12 | 1  | 3 | 34 | 640            | 16           |
| 25-29          | % | 6  | 11 | 6  | 18 | 12 | 1  | 4 | 42 | 592            | 8            |
| 30-39          | % | 3  | 10 | 2  | 14 | 12 | 1  | 4 | 53 | 1292           | 10           |
| 40-49          | % | 2  | 8  | 1  | 8  | 10 | 2  | 3 | 66 | 1331           | 20           |
| 50-59          | % | 2  | 6  | 1  | 5  | 7  | 2  | 3 | 75 | 1171           | 17           |
| 60 & over      | % | 2  | 4  | 1  | 3  | 4  | 3  | 3 | 81 | 336            | 54           |
| Total          | % | 3  | 8  | 3  | 15 | 11 | 1  | 3 | 57 | 5863           | 141          |

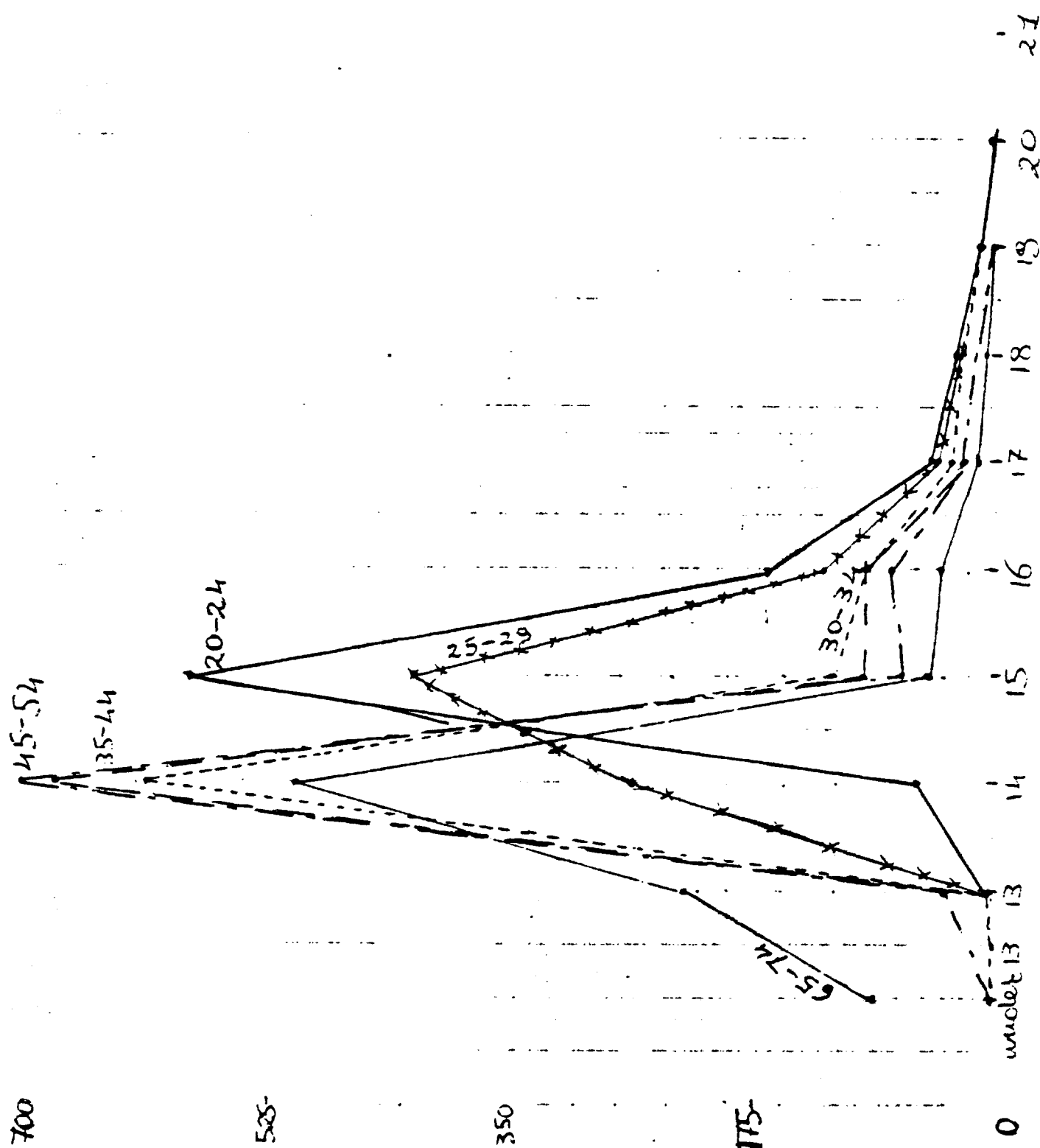
Table 9: Economically active persons aged 20-69 by socio-economic group, by sex, by age, by highest qualification level. GHS, combined data 1976-77.

| Age               |                      | Own socio-economic group |                              |                                     |                          |                                                              |                                                                    |       |
|-------------------|----------------------|--------------------------|------------------------------|-------------------------------------|--------------------------|--------------------------------------------------------------|--------------------------------------------------------------------|-------|
|                   |                      | Pro-<br>fessional        | Employers<br>and<br>managers | Inter-<br>mediate<br>non-<br>manual | Junior<br>non-<br>manual | Skilled<br>manual<br>and own<br>account non-<br>professional | Semi-skilled<br>and unskilled<br>manual and<br>personal<br>service | Total |
| <b>Males</b>      |                      |                          |                              |                                     |                          |                                                              |                                                                    |       |
| 20-29             | Higher education     | 72                       | 26                           | 54                                  | 15                       | 7                                                            | 5                                                                  | 19    |
|                   | Other qualifications | 28                       | 56                           | 40                                  | 70                       | 54                                                           | 28                                                                 | 48    |
|                   | No qualifications    | 7                        | 17                           | 7                                   | 15                       | 19                                                           | 67                                                                 | 34    |
| Base = 100%       |                      | 264                      | 321                          | 299                                 | 482                      | 1538                                                         | 747                                                                | 3651  |
| 30-39             | Higher education     | 82                       | 27                           | 50                                  | 14                       | 4                                                            | 1                                                                  | 19    |
|                   | Other qualifications | 17                       | 47                           | 39                                  | 53                       | 44                                                           | 23                                                                 | 35    |
|                   | No qualifications    | 1                        | 25                           | 11                                  | 33                       | 52                                                           | 75                                                                 | 42    |
| Base = 100%       |                      | 300                      | 702                          | 317                                 | 312                      | 1585                                                         | 583                                                                | 3799  |
| 40-49             | Higher education     | 85                       | 22                           | 39                                  | 8                        | 1                                                            | 0                                                                  | 13    |
|                   | Other qualifications | 12                       | 44                           | 35                                  | 44                       | 37                                                           | 17                                                                 | 34    |
|                   | No qualifications    | 3                        | 34                           | 25                                  | 48                       | 62                                                           | 83                                                                 | 53    |
| Base = 100%       |                      | 192                      | 643                          | 248                                 | 239                      | 1380                                                         | 590                                                                | 3342  |
| 50-59             | Higher education     | 77                       | 23                           | 27                                  | 5                        | 2                                                            | 1                                                                  | 11    |
|                   | Other qualifications | 16                       | 37                           | 38                                  | 34                       | 29                                                           | 15                                                                 | 28    |
|                   | No qualifications    | 7                        | 40                           | 36                                  | 60                       | 59                                                           | 84                                                                 | 62    |
| Base = 100%       |                      | 152                      | 554                          | 218                                 | 311                      | 1345                                                         | 720                                                                | 3300  |
| 60-69             | Higher education     | [43]                     | 15                           | [21]                                | 4                        | 1                                                            | 3                                                                  | 7     |
|                   | Other qualifications | [15]                     | 35                           | [25]                                | 29                       | 34                                                           | 15                                                                 | 28    |
|                   | No qualifications    | [6]                      | 50                           | [25]                                | 67                       | 65                                                           | 95                                                                 | 65    |
| Base = 100%       |                      | 64                       | 208                          | 71                                  | 212                      | 569                                                          | 434                                                                | 1558  |
| All aged<br>20-69 | Higher education     | 78                       | 24                           | 43                                  | 10                       | 4                                                            | 2                                                                  | 15    |
|                   | Other qualifications | 19                       | 44                           | 38                                  | 50                       | 41                                                           | 20                                                                 | 37    |
|                   | No qualifications    | 3                        | 32                           | 19                                  | 40                       | 56                                                           | 78                                                                 | 49    |
| Base = 100%       |                      | 972                      | 2428                         | 1153                                | 1606                     | 6417                                                         | 3074                                                               | 15650 |
| <b>Females</b>    |                      |                          |                              |                                     |                          |                                                              |                                                                    |       |
| 20-29             | Higher education     | [29]                     | [15]                         | 62                                  | 3                        | 3                                                            | 2                                                                  | 15    |
|                   | Other qualifications | [5]                      | [36]                         | 28                                  | 68                       | 28                                                           | 31                                                                 | 48    |
|                   | No qualifications    | NIL                      | [15]                         | 10                                  | 28                       | 70                                                           | 67                                                                 | 37    |
| Base = 100%       |                      | 34                       | 66                           | 428                                 | 1126                     | 174                                                          | 629                                                                | 2457  |
| 30-39             | Higher education     | [12]                     | 12                           | 60                                  | 3                        | 2                                                            | 1                                                                  | 12    |
|                   | Other qualifications | [4]                      | 52                           | 24                                  | 54                       | 28                                                           | 19                                                                 | 34    |
|                   | No qualifications    | [1]                      | 35                           | 16                                  | 43                       | 70                                                           | 80                                                                 | 54    |
| Base = 100%       |                      | 17                       | 105                          | 390                                 | 855                      | 205                                                          | 885                                                                | 2457  |
| 40-49             | Higher education     | [14]                     | 15                           | 52                                  | 2                        | 2                                                            | 1                                                                  | 10    |
|                   | Other qualifications | [4]                      | 31                           | 23                                  | 40                       | 14                                                           | 8                                                                  | 23    |
|                   | No qualifications    | [2]                      | 54                           | 25                                  | 58                       | 64                                                           | 91                                                                 | 67    |
| Base = 100%       |                      | 20                       | 151                          | 355                                 | 895                      | 203                                                          | 981                                                                | 2605  |
| 50-69†            | Higher education     | [10]                     | 23                           | 47                                  | 2                        | 1                                                            | 3                                                                  | 7     |
|                   | Other qualifications | [5]                      | 24                           | 20                                  | 31                       | 21                                                           | 7                                                                  | 17    |
|                   | No qualifications    | [5]                      | 53                           | 33                                  | 67                       | 88                                                           | 93                                                                 | 76    |
| Base = 100%       |                      | 20                       | 198                          | 275                                 | 934                      | 252                                                          | 1374                                                               | 3053  |
| All aged<br>20-69 | Higher education     | [65]                     | 19                           | 56                                  | 2                        | 2                                                            | 1                                                                  | 11    |
|                   | Other qualifications | [18]                     | 36                           | 24                                  | 49                       | 19                                                           | 14                                                                 | 30    |
|                   | No qualifications    | [8]                      | 46                           | 19                                  | 48                       | 79                                                           | 85                                                                 | 60    |
| Base = 100%       |                      | 31                       | 520                          | 1448                                | 3810                     | 834                                                          | 3869                                                               | 10572 |

\* 'Higher education' = Census levels 'a' + 'b' + 'c'; 'other qualifications' = the remainder. Details of qualification levels are given in Appendix A.

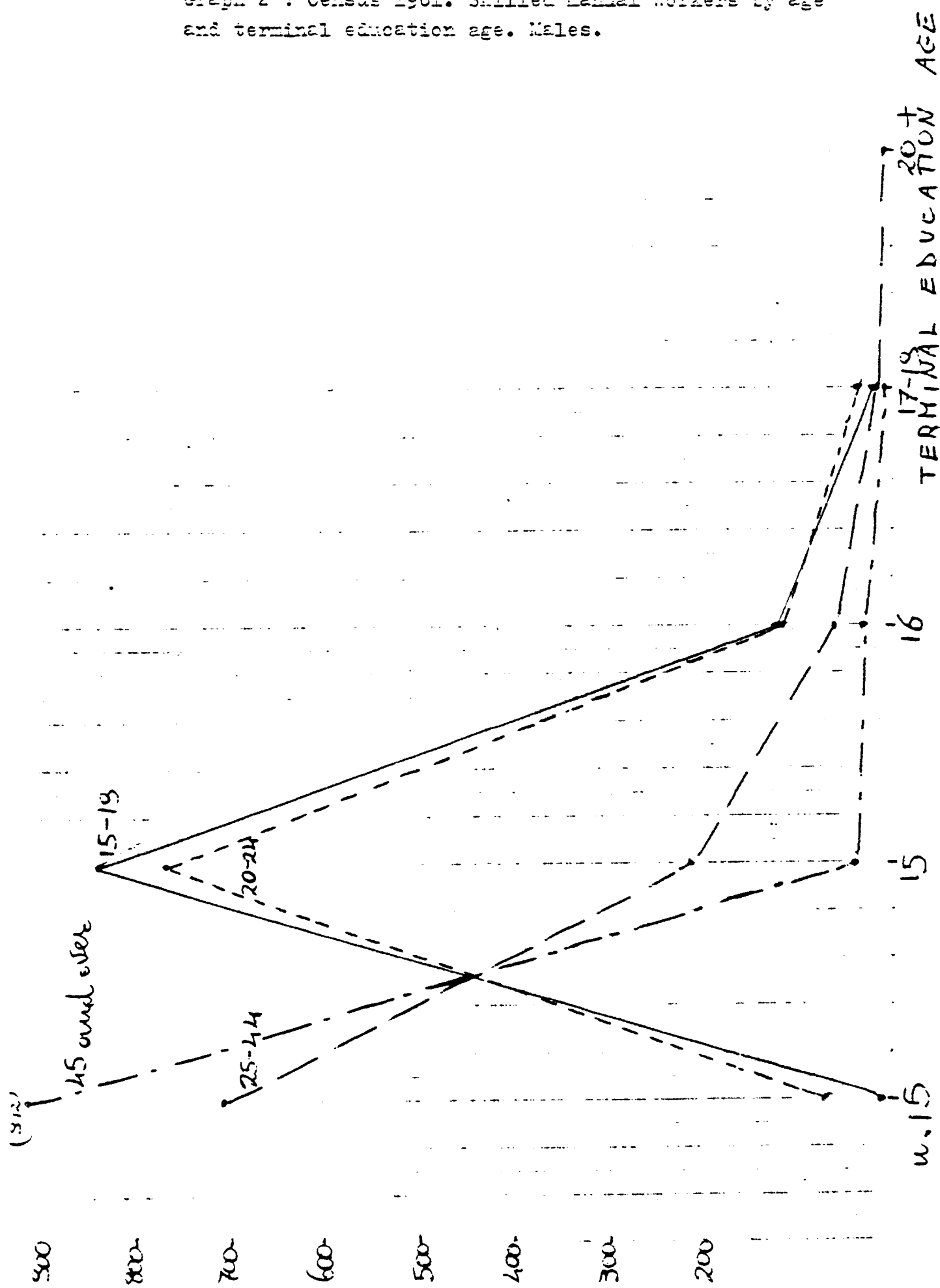
† The numbers of economically active women aged 60-69 are too small to show separately.

## Technical education was

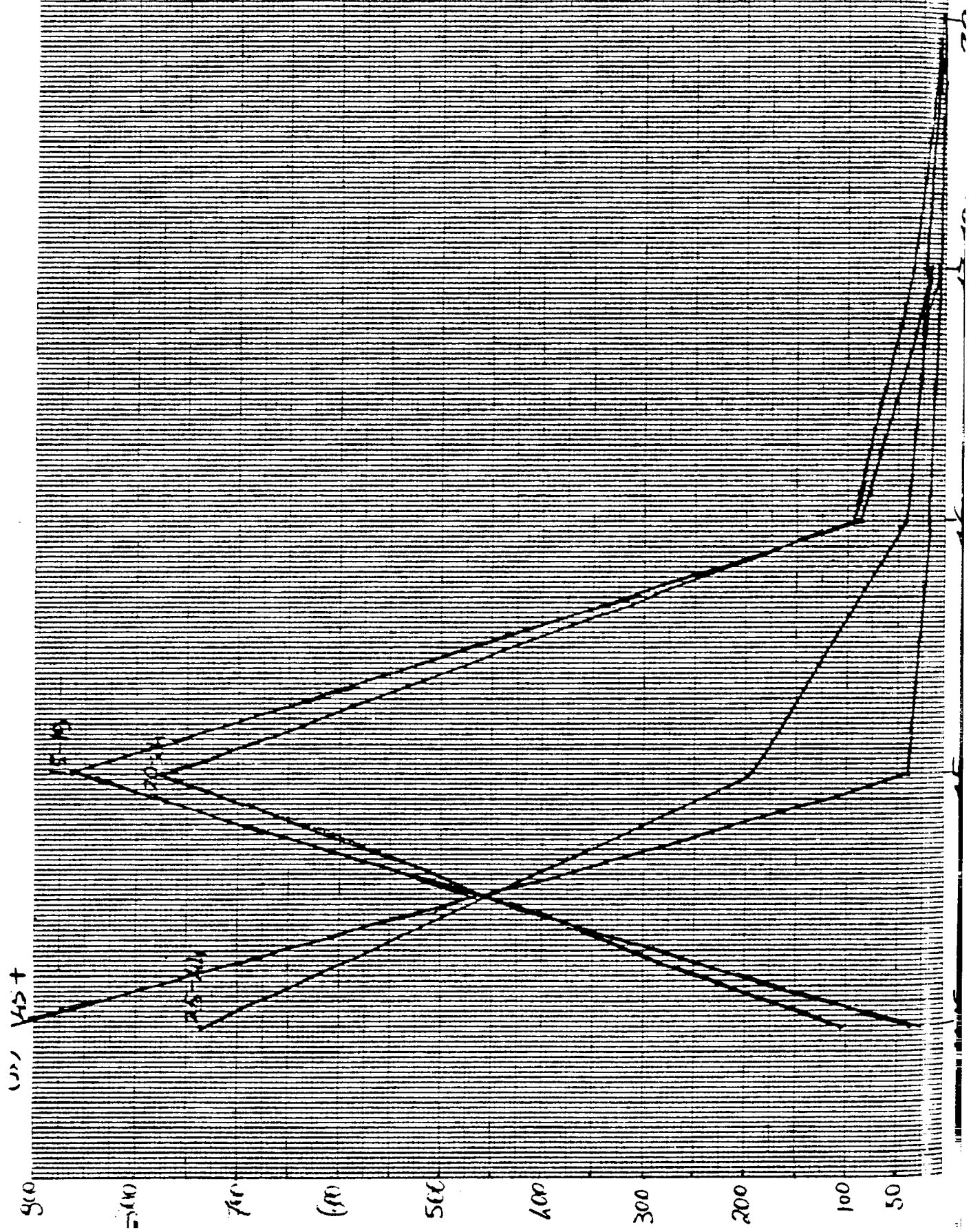




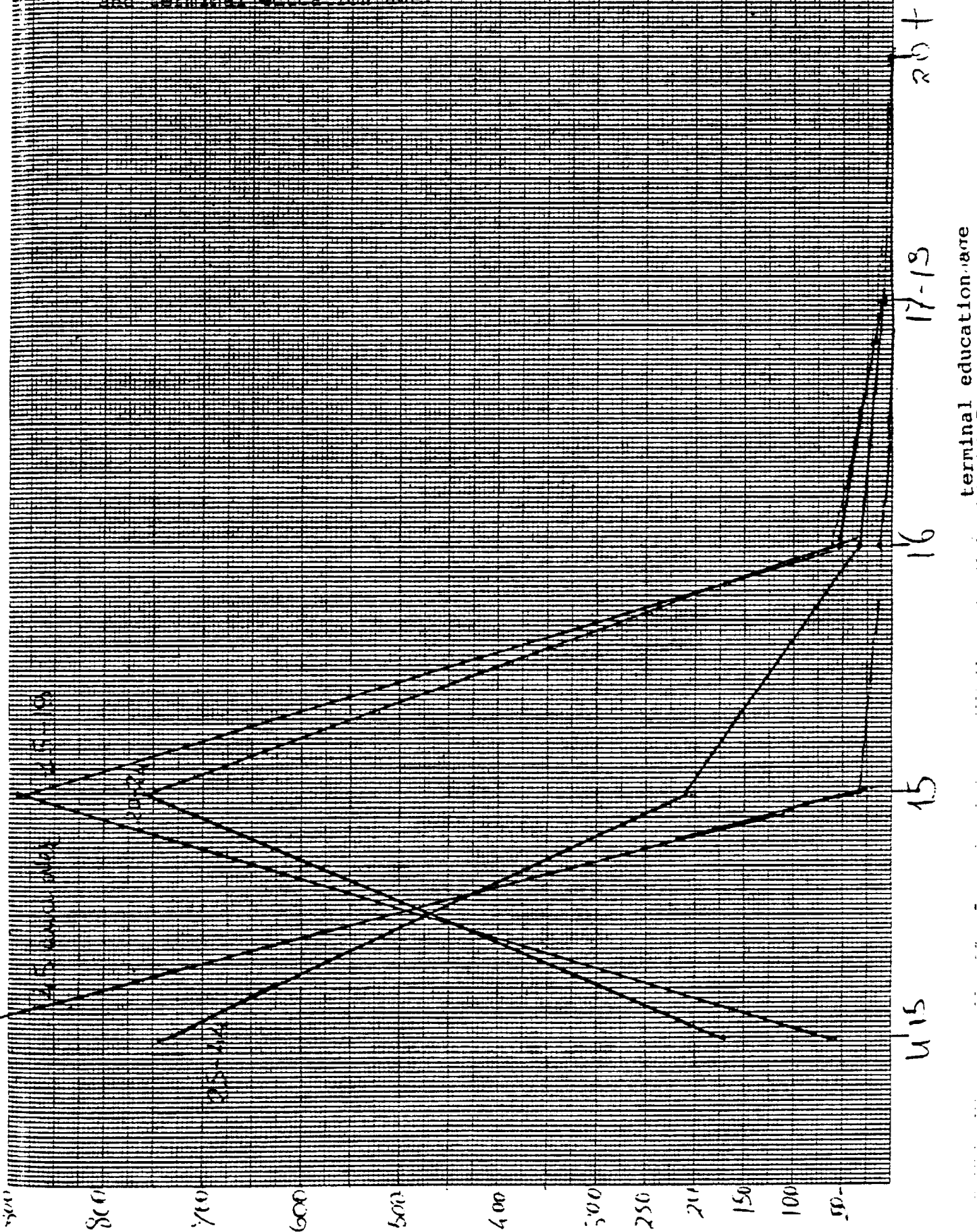
Graph 2 : Census 1961. Skilled manual workers by age and terminal education age. Males.



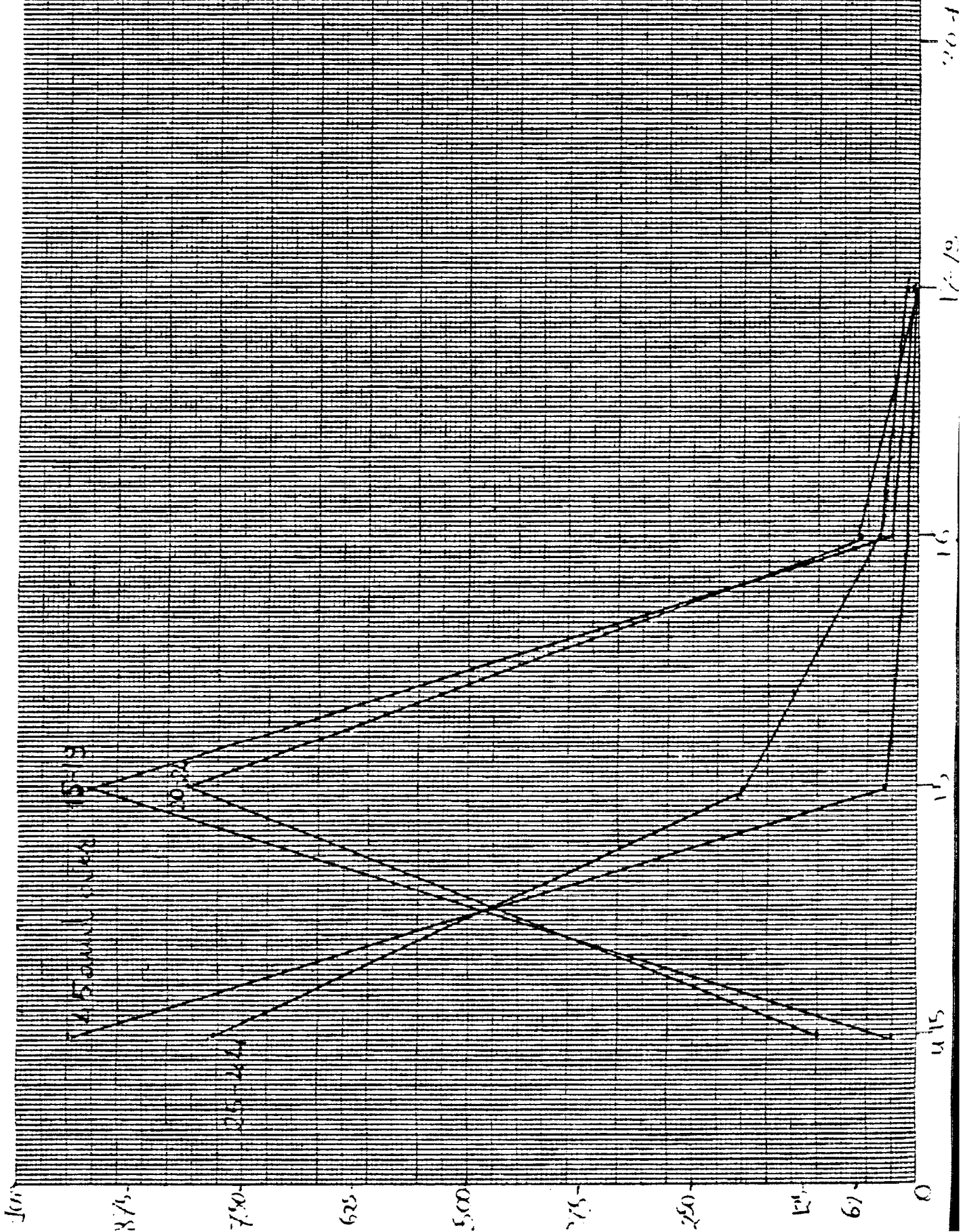
Graph 3. Semiskilled manual workers, by age and  
 minimum education age, Males, Census 1961.



Graph 4 - Canada 1987. Unskilled Manual Workers by Age and Terminal Education Age



Graph 5 - Census 1961, Fabricated metal workers,  
by age and terminal education age, Males.



Graph 6 : Census 1961. Clerical workers, by age and terminal education age. Males and females shown separately.

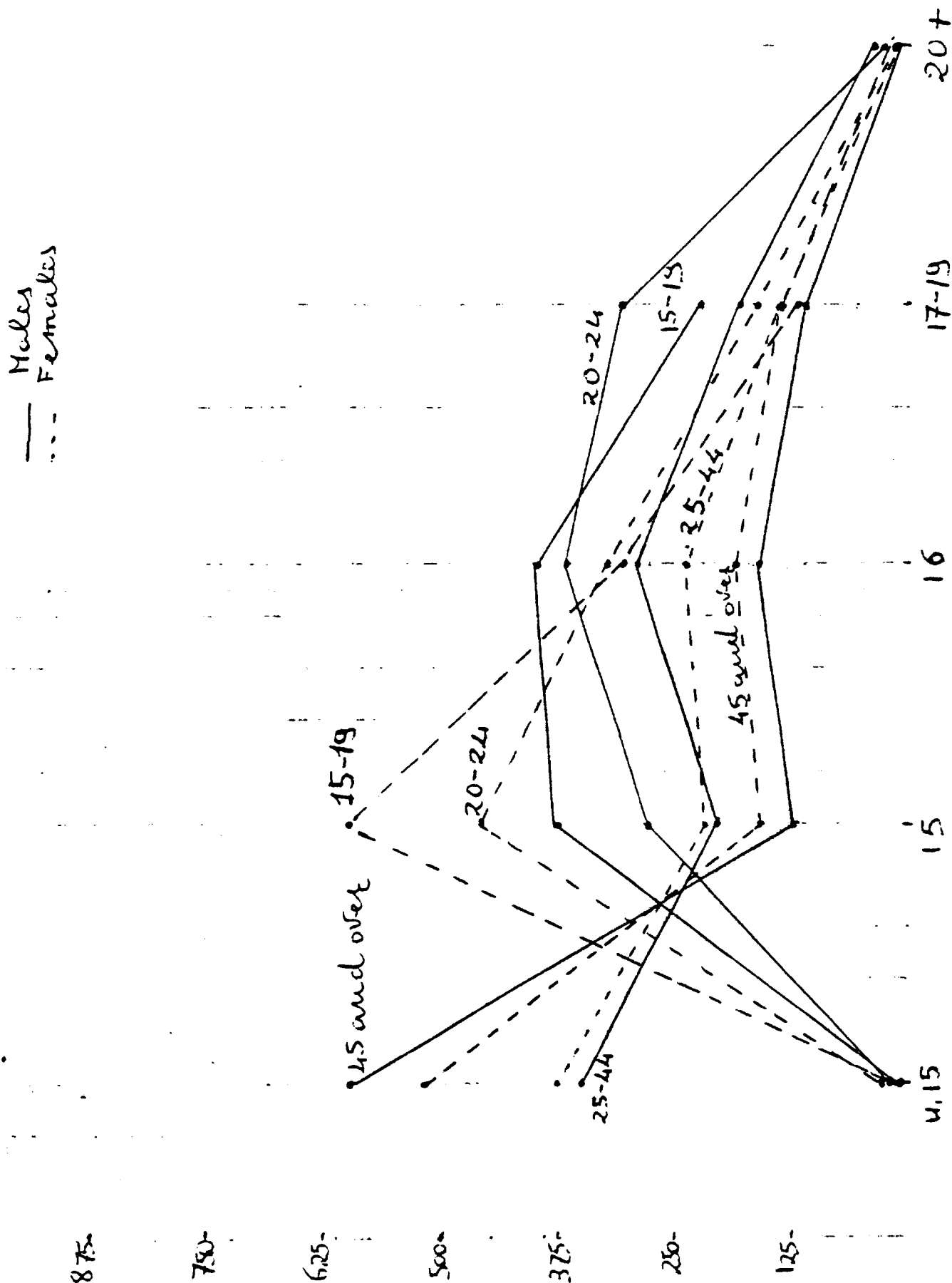


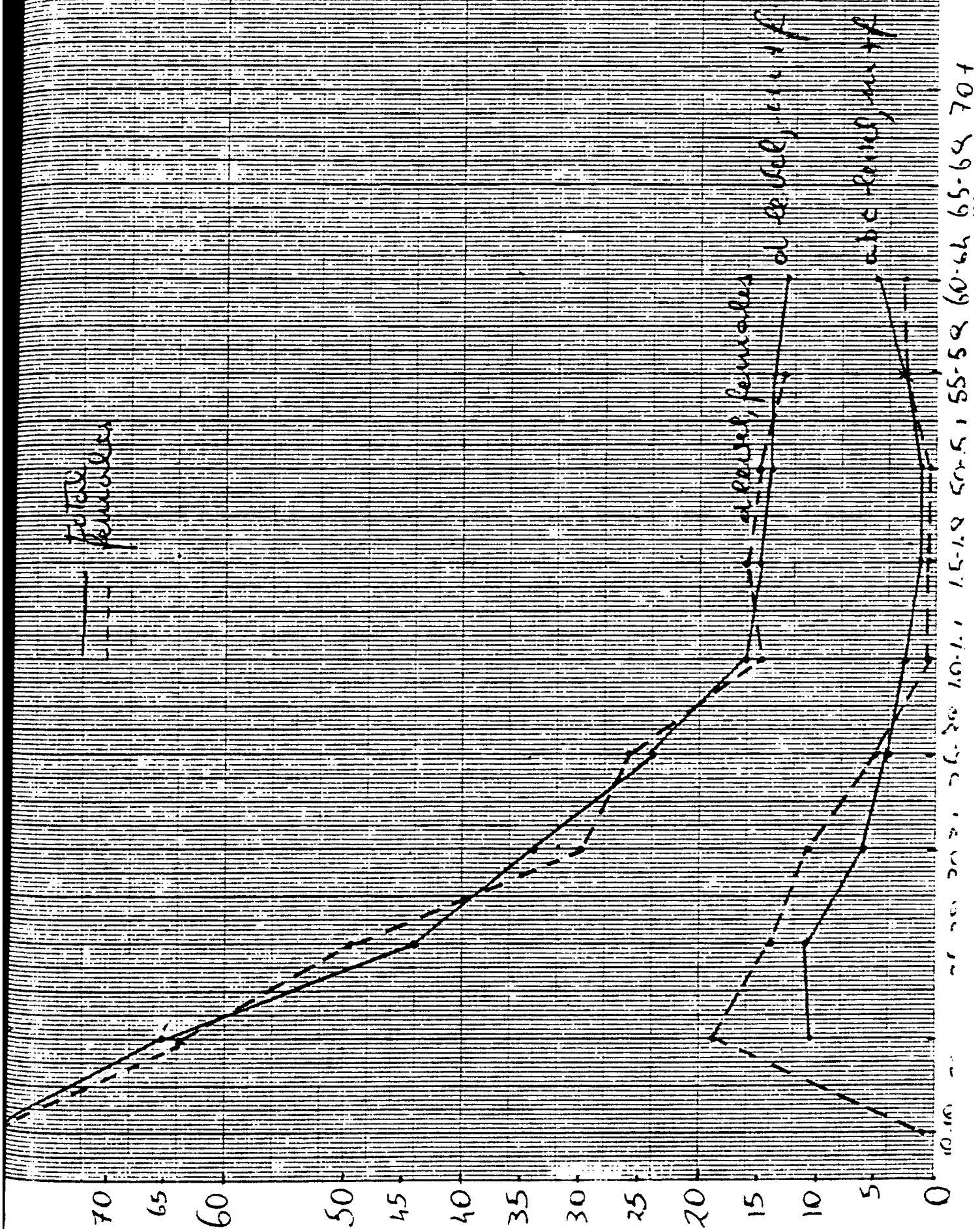
Table 7: Census 1971. Economically active population by educational attainment, sex and age. Percentages by age group.



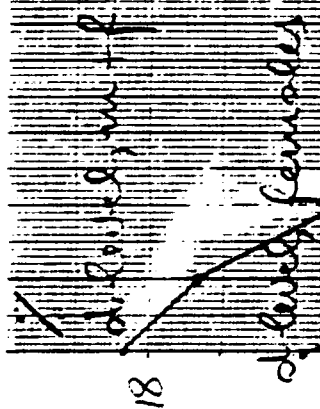
| 18-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | 60-64 | 65-69 | 70+ | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1985 | 1990 | 1995 | 2000 | 2005 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | 2055 | 2060 | 2065 | 2070 | 2075 | 2080 | 2085 | 2090 | 2095 | 2100 |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| 18-19 | 20-24 | 25-29 | 30-34 | 35-39 | 40-44 | 45-49 | 50-54 | 55-59 | 60-64 | 65-69 | 70+ | 1950 | 1955 | 1960 | 1965 | 1970 | 1975 | 1980 | 1985 | 1990 | 1995 | 2000 | 2005 | 2010 | 2015 | 2020 | 2025 | 2030 | 2035 | 2040 | 2045 | 2050 | 2055 | 2060 | 2065 | 2070 | 2075 | 2080 | 2085 | 2090 | 2095 | 2100 |



Graph 8: Census 1971. Civil service executive  
officers, i. educational attainment, sex and age.  
Percentages on age group.



Graph 9: Census 1971. Clerical workers, short-hand writers, and typists, by educational attainment, sex and age. Percentages by age group.



divided into

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Typically, we consider horizontal and vertical (females only)

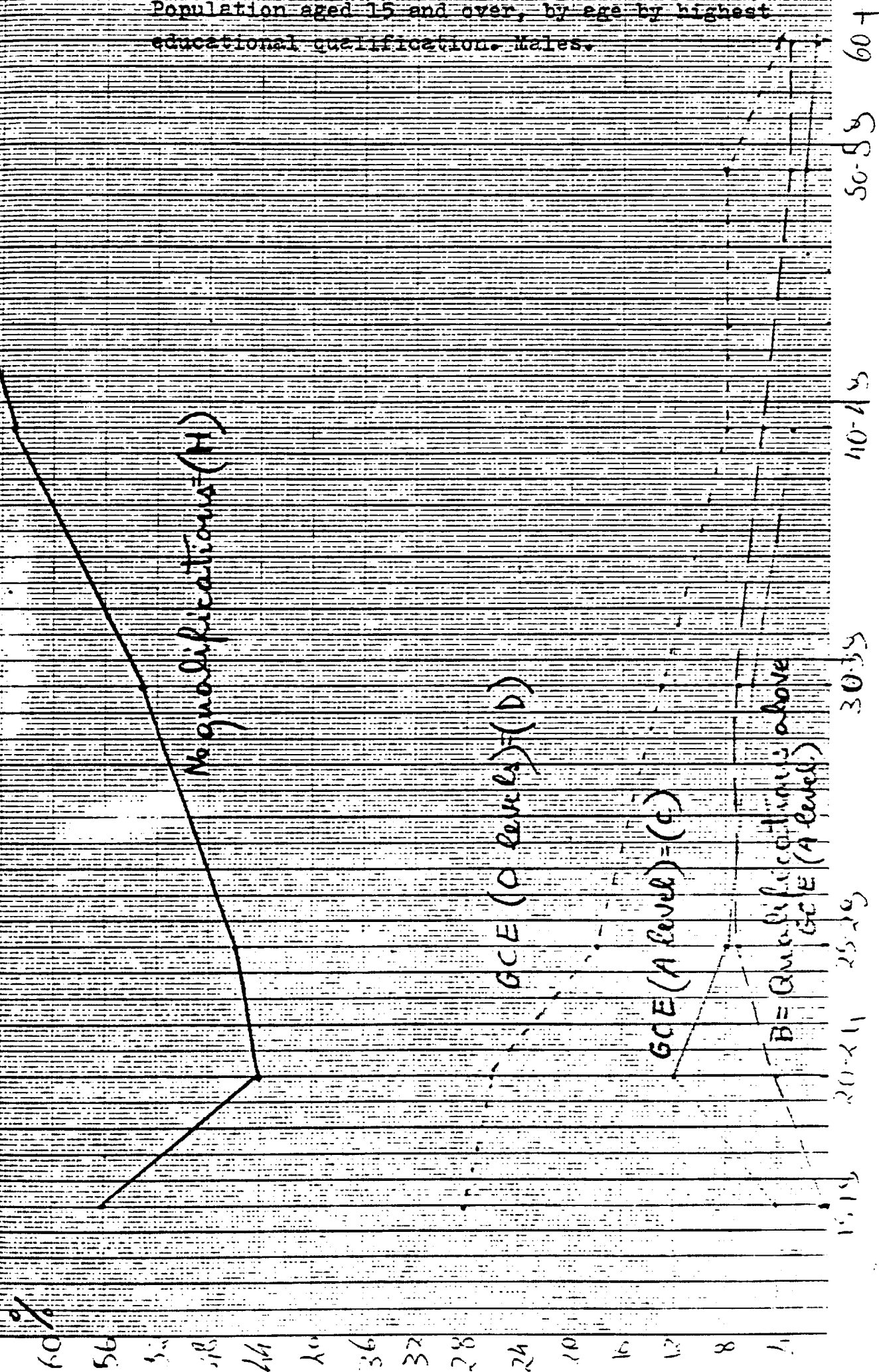
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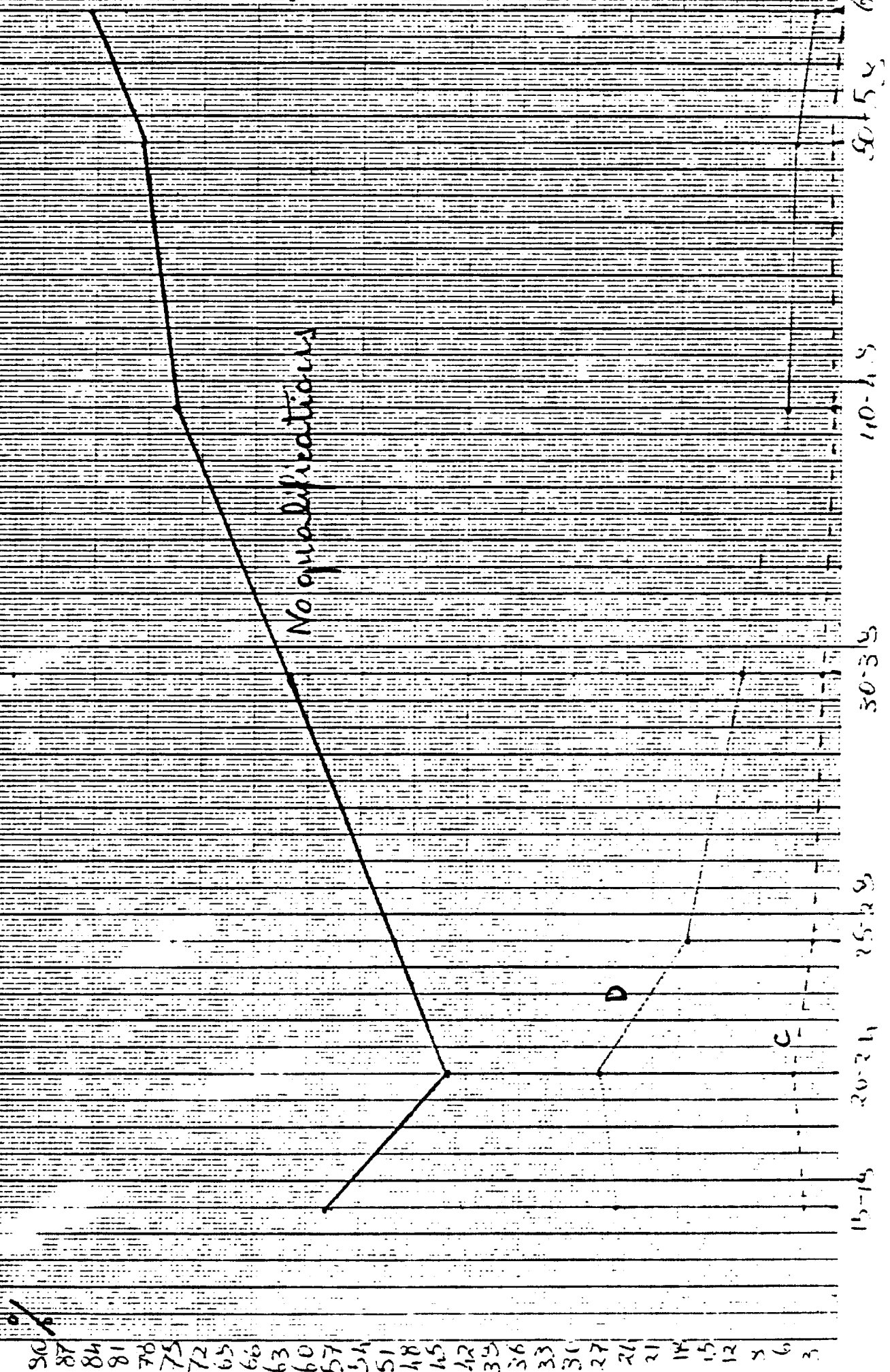
Graph 10 : General Household Survey 1971.

Population aged 15 and over, by age by highest educational qualification. Males.



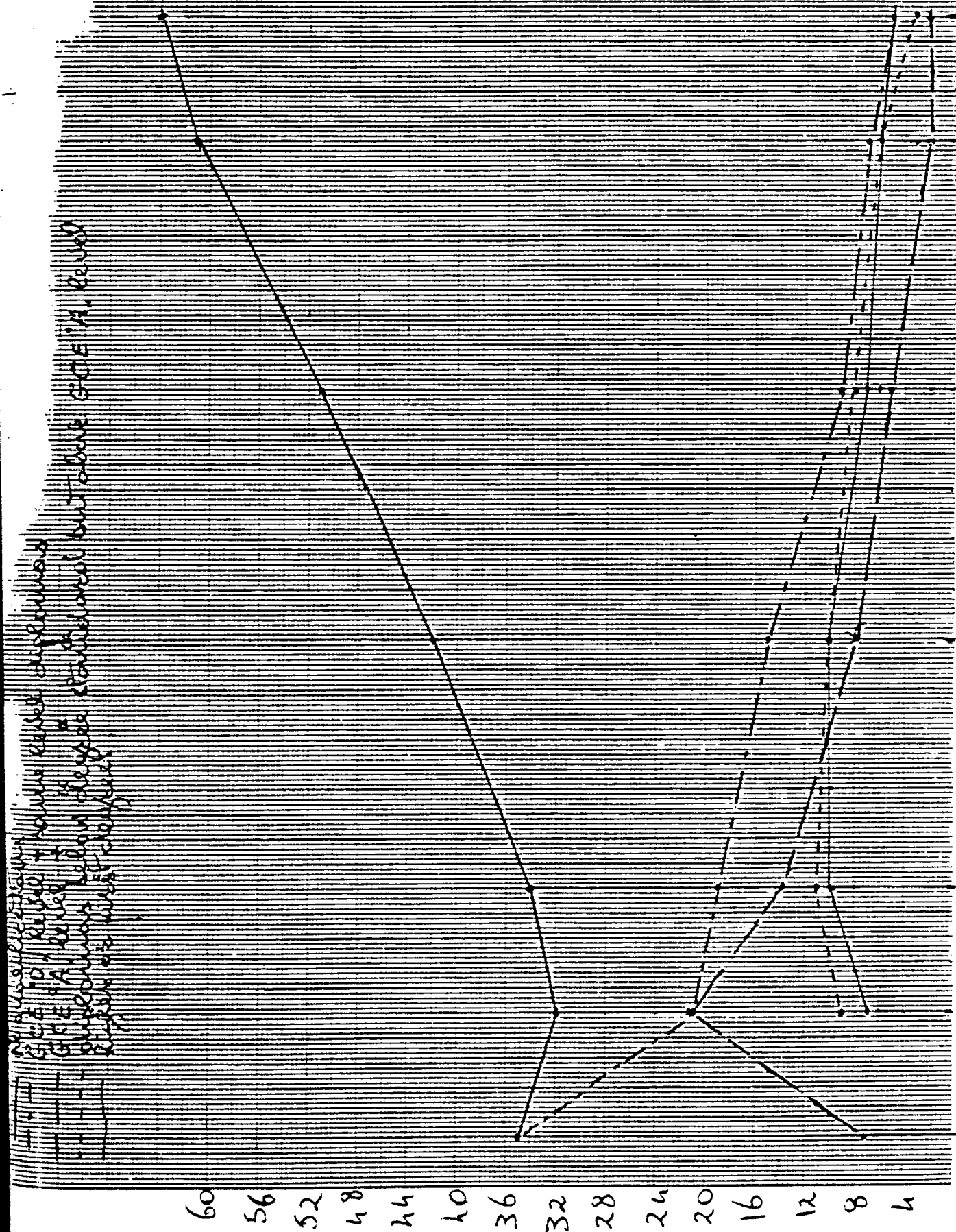
Graph 11 : General Household Survey 1971.

Population aged 15 and over by age by highest educational qualification. Females.



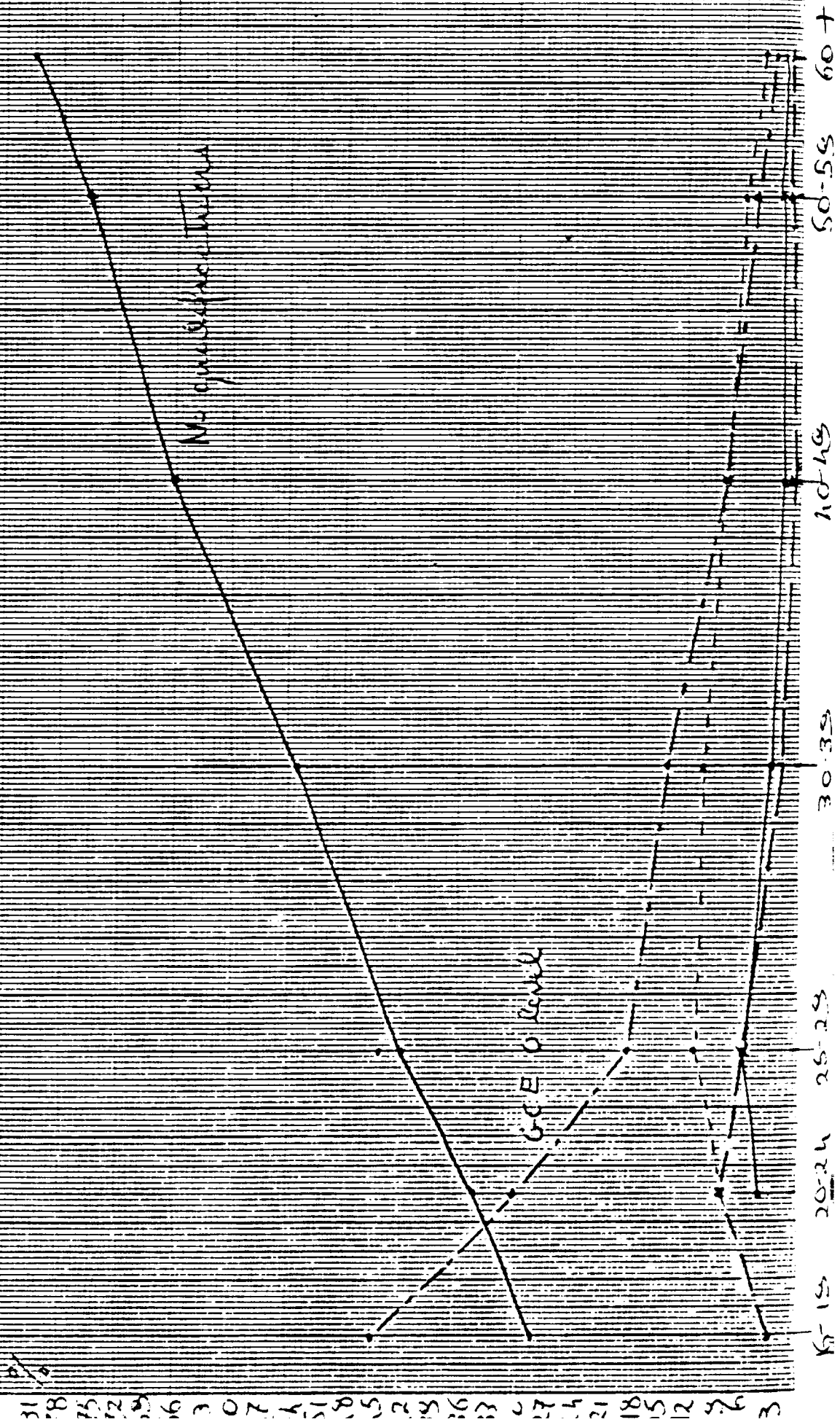
Graph 22, General Population Survey 1971.

Population aged 15 and over, by sex by highest educational attainment, percentages of age group.



Graph 13 : General Household Survey 1977.

Contraception ever used ever, by age by highest educational qualification. Percentages on age group.  
 Source: (Figures as for Graph 12)



Chapter VII: Changes in the Structure of the Labour Force  
by Level of Education. The French Case.

1. The French system of education.

The outstanding features of the French system of education, in contrast to the German one, are its centralization and the close State control, which result from the historical struggle for power between the State and the Church.

The first "school boom" in France can be said to have happened in 1832-48, when the number of the schools and of the students in secondary education almost doubled.

Compulsory education was established already in 1882 from the age of 6 to 13. The population Censuses since 1901 show a slow increase in the average terminal educational age. This progression occurs in successive waves: progression of primary education through the XIXth century (prolonged to the age of 14 in 1946); first developments in secondary education after the first world war; acceleration in higher education after 1936.<sup>1)</sup>

In 1930, the introduction of a system of grants expanded attendance to secondary education. But the ". . . greatest educational expansion in French history, that put France in the lead of Western countries"<sup>2)</sup> followed De Gaulle's Reform of 1959, when the whole system of education was re-

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1) See R. Salais, 1976

2) P. Flora, 1975, p. 135. In German in the original.

newed and access to Universities was liberalized. The Reform prolonged to 16 compulsory education; promoted the revaluation of vocational education; introduced new courses to complement secondary education and reformed the baccalaureat to grant open access to University.<sup>1)</sup>

At the moment, the system of higher education in France consists of three great blocks: Universities, the "Grandes Ecoles" and the Instituts de Hautes Etudes (see fig. VII.1).

Graph VII.1 displays the evolution of the output of the system from the end of the 50's to the mid-70's.

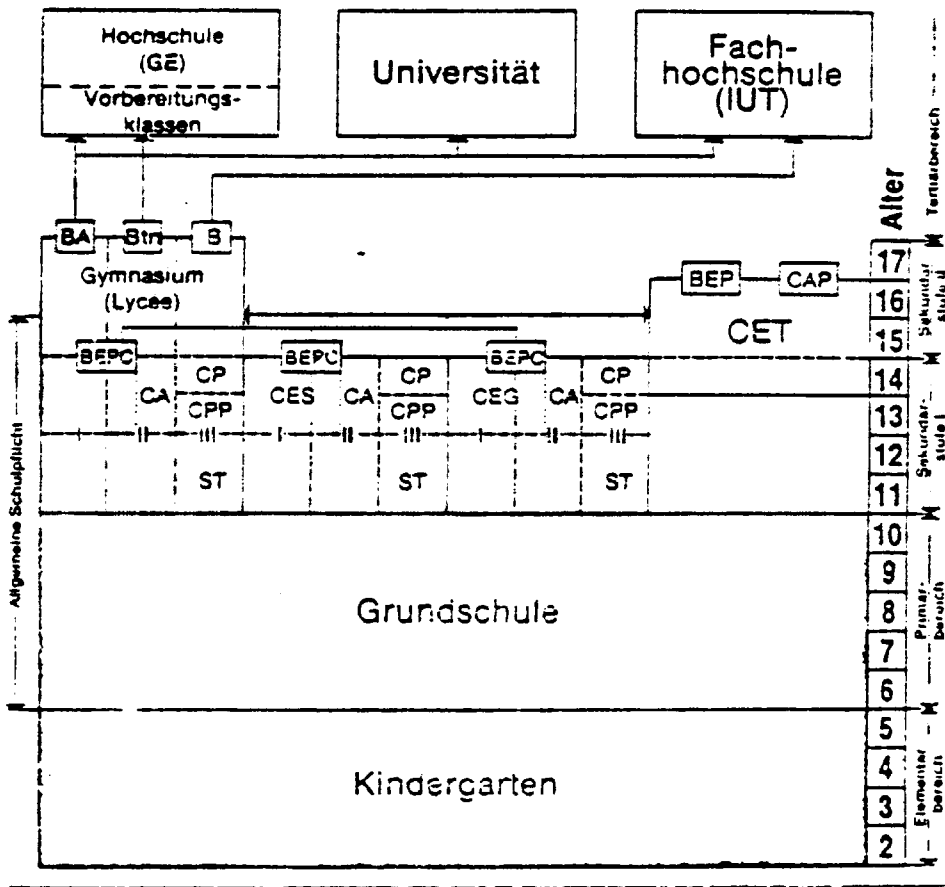
The graph pinpoints, in terms of index numbers (and, in brackets, in terms of thousands of students), the extraordinary development of secondary education first (second degré); and, more so, of higher education in the more recent period.

Secondary education comprises two main streams: a shorter stream with direct professional objectives (cycle court du deuxième degré) and full secondary education with two options, technical and general (cycle long du deuxième

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1) As a matter of fact, this law was not generally applied until 1971-72; as a consequence, the percentage of students leaving the school system at level VI or V bis of education remained very much the same as before. The institutional reforms of the early 70's essentially aimed at improving the situation of non-qualified young people, which constituted at the time about one third of the total output of the school system. These young people were therefore encouraged to follow a short cycle of vocational education.

Figure VII.1: The Structure of the System of Education in France



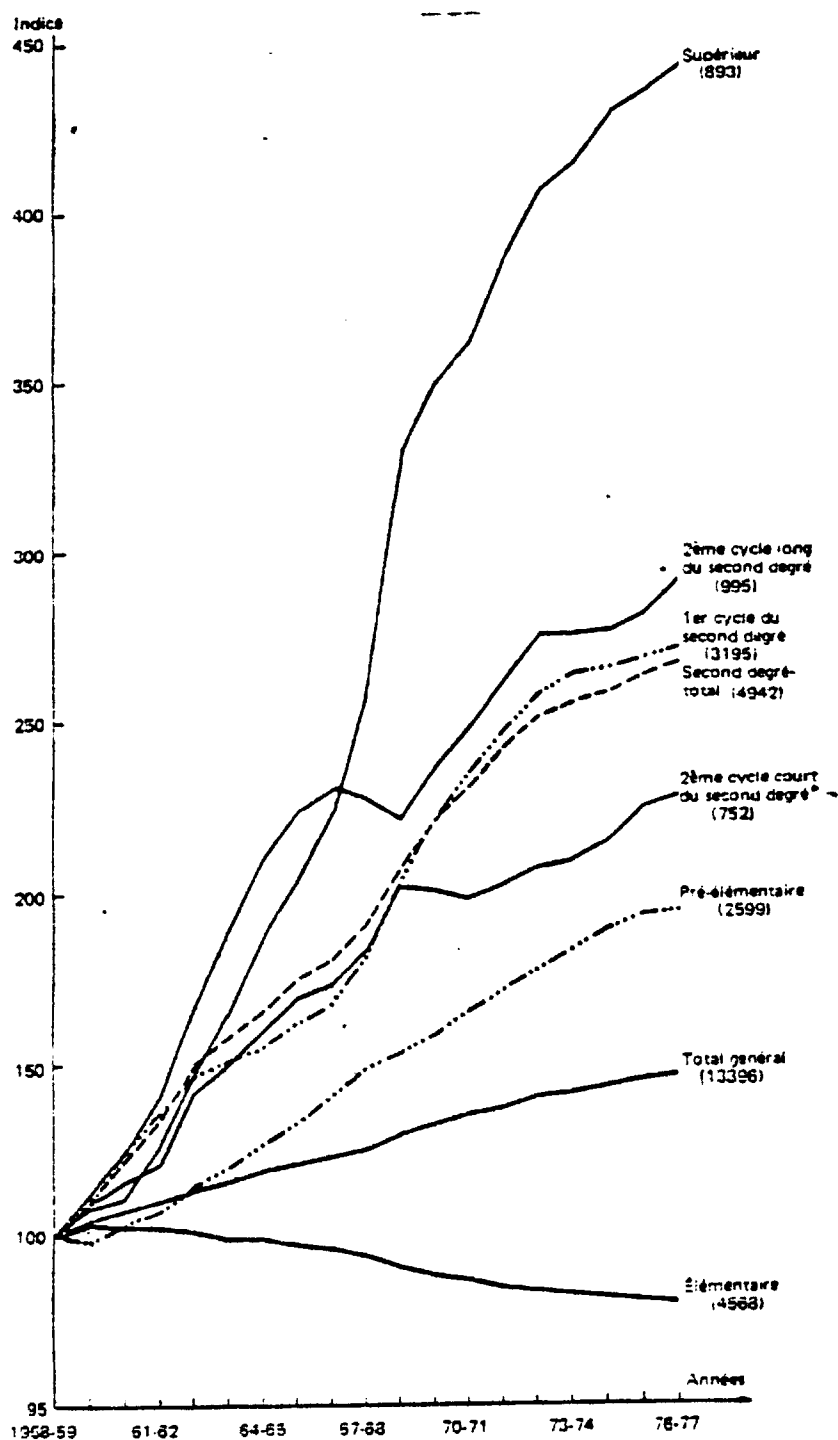
Source/ P.Flora,op.cit.

Legenda to figure :

GE = Grandes Ecoles; IUT = Institut Universitaire de Technologie; BA = Baccalaureat; Btn = Baccalauréat de technicien; B = Brévet de technicien; BEPC = Brevet d'études de premier cycle; BEP = Brevet d'études professionnelles; CAP = Certificat d'aptitude professionnelle; CES = Collège d'enseignement secondaire ; CEG = Collège d'enseignement général; CET = Collège d'enseignement technique ; CP = Classes préparatoires; CPP = Classes préprofessionnelles; CA = Classes aménagées; ST = Sections de transition.

degré). The latter leads to the bac, which in turn leads to post-secondary studies.

Graph VII.1: Evolution of the Number of Students  
(Ministry of Education and Secrétariat  
d'Etat aux Universités). In thousands.  
1958/59 - 1976/77.



Source: J.P. Bazelly, 1977



The explosion of the system of higher education in France is the follow-up, with a lag of a few years, of the expansion in secondary education (see Table VII.1). The percentage of women awarded the baccalaureat has been increasing steadily (see Table VII.2).<sup>1)</sup>

Table VII.1: Students awarded the  
baccalauréat, 1950-  
1980<sup>a</sup>

| Year | Absolute totals | Index<br>1950 = 100 |
|------|-----------------|---------------------|
| 1950 | 33.100          | 100                 |
| 1952 | 34.500          | 100                 |
| 1954 | 36.700          | 108.6               |
| 1956 | 42.300          | 125.1               |
| 1958 | 50.300          | 148.8               |
| 1960 | 61.500          | 181.9               |
| 1962 | 66.200          | 195.9               |
| 1964 | 86.700          | 256.5               |
| 1966 | 105.800         | 313                 |
| 1968 | 169.400         | 501.2               |
| 1970 | 167.300         | 495                 |
| 1972 | 184.200         | 545                 |
| 1974 | 198.700         | 587.9               |
| 1976 | 202.100         | 597.9               |
| 1978 | 215.500         | 637.5               |
| 1980 | 221.200         | 654.4               |

<sup>a</sup> To the nearest hundred.

Source: CHESNAIS, J.C. (1975) La population des bacheliers en France: estimation et projection jusqu'en 1995 (updated since 1974), *Revue Population*, No. 3, May-June.

Table VII.2:  
Percentage of female  
bachelières, 1925-  
1980

| Year | Percentage |
|------|------------|
| 1925 | 18.2       |
| 1930 | 23.6       |
| 1935 | 28.3       |
| 1940 | 33.5       |
| 1945 | 42.9       |
| 1950 | 42.0       |
| 1955 | 45.4       |
| 1960 | 48.5       |
| 1965 | 49.0       |
| 1970 | 52.7       |
| 1975 | 57.8       |
| 1980 | 56.4       |

Source: CHESNAIS, J.C. (1975) La population des bacheliers en France: estimation et projection jusqu'en 1995 (updated since 1974), *Revue Population*, No. 3, May-June.

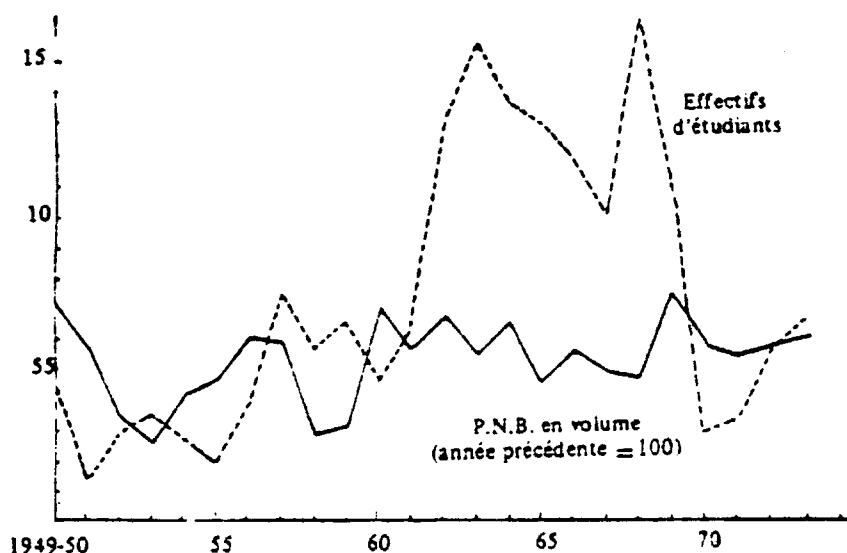
Source : reproduced from J.Vincens, 1981.

- 1) "The increase was particularly marked after 1960 for three main reasons. Of these, the first was the fact that numerous generations born after 1946 had reached the age of eighteen at which the bac is normally taken, a second was the prolongation of compulsory school attendance to the age of sixteen, which incited many young people to stay on to take the exam; the final factor was a spontaneous demand for longer education linked to a higher standard of living." J. Vincens, 1981, p. 31.

As a consequence, the period of growth of the Universities lasted fifteen years, from 1955 to 1970, with a peak between 1961 and 1967, when the yearly growth rate was some 14.2%. In particular, the beginning of term in 1968 and '69 are to be considered ". . . variations conjoncturelles, profondément perturbées par le taux de succès au bac très atypique de l'année 1968 et qui a provoqué un afflux anormal de nouveaux étudiants".<sup>1)</sup>

After 1970, this trend is reversed. The rate of growth of University students decelerates abruptly and reaches the "inflexion point of a logistic curve stretching over two centuries".<sup>2)</sup>

Graph VII.2: Yearly Growth of University Students Population (1) and of GNP in Volume (2)



1) J.C. Eicher and L. Lévy Garboua (eds.), 1979. Graph VII.2 is from page 179.

2) Ibidem, p. 144; in French in the original.

On the other hand, the University system in France is extremely selective: one over two students leave the system during the first cycle of University (first or second year of DEUG).<sup>1)</sup> Thus the caution with respect to the French figures on student enrolments and the discrepancies with respect to the data on completed courses of diploma.

#### 1.1. Sources and problems of the French data

It is useful here to examine some peculiarities of the French system of education and of the way the data are provided.

The French system of education, as well as the data on the level of education of the labour force, is broadly divided into "general" and "vocational" types of education (formation générale/formation professionnelle ou technique). General education is so structured:

1. Certificat d'études primaires (CEP), diplôme de fin d'études obligatoires (DFEO).
2. Brevet d'études du premier cycle (BEPC), brevet élémentaire (BE), brevet d'enseignement primaire supérieur (EEPS).
3. Baccalauréat (première partie probatoire ou deuxième partie) (not including the technical series F, G, H); brevet supérieur.
4. Diplôme de niveau supérieur au bac complet (diplomas delivered by a Faculty or one of the Grandes Ecoles).

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1) Y. Capdevielle and P. Grapin, 1976

Vocational and technical education is so subdivided:

1. Certificat d'aptitude professionnelle (CAP), brevet d'enseignement professionnel (BEP), examen de fin d'apprentissage artisanal (EFAA), brevets agricoles (BAA, BEA, BPA), certificat de fin de stage de la FPA (formation professionnelle des adultes) premier degré.
2. Brevet professionnelle (BP), brevet de maîtrise, certificat de fin de stage de la FPA, deuxième degré.
3. Brevet d'enseignement commercial (BEC), industriel (BEI), social (BES), hôtelier (BEH), brevet d'agent technique agricole (BATA).
4. Baccalauréat de technicien (séries F, G, H), brevet de technicien (BT, BTA).
5. BTS, DUT, DEST (brevet de technicien supérieur, diplôme universitaire de technologie, diplôme d'études supérieures techniques).
6. Diplômes paramédicaux et sociaux.
7. Other vocational diplomas (e.g. ENP école nationale professionnelle).

The level of education of the French labour force was first measured in the 1954 Census of the population, with the terminal educational age.<sup>1)</sup> In 1962 the data referred instead to the highest level of diploma achieved; in 1968 the two criteria were both used, thus

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1) See Chapter V for a critique of the indicators.

permitting a comparison with the previous results. The same two criteria have been used in the Census 1975, which I have used to conduct my own analysis of the stock of education of the French labour force in the 70's.

In the 1968 Census, people were subdivided according to whether they were still following a course of studies (and classified as "sans objet/études non terminées"), or they had not declared their diploma. In 1975, these two categories have been pooled together both for general and for vocational education. Therefore, one cannot distinguish in the data those who have no diploma whatsoever from those who have omitted to declare it.<sup>1)</sup> Moreover, in the same category the persons who are still finishing a course of study are included regardless of whether they have actually already got a diploma (they were instead classified separately in the 1962 Census). This constitutes a serious hindrance to the interpretation of the data.

In the case of the French data, in addition, the use of the indicator "highest level of diploma" is subject to particular weakness, given the high proportion of people who fail their final exams--thus leading e.g. to the inclusion of someone having failed the final bac exam in the category of "no diploma" after some 12 completed years of schooling. This case seems to be frequent for technical education (37% of men and 46% of women of the generations 1936-50 according to the Enquête Formation et Qualifica-

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1) See E. Ramaroson, Recensement général de la population de 1975 - Vol. Formation. Les collections de l'INSEE, série D, no. 71: p. 78.

tion Professionnelle (FQP) of 1970).<sup>1)</sup>

This is obviously a second caution with respect to the French data.

As to the first problem, it is to be observed that even when distinguishing between those who have not declared their diploma and those who are still studying, the first group would still include those who have no diploma and those who forgot to declare it. To solve this problem, one has to make two assumptions:

- a) people who are still studying are presumably concentrated in the younger age groups, given the minor proportion of French adults in recurrent or "permanent" education.
- b) Given the prestige attached to the possession of a diploma in French society, one can assume that the majority of those who have not responded to the question only had a low level one, if any.<sup>2)</sup>

Thus we would expect a higher proportion of the null category in those occupations or professional groupings where the average level of qualification, or the required level, is very low.

Finally, it has to be observed that this broad subdivision into "types" of education does not allow a synthetic picture of the stock of education of the French

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1) See R. Salais, *op. cit.*

2) See M. Monfort, 1972.

labour force.

Since the French system of education is "vertically" structured, it was possible to reorganize the diplomas of both types into six more or less homogeneous levels of education.<sup>1)</sup>

Levels:

- I and II higher education (license, doctorat, diplôme d'ingénieur). The data are usually not disaggregated between level I and II. In practice, students leaving the system with a diploma of second and third cycle or of the Grandes Ecoles.
- III BTS level diplomas (bac plus two years); e.g. DUT, instituteurs, DEUG, école de santé; or diploma of the Institut Universitaire de Technologie (IUT, created in 1966).
- IV Bac, BT, BS, or BEI, BEC.
- V BEPC level, i.e. students from the "short" vocational cycles and dropouts from the long vocational cycles.
- V bis CAP, EFA, FPA.
- VI compulsory education, CEP, CPA.

In addition to the Censuses 1954, 1962, 1968 and 1975, already mentioned, data on the level of education of

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1) This classification was originally devised for the French IVth Plan, and successively retained. The data are provided in this form in the 1968, but not in the 1975 Census.

the French labour force are provided in the yearly Employment Survey of the French Central Statistical Office (Enquête sur l'Emploi de l'INSEE); and the occasional Enquête Formation-Qualification Professionnelle (conducted in 1964 and 1970); and in the survey series of the CEREQ (Centre d'études et de recherches sur les qualifications) and of the CEE (centre d'études sur l'emploi).

Regular series of data are also provided by the Departments and Ministerial services in charge of education, such as the Service d'information et d'études statistiques of the Ministry of Education and of the Secrétariat d'Etat aux Universités.

2. The structure of the French labour force. Statistical analysis.

In his chapter on the French educational levels, Denison<sup>1)</sup> criticized the results of the 1954 Census by comparing them with the enrolment statistics. In view of the different biases which affected the two series of data, he adopted his own procedure to establish the level of education of the French labour force in 1954.

The distributions are shown in Table VII.3:

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1) E.G. Denison, 1967, p. 383-84.



Table VII.3

*France: Percentage Distributions of the Labor Force  
by Sex and Years of School Completed, 1954;  
Alternative Estimates*

| Years of<br>school<br>completed | Males                      |                                          |                                                              | Females                    |                                          |                                                              |
|---------------------------------|----------------------------|------------------------------------------|--------------------------------------------------------------|----------------------------|------------------------------------------|--------------------------------------------------------------|
|                                 | Derived from<br>the census | Derived from<br>enrollment<br>statistics | Adopted in<br>this study for<br>international<br>comparisons | Derived from<br>the census | Derived from<br>enrollment<br>statistics | Adopted in<br>this study for<br>international<br>comparisons |
| 0-4                             | 2.9                        | 3.0                                      | 2.7                                                          | 2.7                        | 2.8                                      | 2.6                                                          |
| 5                               | 3.9                        | 0.3                                      | 3.6                                                          | 3.6                        | 0.2                                      | 3.6                                                          |
| 6                               | 17.1                       | 0.5                                      | 15.6                                                         | 16.7                       | 0.4                                      | 16.4                                                         |
| 7                               | 23.1                       | 29.5                                     | 21.1                                                         | 23.0                       | 44.2                                     | 22.6                                                         |
| 8                               | 30.4                       | 34.0                                     | 27.8                                                         | 28.4                       | 24.7                                     | 27.9                                                         |
| 9                               | 5.0                        | 8.1                                      | 4.6                                                          | 5.6                        | 6.3                                      | 5.5                                                          |
| 10                              | 4.8                        | 4.1                                      | 4.1                                                          | 6.5                        | 5.1                                      | 5.1                                                          |
| 11                              | 4.0                        | 6.5                                      | 6.5                                                          | 5.2                        | 5.8                                      | 5.3                                                          |
| 12                              | 3.8                        | 5.4                                      | 5.4                                                          | 4.1                        | 4.3                                      | 4.3                                                          |
| 13 or more                      | 5.0                        | 8.6                                      | 8.6                                                          | 4.1                        | 6.2                                      | 6.2                                                          |
|                                 | 100.0                      | 100.0                                    | 100.0                                                        | 100.0                      | 100.0                                    | 100.0                                                        |
| Mean years                      | 7.90                       | 8.64                                     | 8.30                                                         | 7.96                       | 8.30                                     | 8.10                                                         |

Source: E.G. Denison, 1967.

The distributions exhibit a pattern consistent with the findings for other countries, i.e. a clustering of the frequencies around the legally required number of years of schooling, seven or eight at most in the case of France. It has to be noticed, when comparing the distributions for the males and for the females, how similar is the proportion of both groups staying on at school after the age of fourteen. The situation was very different only a few decades earlier: primary education was opened to girls in 1850, and secondary education in 1880. French women thus had to catch up with almost a century of discrimination.

A comprehensive study of the stock of education in France in 1968 is provided, based on a comparison of the

1962 and 1968 Censuses, by M. Monfort.<sup>1)</sup>

Tables I to VIII in the Annex to this chapter give the absolute numbers and the distributions of total population by age group for the two types of education (general/vocational or technical), respectively for the 1962 Census (Tables I to IV) and the 1968 Census (V to VIII). The incidence of diplomas of vocational or technical education over total population is fairly low and especially so for the female population.

Graph I shows the educational profiles in 1968 of a few age groups according to the criterion of the "terminal educational age". Graph II gives the cumulative percentages of two selected age groups, that is, the proportion of active persons whose terminal educational age is higher than a certain specified one.

From the analysis of these tables and graphs one can derive the following conclusions:<sup>2)</sup>

- more than half the active population had not continued education after the compulsory school-leaving age (i.e.

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1) M. Monfort, 1972. This article analyzes the French Census data of 1962 and 1968 with the same methodological approach that I have used for the data of the 1975 Census. It would be extremely interesting to report Monfort's tabulations and graphs, in order to confront them with my own. However, this would imply a repetitive account of the original article, to which I therefore refer the interested reader, limiting myself here to report the main conclusions.

2) M. Monfort, op. cit.

at the age of fourteen, or eight completed school years). Less than 10 percent of total labour force stayed on after the age of nineteen.

- On the other hand, graph I clearly indicates a progressively higher level of education for the younger generations.

The graph shows, starting from the older age groups, the higher proportion of active persons continuing their studies after the age of fourteen. The improvement in the educational profiles with decreasing age is extremely noticeable even when comparing the data for two very close age groups. If we take e.g. terminal educational age 17, 5.4% of the age group 40/44 have reached this level as against 12% for the generation 25/29 and some 15% for the 20/24 age group.

We submit that this measures the "generation leap" in secondary level education in France as far as total active population is concerned.

Graph II displays the educational profiles of two selected age groups (50-54 and 30-34), disaggregated by sex. It appears that, in the younger age group, the male predominance is reverted: more women than men stay on at school up to the age of 20-21. Thus, the "generation leap" in France appears to be more a feminine than a masculine phenomenon.

The distributions by age in 1968 of the active population by the highest diploma of general education and of

vocational or technical education confirm the conclusions about the concentration of the stock of education in the younger generations. So e.g. in 1968 more than 50 percent of the active persons with a BEPC and 65 percent of those with a CAP were less than 35 years old.

Results of previous studies indicate that there exists a close similarity between the "general" and the "vocational" age distributions.<sup>1)</sup> Further, vocational education is less than half as common as general education, and even less so for many occupational categories.

This explains our main concern, in our own empirical analysis, with levels of education in the sense of general, rather than specifically vocational or technical education. However, the development of vocational and technical education in France requires separate treatment. Since 1921, a growing proportion of each generation has attended courses of technical education (see Table VII.4): from 10.2% for men of the generations 1921/26 to 34.5% for the generations 1946/50; the same, in an even stronger progression, holds true for women.

The several institutional reforms of the educational system mainly concerned young people leaving school after the primary: with the new system, these young people turned instead towards the Collège d'Enseignement Technique (CET). Since then, the CAP (Certificat d'aptitude professionnelle), followed after 1969 by the BEP (Brevet

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1) See M. Monfort, op. cit.

Table VII.4: Attendance of Technical or Vocational Education, in percent

| Âge en années révolues<br>au 1 <sup>er</sup> janvier 1971 | Survivants<br>des générations | Hommes               |                                                     |                                              | Femmes               |                                                     |                                              |
|-----------------------------------------------------------|-------------------------------|----------------------|-----------------------------------------------------|----------------------------------------------|----------------------|-----------------------------------------------------|----------------------------------------------|
|                                                           |                               | Études<br>techniques | Formation professionnelle<br>sans études techniques |                                              | Études<br>techniques | Formation professionnelle<br>sans études techniques |                                              |
|                                                           |                               |                      | Ensemble                                            | Part<br>des contrats<br>d'appren-<br>tissage |                      | Ensemble                                            | Part<br>des contrats<br>d'appren-<br>tissage |
| 16-19 ans.....                                            | 1951-1954 .....               | 36,6                 | 22,5                                                | (75,9)                                       | 40,7                 | 3,8                                                 | (52,9)                                       |
| 20-24 ans.....                                            | 1946-1950 .....               | 34,5                 | 29,7                                                | (69,2)                                       | 43,6                 | 13,0                                                | (48,0)                                       |
| 25-29 ans.....                                            | 1941-1945 .....               | 32,9                 | 28,6                                                | (59,6)                                       | 36,7                 | 10,5                                                | (48,5)                                       |
| 30-34 ans.....                                            | 1936-1940 .....               | 25,5                 | 31,5                                                | (52,3)                                       | 31,7                 | 12,5                                                | (44,3)                                       |
| 35-39 ans.....                                            | 1931-1935 .....               | 22,7                 | 29,3                                                | (43,7)                                       | 24,2                 | 13,9                                                | (31,9)                                       |
| 40-44 ans.....                                            | 1926-1930 .....               | 16,0                 | 29,7                                                | (33,4)                                       | 17,7                 | 15,9                                                | (35,4)                                       |
| 45-49 ans.....                                            | 1921-1925 .....               | 10,2                 | 28,9                                                | (21,6)                                       | 13,2                 | 13,0                                                | (18,6)                                       |
| 50-52 ans.....                                            | 1918-1920 .....               | 10,9                 | 30,6                                                | (21,6)                                       | 3,6                  | 16,4                                                | ( 3,2)                                       |
| Ensemble                                                  |                               | 24,7                 | 28,7                                                | (48,8)                                       | 28,2                 | 12,8                                                | (26,8)                                       |

Le tableau se lit en ligne de la façon suivante : par exemple, dans la tranche d'âge 20-24 ans, 34,5 % des hommes de cette tranche d'âge ont fait des études techniques; 29,7 % ont eu une formation professionnelle sur le tas, sans études techniques et, parmi eux, 69,2 % ont bénéficié d'un contrat d'apprentissage.

Source : Enquête sur la formation et la qualification professionnelle de 1970.

d'études professionnelles) plays for the younger generations the role that the CEP (Certificat d'études primaires) used to play for the older ones.

Vocational and technical education at a level higher than the minimum is often achieved on the job, but in this case it is not certified and not recorded in the figures of diplomas. On the other hand, the percentage of failures (non-obtention of the final diploma after a completed course of studies) is, as already mentioned, particularly high for technical education.

Thus, in general, the structure of the French labour force by level of education is strongly marked by a high percentage of people with no or very low level of qualification.

It should not come as a surprise, then, that in 1969 the proportion of young people entering working life with at most level V education was 79% for men (71% for women); the same percentages in 1974 were 80% and 70% respectively (see Table IX).

However, a comparison with the persons older than 55 leaving the labour force in the same period shows that the younger generations are more qualified and more educated--especially for what concerns basic vocational or technical education--than the older ones, and, in particular, the generation of their parents (see Table VII.5).

The data from the Enquête sur l'emploi for the more recent period confirm that women in the younger age groups are more qualified than men (see Table IX).

Young women are more qualified at the education levels III and IV (BTS, DUT, DUEL, DUES, BAC, BT); whilst men are more numerous, both in absolute and in relative terms, at education levels I and II.

Table VII.5: Comparison between Inflows and Outflows from Active Life, by Level of Diploma Achieved

|                                                  | Ensemble            | Niveau de diplôme le plus élevé obtenu |                     |                           |                                 |                                       |                                                    |                                                                 | Non déclarés    |
|--------------------------------------------------|---------------------|----------------------------------------|---------------------|---------------------------|---------------------------------|---------------------------------------|----------------------------------------------------|-----------------------------------------------------------------|-----------------|
|                                                  |                     | VI<br>Aucun<br>diplôme                 | VI<br>CEP           | V<br>CAP<br>ou équivalent | V<br>BEP<br>avec ou sans<br>CAP | IV<br>Bac. ou brevet<br>de technicien | III<br>Préparatoire-<br>DUEL - DUES<br>Techn. sup. | II - I<br>Diplôme<br>équivalent<br>ou supérieur<br>à la licence |                 |
| Jeunes entrés entre<br>mars 1971 et mars<br>1972 | 954 792<br>100 %    | 190 081<br>20.0 %                      | 233 015<br>24.4 %   | 174 016<br>18.3 %         | 143 324<br>15.0 %               | 110 654<br>11.6 %                     | 47 373<br>5.0 %                                    | 49 876<br>5.2 %                                                 | 5 233<br>0.5 %  |
| Sorties des plus de<br>55 ans.                   | 428 099<br>100 %    | 205 182<br>47.9 %                      | 141 258<br>33.0 %   | 16 700<br>3.9 %           | 26 397<br>6.2 %                 | 19 330<br>4.3 %                       | 3 978<br>0.9 %                                     | 15 783<br>3.7 %                                                 | 470<br>0.1 %    |
| Ensemble des actifs,<br>en mars 1972             | 20 829 695<br>100 % | 6 358 395<br>30.5 %                    | 6 162 258<br>29.6 % | 3 382 934<br>16.2 %       | 1 847 074<br>8.9 %              | 1 744 954<br>8.4 %                    | 524 192<br>2.5 %                                   | 788 835<br>3.8 %                                                | 21 263<br>0.1 % |

1. Dont 36 116 titulaires d'un diplôme technique de niveau V.

Graphs III to XXIII in the Annex derive from the published tables of the 1975 Recensement de la Population--sondage au 1/20--Volume "Formation". They show the distribution by age group and by highest diploma of general education of the total active population above the age of 16, disaggregated by socio-professional category and sex.

The graphs, in particular, refer to a few selected socio-professional groupings for which I have calculated the percentage distributions by age group. The distributions have generally been calculated for both sexes, except when the numbers in the cells were too small (e.g. occupations where women are scarcely represented). The graphs are intended to give the visual impression of what we called the "generation leap", i.e. the break in the series of data due to the expansion of the educational system in the late 50's and 60's.

These graphs have the age groups plotted on the horizontal axis and the percentage distribution on the vertical axis. Thus they should be read as to show, for each age group, the percentage of active persons having reached a certain specified level of diploma.

The category of non-respondents (coded as N.D. = non déclaré) is also shown in the graphs. As it was to be expected, this category is highly represented in the youngest age groups (people still in a course of studies); it increases in the older age groups (coherently with the assumption of a low, if any, level of diploma for these groups); finally, it is mostly present in the occupations

with a low average level of education.

Due to this heavy "distortion" in the French data (on average 30 percent of all distributions), the other figures should also be read with caution as far as the absolute level of education is concerned. The main interest lies instead in the comparison of the distributions across generations.

In order of presentation, the graphs refer respectively to total active population, dependent workers in agriculture, miners, manual workers' total (ouvriers, ensemble), manoeuvres (labourers, unskilled), ouvriers spécialisés (semi-skilled), ouvriers qualifiés (skilled workers), contremaîtres (foremen and supervisors), employees (white-collars) total, commerce employees, office clerks (employés de bureau), technical workers (techniciens), cadres moyens.

The order of presentation is deemed to represent some form of hierarchical social order.

The distribution for the total active population is shown in three different graphs, two of them by sex and one for males and females together. The latter is rather "crowded", but it presents the advantage of a straight comparison between the sexes.

As the graphs show, up to some 40 percent of the French active population in 1975 declared to have completed at most primary level education (CEP).<sup>1)</sup>

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1) It has to be noted that the percentages are calculated on the total of the age group, without previously excluding the non-respondents.



The percentage of non-respondents for both males and females is almost as high, and even higher for the age group 40-44 (the last generation born before the war).

The specific feature of the French results, i.e. a distinctly higher level of education for women than for men, appears clearly at the higher levels of education. Both for the BEPC level and for the BAC level of diploma, the females' education profile lies above the males' profile for all but the oldest age groups.

The same is true, although on a smaller scale, for higher education diplomas, where the phenomenon is reverted after the age group 30-34. This generation of women (born after the war) benefited the most from the expansion in the system of higher education, as well as in the system of secondary education.

This confirms our earlier conclusion that the generation leap in France is essentially a females' phenomenon.

From the distribution by age and by level of education of the population at a certain point in time, one can detect the impact of the successive reforms of the system of education on the relevant age groups. Thus, by examining the data of the 1975 Census, one is able to identify the three broad generational groupings envisaged in the generation leap hypothesis, as they were shaped by the successive "waves" of educational development. Broadly speaking, the second "generation grouping" envisaged in the generation leap hypothesis can be said to ex-

tend up to the age group 55-59, which appears to be schol-  
arized at the CEP level.

The socio-professional groupings were chosen with an  
eye on giving a representative selection of the French la-  
bour force. Thus, they all consist of dependent workers in  
different sectors of the economy: blue- and white-collars  
are represented alike, as well as several blue-collar skill  
levels.

Graph VI (salariés agricoles) displays a very flat  
educational profile, as it was to be expected from an agri-  
cultural population in a declining sector. Signs of schol-  
arization at the CEP level are visible up to the age group  
35-39. The same holds true for the category of miners and  
for the total of blue-collar workers. For a small propor-  
tion of these categories, the BEPC is the highest achieve-  
ment of the younger generations (20-24).

The results are pretty much the same when examining  
the population of "manoeuvres" and of the "ouvriers spécia-  
lisés", that are at the lower end of the French hierarchy  
of blue-collar occupations. In all of these graphs, the  
percentage of non-respondents varies inversely to the per-  
centage at the CEP level, thus confirming the assumptions  
made at the outset of the chapter.

The categories of skilled workers (ouvriers qualifiés)  
and of the foremen (contremaîtres) are somewhat more schol-  
arized on their average: at CEP level for the younger  
men's generations, whilst for women small percentages of

the younger age groups are at BEPC level. Less than 10 percent of male supervisors and foremen of the age of 20-24 have completed secondary education.

White-collar workers as a group are on average more educated than their blue-collar counterparts, but it would be wrong to expect the difference to be big.

Up to some 50 percent of all employees, both males and females, declared at most CEP level education.<sup>1)</sup> The younger generations (up to 35-39) obtained the BEPC at the end of compulsory schooling.

Again, among white-collar workers, women are more qualified than men at BEPC level, but not at higher levels of education.

Finally, the two graphs for technical workers and for the "cadres moyens" (middle range executives)--who can be deemed to represent the "new working class" in France--show an increasing percentage of graduates at higher levels of education in the younger age groups: as a proportion of the total profession, they represent a small but growing minority.

### 3. The "new working class" in France.

Following the scheme applied to the analysis of the

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1) It has to be noted that the percentage of non-respondents is much lower for employees than it was for blue-collar workers. So the proportions are probably nearer the "true" proportions.

"new working class" in Great Britain, a picture of the same phenomenon in the case of France is provided, having recourse to the indicator that we have called the "density" of qualified manpower in an occupation, defined as  $\frac{\text{number of graduates}}{\text{total population}}$  in each occupation.

A synthetic picture of the evolution of this indicator in a number of occupational categories is given in Table X in the Annex, for the years 1954 through 1975.

The use of this indicator to detect the existence and the order of magnitude of the new working class in France, as noted for the case of Great Britain, is restricted for statistical reasons to a relatively minor proportion of the active population; so, e.g., graduates represented in 1954 only 2.1 percent of the active population; and, although almost trebling their proportion, only 6.1 percent in 1975.

As it was the case for Great Britain, the density of qualified manpower so defined is consistently very low in every occupational category except for Professional and Managerial workers, followed, at a long distance, by the middle level executive workers.

In both these occupational categories, women appear to be better qualified than men, a phenomenon that was evident also for some occupational categories in the case of Great Britain, but that is more consistently found in the case of France.

The proportion of graduates appears especially low in industry.

It is not possible to give an account of these facts if we do not take into consideration the contemporary demographic trends and the economic cycle.

During the 50's, the considerable needs of manpower in France hit against the limited supply of the relevant age group. The available manpower was absorbed in the economy according to the established hierarchies, in particular, distributed by level of education.

By the mid-60's, the new generations from the postwar baby-boom were offering themselves on the labour markets. During the 60's, however, labour market conditions for graduates had been gradually but steadily deteriorating. On the one hand, the demand for diploma holders and graduates had been growing more slowly than GNP, because of the concentration and rationalization policies of the enterprises and the labour-saving technical progress; on the other hand, the educational system had been developing at its own pace, with little or no concern for the occupational needs of the economy.<sup>1)</sup>

As a result, during the 60's, the supply of graduate manpower in France grew much faster than their respective demand, provoking graduate unemployment and lesser occupational chances.<sup>2)</sup>

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1) L. Lévy-Garboua in J.C. Eicher et L. Lévy-Garboua, cit. See also R. Boudon, 1977.

2) See Y. Capdevielle et P. Grapin, cit. Also CEREQ, 1975.

J. Vincens found that the increase in the number of graduates in higher level jobs remained moderate ". . . either because the level reached is already high (for engineers, secondary school and University teachers and "liberal" professions) and the preference for graduates is not strong enough to increase markedly the recruitment of younger people instead of the more mature and experienced; or because the available graduates have not been thought capable of filling the jobs".<sup>1)</sup>

To summarize, there are reasons to believe that, due to economic and institutional factors, the impact of the educational expansion on the employed labour force has been more limited than expected.

In addition, both in the case of France and in the case of Great Britain, there have been symptoms of a "devalorization" of the formal qualifications, in the sense of a decrease in the probability of finding an adequate job.

This seems to indicate the establishment, during the '60's, of a different mechanism of adjustment on the labour markets as a consequence of the educational expansion.

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1) J. Vincens, 1981: p. 54.

## Annex to Chapter VII

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Graph VIII: Total manual workers, as above (males).

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Graph XI: Semiskilled workers, as above (males).

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Graph XX: Office clerks (males).

Graph XXI: Office clerks (females).

Graph XXII: Technical workers (men).

Graph XXIII: Middle-range executives (cadres moyens).



Table I:

Population de plus de 14 ans, non scolaire, par catégorie socio-professionnelle détaillée, diplôme d'enseignement général déclaré, sexe et âge, en 1962 (suite).

## SEXES MASCULIN

Source : DFP 10/1/SF

| Age (9)                                                 | Total      | Dont ayant obtenu comme diplôme (7) |      |          |     |              |     |                                           |     |
|---------------------------------------------------------|------------|-------------------------------------|------|----------|-----|--------------|-----|-------------------------------------------|-----|
|                                                         |            | C.E.P.                              | %    | B.E.P.C. | %   | Baccalauréat | %   | Diplômes<br>supérieurs<br>au baccalauréat | %   |
| CS : 0 à 9. — Population non scolaire de plus de 14 ans |            |                                     |      |          |     |              |     |                                           |     |
| 15-24 ans.....                                          | 3 176 900  | 1 330 640                           | 41,9 | 254 500  | 8,0 | 163 140      | 5,1 | 53 040                                    | 1,7 |
| 25-34.....                                              | 3 237 480  | 1 215 700                           | 37,6 | 149 360  | 4,6 | 116 240      | 3,6 | 134 700                                   | 4,2 |
| 35-44.....                                              | 3 041 960  | 1 216 680                           | 40,0 | 146 600  | 4,8 | 111 380      | 3,7 | 124 140                                   | 4,1 |
| 45-54.....                                              | 2 523 440  | 803 340                             | 31,8 | 96 320   | 3,8 | 74 560       | 3,0 | 82 940                                    | 3,3 |
| 55 et plus.....                                         | 4 729 380  | 1 187 920                           | 25,1 | 133 720  | 2,8 | 110 220      | 2,3 | 117 940                                   | 2,5 |
| Total.....                                              | 16 709 160 | 5 754 280                           | 34,4 | 780 500  | 4,7 | 575 540      | 3,4 | 512 760                                   | 3,1 |

Population de plus de 14 ans, non scolaire, par catégorie socio-professionnelle détaillée, diplôme d'enseignement général déclaré, sexe et âge, en 1962 (suite et fin).

## SEXES FÉMININ

Table II :

Source : DFP 10/1/SF

| Age (9)                                                 | Total      | Dont ayant obtenu comme diplôme (7) |      |           |      |              |     |                                     |     |
|---------------------------------------------------------|------------|-------------------------------------|------|-----------|------|--------------|-----|-------------------------------------|-----|
|                                                         |            | C.E.P.                              | %    | B.E.P.C.  | %    | Baccalauréat | %   | Diplômes supérieurs au baccalauréat | %   |
| CS : 0 à 9. — Population non scolaire de plus de 14 ans |            |                                     |      |           |      |              |     |                                     |     |
| 15-24 ans.....                                          | 3 006 460  | 1 234 220                           | 41,1 | 330 960   | 11,0 | 154 000      | 5,1 | 39 820                              | 1,3 |
| 25-34.....                                              | 3 095 100  | 1 148 360                           | 37,1 | 231 440   | 7,5  | 125 680      | 4,1 | 63 000                              | 2,0 |
| 35-44.....                                              | 3 027 660  | 1 156 640                           | 38,2 | 191 920   | 6,3  | 113 680      | 3,8 | 47 140                              | 1,6 |
| 45-54.....                                              | 2 615 440  | 752 300                             | 28,8 | 136 060   | 5,2  | 64 540       | 2,5 | 25 480                              | 1,0 |
| 55 et plus.....                                         | 6 469 720  | 1 381 980                           | 21,4 | 255 000   | 3,9  | 94 780       | 1,5 | 22 480                              | 0,3 |
| Total.....                                              | 18 214 380 | 5 673 500                           | 31,1 | 1 145 380 | 6,3  | 552 680      | 3,0 | 197 920                             | 1,1 |

Source : Recensement  
de la population de 1968  
Volume Formation  
Paris, Impr. Nationale, 1971

TABLE III :

Population non scolaire de plus de 14 ans par catégorie socio-professionnelle détaillée, diplôme de formation professionnelle ou technique déclaré, sexe et âge, en 1962 (suite).

• SEXE MASCULIN

Source : DFP 111 SF

| Age (9)         | Total      | Dont ayant obtenu comme diplôme (7) |     |                            |     |           |      |                            |     |                     |     |
|-----------------|------------|-------------------------------------|-----|----------------------------|-----|-----------|------|----------------------------|-----|---------------------|-----|
|                 |            | E.F.A.A.                            | %   | Certificat de stage F.P.A. | %   | C.A.P.    | %    | Brevet professionnel, etc. | %   | D.E.I., D.E.C. etc. | %   |
| 15-21 ans.....  | 3 176 900  | 25 200                              | 0,8 | 17 000                     | 0,5 | 345 520   | 10,9 | 22 620                     | 0,7 | 54 080              | 1,7 |
| 25-34.....      | 3 237 480  | 31 680                              | 1,0 | 24 240                     | 0,7 | 392 260   | 12,1 | 52 800                     | 1,6 | 44 280              | 1,4 |
| 35-44.....      | 3 041 960  | 17 360                              | 0,6 | 10 040                     | 0,4 | 163 940   | 5,4  | 49 000                     | 1,6 | 32 740              | 1,1 |
| 45-54.....      | 3 523 410  | 14 040                              | 0,6 | 1 760                      | 0,1 | 74 020    | 2,9  | 32 240                     | 1,3 | 12 500              | 0,5 |
| 55 et plus..... | 4 729 380  | 15 020                              | 0,3 | 600                        | 0,0 | 38 320    | 0,8  | 32 220                     | 0,7 | 8 140               | 0,2 |
| Total.....      | 16 709 160 | 103 380                             | 0,6 | 54 440                     | 0,3 | 1 014 060 | 6,1  | 188 880                    | 1,1 | 151 740             | 0,9 |
|                 |            |                                     |     |                            |     |           |      |                            |     | 67 740              | 0,4 |
|                 |            |                                     |     |                            |     |           |      |                            |     | 287 540             | 1,7 |

Population non scolaire de plus de 14 ans par catégorie socio-professionnelle détaillée, diplôme de formation professionnelle ou technique déclaré, sexe et âge, en 1962 (suite et fin).

TABLE IV

• SEXE FÉMININ

Source : DFP 111 SF

| Age (9)         | Total      | Dont ayant obtenu comme diplôme (7) |     |                            |     |         |     |                            |     |                     |     |
|-----------------|------------|-------------------------------------|-----|----------------------------|-----|---------|-----|----------------------------|-----|---------------------|-----|
|                 |            | E.F.A.A.                            | %   | Certificat de stage F.P.A. | %   | C.A.P.  | %   | Brevet professionnel, etc. | %   | D.E.I., D.E.C. etc. | %   |
| 15-21 ans.....  | 3 006 460  | 6 400                               | 0,2 | 2 300                      | 0,1 | 187 200 | 6,2 | 16 680                     | 0,6 | 46 020              | 1,5 |
| 25-34.....      | 3 095 100  | 8 900                               | 0,3 | 2 700                      | 0,1 | 190 840 | 6,4 | 28 480                     | 0,9 | 39 520              | 1,3 |
| 35-44.....      | 3 027 660  | 5 460                               | 0,2 | 1 000                      | 0,0 | 82 000  | 2,7 | 19 640                     | 0,7 | 19 860              | 0,7 |
| 45-54.....      | 2 615 440  | 3 180                               | 0,1 | 300                        | 0,0 | 33 840  | 1,3 | 12 120                     | 0,5 | 7 060               | 0,3 |
| 55 et plus..... | 6 469 720  | 2 960                               | 0,0 | 440                        | 0,0 | 25 580  | 0,4 | 13 100                     | 0,2 | 4 300               | 0,1 |
| Total.....      | 18 214 380 | 26 900                              | 0,1 | 6 980                      | 0,0 | 527 620 | 2,9 | 92 020                     | 0,5 | 116 760             | 0,6 |
|                 |            |                                     |     |                            |     |         |     |                            |     | 9 980               | 0,1 |
|                 |            |                                     |     |                            |     |         |     |                            |     | 336 220             | 1,8 |

Source : Recensement de la population de 1968.

Table V :

Population totale de plus de 14 ans par catégorie socio-professionnelle détaillée,  
diplôme d'enseignement général déclaré, sexe et âge (suite).

## • SEXE MASCULIN

Source : DFP 329 V

| Age (9)                                           | Total      | Dont ayant obtenu comme diplôme (7) |      |          |     |              |     |                                           |     |
|---------------------------------------------------|------------|-------------------------------------|------|----------|-----|--------------|-----|-------------------------------------------|-----|
|                                                   |            | C.E.P.                              | %    | B.E.P.C. | %   | Baccalauréat | %   | Diplômes<br>supérieurs<br>au baccalauréat | %   |
| CS : 0 à 9. — Population totale de plus de 14 ans |            |                                     |      |          |     |              |     |                                           |     |
| 15-19 ans.....                                    | 2 152 380  | 484 740                             | 22,3 | 45 480   | 2,1 | 1 940        | 0,1 | 360                                       | c   |
| 20-24.....                                        | 1 947 380  | 820 020                             | 42,1 | 177 260  | 9,1 | 68 780       | 3,5 | 21 360                                    | 1,1 |
| 15-24.....                                        | 4 099 760  | 1 304 760                           | 31,8 | 222 740  | 5,4 | 70 720       | 1,7 | 21 720                                    | 0,5 |
| 25-29.....                                        | 1 488 700  | 647 140                             | 43,5 | 109 440  | 7,4 | 72 000       | 4,8 | 85 420                                    | 5,7 |
| 30-34.....                                        | 1 596 700  | 679 920                             | 42,6 | 91 620   | 5,7 | 59 300       | 3,7 | 90 800                                    | 5,7 |
| 25-34.....                                        | 3 085 480  | 1 327 060                           | 43,0 | 201 060  | 6,5 | 131 300      | 4,3 | 176 220                                   | 5,7 |
| 35-39.....                                        | 1 712 400  | 690 600                             | 40,3 | 89 680   | 5,2 | 58 200       | 3,4 | 83 140                                    | 4,9 |
| 40-44.....                                        | 1 679 840  | 765 160                             | 45,5 | 90 500   | 5,4 | 60 500       | 3,6 | 82 500                                    | 4,9 |
| 35-44.....                                        | 3 392 240  | 1 455 760                           | 42,9 | 180 180  | 5,3 | 118 700      | 3,5 | 165 640                                   | 4,9 |
| 45-49.....                                        | 1 533 180  | 684 040                             | 44,6 | 95 340   | 6,2 | 60 620       | 4,0 | 73 340                                    | 4,8 |
| 50-54.....                                        | 957 000    | 379 480                             | 39,7 | 53 140   | 5,6 | 36 100       | 3,8 | 43 380                                    | 4,5 |
| 45-54.....                                        | 2 490 180  | 1 063 520                           | 42,7 | 148 480  | 6,0 | 96 720       | 3,9 | 116 720                                   | 4,7 |
| 55-64.....                                        | 2 612 180  | 869 640                             | 33,3 | 115 660  | 4,4 | 68 040       | 2,6 | 97 360                                    | 3,7 |
| 65-74.....                                        | 1 745 220  | 535 440                             | 30,7 | 65 000   | 3,7 | 42 940       | 2,5 | 54 540                                    | 3,1 |
| 75 et plus.....                                   | 811 360    | 236 580                             | 29,2 | 29 600   | 3,6 | 19 080       | 2,4 | 26 600                                    | 3,3 |
| 65 et plus.....                                   | 2 556 580  | 772 020                             | 30,2 | 94 600   | 3,7 | 62 020       | 2,4 | 81 140                                    | 3,2 |
| Total.....                                        | 18 236 420 | 6 792 760                           | 37,2 | 962 720  | 5,3 | 547 500      | 3,0 | 658 800                                   | 3,6 |

Voir les notes en tête des tableaux.

Population totale de plus de 14 ans par catégorie socio-professionnelle détaillée  
diplôme d'enseignement général déclaré, sexe et âge (suite et fin).

## • SEXE FÉMININ

Table VI :

Source : DFP 329 V

| Age (9)                                           | Total      | Dont ayant obtenu comme diplôme (7) |      |           |      |              |     |                                           |     |
|---------------------------------------------------|------------|-------------------------------------|------|-----------|------|--------------|-----|-------------------------------------------|-----|
|                                                   |            | C.E.P.                              | %    | B.E.P.C.  | %    | Baccalauréat | %   | Diplômes<br>supérieurs<br>au baccalauréat | %   |
| CS : 0 à 9. — Population totale de plus de 14 ans |            |                                     |      |           |      |              |     |                                           |     |
| 15-19 ans.....                                    | 2 079 800  | 424 240                             | 20,4 | 61 740    | 3,0  | 3 440        | 0,2 | 300                                       | c   |
| 20-24.....                                        | 1 842 820  | 764 280                             | 41,5 | 253 040   | 13,7 | 99 440       | 5,4 | 20 500                                    | 1,1 |
| 15-24.....                                        | 3 922 620  | 1 188 520                           | 30,3 | 314 780   | 8,0  | 102 880      | 2,6 | 20 800                                    | 0,5 |
| 25-29.....                                        | 1 389 680  | 610 420                             | 43,9 | 162 180   | 11,7 | 100 140      | 7,2 | 58 100                                    | 4,2 |
| 30-34.....                                        | 1 515 240  | 637 860                             | 42,1 | 149 240   | 9,8  | 75 680       | 5,0 | 46 340                                    | 3,1 |
| 25-34.....                                        | 2 904 920  | 1 248 280                           | 43,0 | 311 420   | 10,7 | 175 820      | 6,1 | 104 440                                   | 3,6 |
| 35-39.....                                        | 1 649 060  | 683 100                             | 41,4 | 141 520   | 8,6  | 65 200       | 4,0 | 38 220                                    | 2,3 |
| 40-44.....                                        | 1 656 060  | 772 240                             | 46,6 | 127 920   | 7,7  | 66 780       | 4,0 | 33 920                                    | 2,0 |
| 35-44.....                                        | 3 305 120  | 1 455 340                           | 44,0 | 269 440   | 8,2  | 131 980      | 4,0 | 72 140                                    | 2,2 |
| 45-49.....                                        | 1 561 680  | 675 660                             | 43,3 | 132 900   | 8,5  | 58 780       | 3,8 | 28 160                                    | 1,8 |
| 50-54.....                                        | 1 016 220  | 374 260                             | 36,8 | 79 000    | 7,8  | 33 280       | 3,3 | 14 980                                    | 1,5 |
| 45-54.....                                        | 2 577 900  | 1 049 920                           | 40,7 | 211 900   | 8,2  | 92 060       | 3,6 | 43 140                                    | 1,7 |
| 55-64.....                                        | 2 889 580  | 901 640                             | 31,2 | 190 380   | 6,6  | 53 740       | 1,9 | 25 760                                    | 0,9 |
| 65-74.....                                        | 2 410 160  | 669 340                             | 27,8 | 143 420   | 6,0  | 34 700       | 1,4 | 12 780                                    | 0,5 |
| 75 et plus.....                                   | 1 713 280  | 415 820                             | 24,3 | 86 560    | 5,1  | 18 240       | 1,1 | 5 340                                     | 0,3 |
| 65 et plus.....                                   | 4 123 440  | 1 085 160                           | 26,3 | 229 980   | 5,6  | 52 940       | 1,3 | 18 120                                    | 0,4 |
| Total.....                                        | 19 723 580 | 6 928 860                           | 35,1 | 1 527 900 | 7,7  | 609 420      | 3,1 | 284 400                                   | 1,4 |

Source : Recensement  
de la population de 1968.  
Vol. "Formation". -  
Paris, Imprimerie Nationale, 1974

TABLE VII

Population totale de plus de 14 ans par catégorie socio-professionnelle détaillée, diplôme de formation professionnelle ou technique déclaré, sexe et âge (suite).

• SEXE MASCULIN

1968

Source : DFP 330 V

| Age<br>(1)                                       | Total       | Dont ayant obtenu comme diplôme (7) |     |                            |     |           |      |                            |     |                     |     | Diplôme technique ou B.N.P., B.T., B.T.S. |     |         | Autres diplômes professionnels |  |  |
|--------------------------------------------------|-------------|-------------------------------------|-----|----------------------------|-----|-----------|------|----------------------------|-----|---------------------|-----|-------------------------------------------|-----|---------|--------------------------------|--|--|
|                                                  |             | E.P.A.A.                            | %   | Certificat de stage P.P.A. | %   | C.A.P.    | %    | Brevet professionnel, etc. | %   | B.E.T., B.E.C. etc. | %   |                                           |     |         |                                |  |  |
| CS 10 à 9. — Population totale de plus de 14 ans |             |                                     |     |                            |     |           |      |                            |     |                     |     |                                           |     |         |                                |  |  |
| 15-19 ans.....                                   | 2 152 300   | 11 780                              | 0,5 | 6 260                      | 0,3 | 117 760   | 5,5  | 2 680                      | 0,1 | 7 900               | 0,4 | 700                                       | c   | 6 500   | 0,3                            |  |  |
| 20-24.....                                       | 1 947 300   | 31 400                              | 1,6 | 30 040                     | 1,5 | 423 020   | 21,7 | 23 100                     | 1,2 | 57 960              | 3,0 | 22 400                                    | 1,2 | 41 000  | 2,1                            |  |  |
| 15-24.....                                       | 4 099 760   | 43 180                              | 1,1 | 36 300                     | 0,9 | 510 780   | 13,2 | 25 780                     | 0,6 | 65 860              | 1,6 | 23 260                                    | 0,6 | 47 900  | 1,2                            |  |  |
| 25-29.....                                       | 1 408 700   | 20 140                              | 1,4 | 24 720                     | 1,7 | 313 780   | 21,1 | 27 660                     | 1,9 | 53 500              | 3,6 | 24 800                                    | 1,7 | 52 140  | 3,5                            |  |  |
| 30-34.....                                       | 1 596 700   | 19 060                              | 1,2 | 21 500                     | 1,3 | 284 420   | 17,8 | 27 800                     | 1,7 | 43 360              | 2,7 | 20 640                                    | 1,3 | 55 840  | 3,5                            |  |  |
| 25-34.....                                       | 3 085 480   | 39 200                              | 1,3 | 46 220                     | 1,5 | 598 200   | 19,4 | 55 540                     | 1,8 | 96 860              | 3,1 | 45 440                                    | 1,5 | 107 980 | 3,5                            |  |  |
| 35-39.....                                       | 1 712 400   | 18 440                              | 1,1 | 15 420                     | 0,9 | 225 900   | 13,2 | 28 800                     | 1,7 | 33 440              | 2,0 | 17 760                                    | 1,0 | 57 560  | 3,4                            |  |  |
| 40-44.....                                       | 1 679 840   | 11 200                              | 0,7 | 10 920                     | 0,7 | 141 100   | 8,4  | 28 180                     | 1,7 | 26 120              | 1,6 | 16 600                                    | 1,0 | 57 810  | 3,4                            |  |  |
| 35-44.....                                       | 3 392 240   | 29 640                              | 0,9 | 26 340                     | 0,8 | 367 080   | 10,8 | 56 980                     | 1,7 | 59 560              | 1,8 | 34 360                                    | 1,0 | 115 400 | 3,4                            |  |  |
| 45-49.....                                       | 1 533 180   | 10 460                              | 0,7 | 5 800                      | 0,3 | 96 300    | 6,3  | 24 560                     | 1,6 | 24 360              | 1,6 | 12 960                                    | 0,8 | 51 340  | 3,3                            |  |  |
| 50-54.....                                       | 957 000     | 6 740                               | 0,7 | 1 800                      | 0,2 | 49 580    | 5,2  | 14 200                     | 1,5 | 11 560              | 1,2 | 6 800                                     | 0,7 | 29 100  | 3,0                            |  |  |
| 45-54.....                                       | 2 490 180   | 17 200                              | 0,7 | 7 600                      | 0,3 | 145 960   | 5,9  | 38 760                     | 1,6 | 35 920              | 1,4 | 19 760                                    | 0,8 | 80 440  | 3,2                            |  |  |
| 55-64.....                                       | 2 613 180   | 15 910                              | 0,6 | 1 640                      | 0,1 | 80 000    | 3,1  | 28 160                     | 1,1 | 15 620              | 0,6 | 14 760                                    | 0,6 | 60 700  | 2,3                            |  |  |
| 65-74.....                                       | 1 745 220   | 5 960                               | 0,3 | 520                        | c   | 19 180    | 1,1  | 10 400                     | 0,6 | 5 820               | 0,3 | 6 340                                     | 0,4 | 30 280  | 1,7                            |  |  |
| 75 et plus.....                                  | 811 360     | 2 220                               | 0,3 | 120                        | c   | 5 920     | 0,7  | 3 740                      | 0,5 | 2 020               | 0,2 | 2 780                                     | 0,3 | 12 600  | 1,6                            |  |  |
| 65 et plus.....                                  | 2 556 580   | 8 180                               | 0,3 | 640                        | c   | 25 100    | 1,0  | 14 140                     | 0,6 | 7 840               | 0,3 | 9 120                                     | 0,4 | 42 880  | 1,7                            |  |  |
| Total.....                                       | 18 236 4200 | 153 340                             | 0,8 | 118 740                    | 0,7 | 1 757 120 | 9,6  | 219 360                    | 1,2 | 281 660             | 1,5 | 146 700                                   | 0,8 | 455 300 | 2,5                            |  |  |

Source : Recensement de la population de 1968. Volume "Formation". Paris. Impr. Nationale, 1971 -

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● **SEXE FÉMININ**

Source : DFP 330 V

Source: Recensement  
de la population de  
1968. Volume "Formation"  
Paris, Impr. Nationale.  
1971.

Table IX : Young people entering working life, by level of diploma, 1969-74 (%).

| Niveau de diplôme le plus élevé obtenu                                                    | 1969  | 1970  | 1971  | 1972  | 1973  | 1974  |
|-------------------------------------------------------------------------------------------|-------|-------|-------|-------|-------|-------|
| <b>HOMMES</b>                                                                             |       |       |       |       |       |       |
| Aucun diplôme.....                                                                        | 18,6  | 19,5  | 19,1  | 19,9  | 18,1  | 22,3  |
| CEP.....                                                                                  | 25,5  | 24,5  | 25,3  | 23,4  | 22,0  | 20,0  |
| CAP ou équivalent.....                                                                    | 25,4  | 24,9  | 23,6  | 22,4  | 23,7  | 23,6  |
| BEPC avec ou sans CAP.....                                                                | 9,5   | 12,0  | 10,8  | 13,1  | 14,1  | 14,0  |
| Baccalauréat ou brevet de technicien....                                                  | 11,7  | 10,3  | 10,8  | 10,4  | 10,3  | 10,8  |
| Propédeutique, DUEL, DUES, diplôme d'enseignement technique supérieur...                  | 3,5   | 3,9   | 4,2   | 4,3   | 4,5   | 4,0   |
| Diplôme équivalent ou supérieur à la licence et diplôme de sortie d'une grande école..... | 4,7   | 4,3   | 5,7   | 5,9   | 7,0   | 4,8   |
| Non déclaré.....                                                                          | 1,1   | 0,6   | 0,5   | 0,6   | 0,1   | 0,5   |
| <b>ENSEMBLE</b> .....                                                                     | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 |
| <b>FEMMES</b>                                                                             |       |       |       |       |       |       |
| Aucun diplôme.....                                                                        | 16,7  | 19,0  | 16,8  | 18,5  | 20,1  | 17,7  |
| CEP.....                                                                                  | 24,7  | 26,9  | 25,9  | 25,0  | 23,3  | 21,2  |
| CAP ou équivalent.....                                                                    | 16,6  | 14,1  | 14,9  | 14,1  | 12,8  | 12,2  |
| BEPC avec ou sans CAP.....                                                                | 13,1  | 13,6  | 14,2  | 17,1  | 20,2  | 19,0  |
| Baccalauréat ou brevet de technicien....                                                  | 17,1  | 16,0  | 15,5  | 14,1  | 12,9  | 16,9  |
| Propédeutique, DUEL, DUES, diplôme d'enseignement technique supérieur...                  | 7,2   | 8,1   | 7,7   | 6,4   | 5,7   | 8,8   |
| Diplôme équivalent ou supérieur à la licence et diplôme de sortie d'une grande école..... | 3,9   | 4,1   | 4,8   | 4,5   | 4,7   | 4,0   |
| Non déclaré.....                                                                          | 0,7   | 1,2   | 0,2   | 0,3   | 0,3   | 0,2   |
| <b>ENSEMBLE</b> .....                                                                     | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 |
| <b>LES DEUX SEXES</b>                                                                     |       |       |       |       |       |       |
| Aucun diplôme.....                                                                        | 17,8  | 19,3  | 18,3  | 19,4  | 18,9  | 20,5  |
| CEP.....                                                                                  | 25,2  | 25,5  | 25,5  | 24,1  | 22,5  | 20,4  |
| CAP ou équivalent.....                                                                    | 21,7  | 20,4  | 20,3  | 19,1  | 19,4  | 19,3  |
| BEPC avec ou sans CAP.....                                                                | 11,0  | 12,7  | 12,1  | 14,7  | 16,6  | 15,9  |
| Baccalauréat ou brevet de technicien....                                                  | 14,0  | 11,4  | 12,5  | 11,3  | 11,4  | 13,1  |
| Propédeutique, DUEL, DUES, diplôme d'enseignement technique supérieur...                  | 5,1   | 5,7   | 5,5   | 5,1   | 5,0   | 5,9   |
| Diplôme équivalent ou supérieur à la licence et diplôme de sortie d'une grande école..... | 4,3   | 4,2   | 5,4   | 5,3   | 6,1   | 4,5   |
| Non déclaré.....                                                                          | 0,9   | 0,8   | 0,4   | 0,5   | 0,1   | 0,4   |
| <b>Ensemble</b> .....                                                                     | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 | 100,0 |

N.B. — A la suite d'une erreur d'exploitation les répartitions selon le niveau de diplôme ne sont pas disponibles pour l'enquête de 1975.

Source : Enquêtes sur l'emploi de 1968 à 1975 (série redressée).

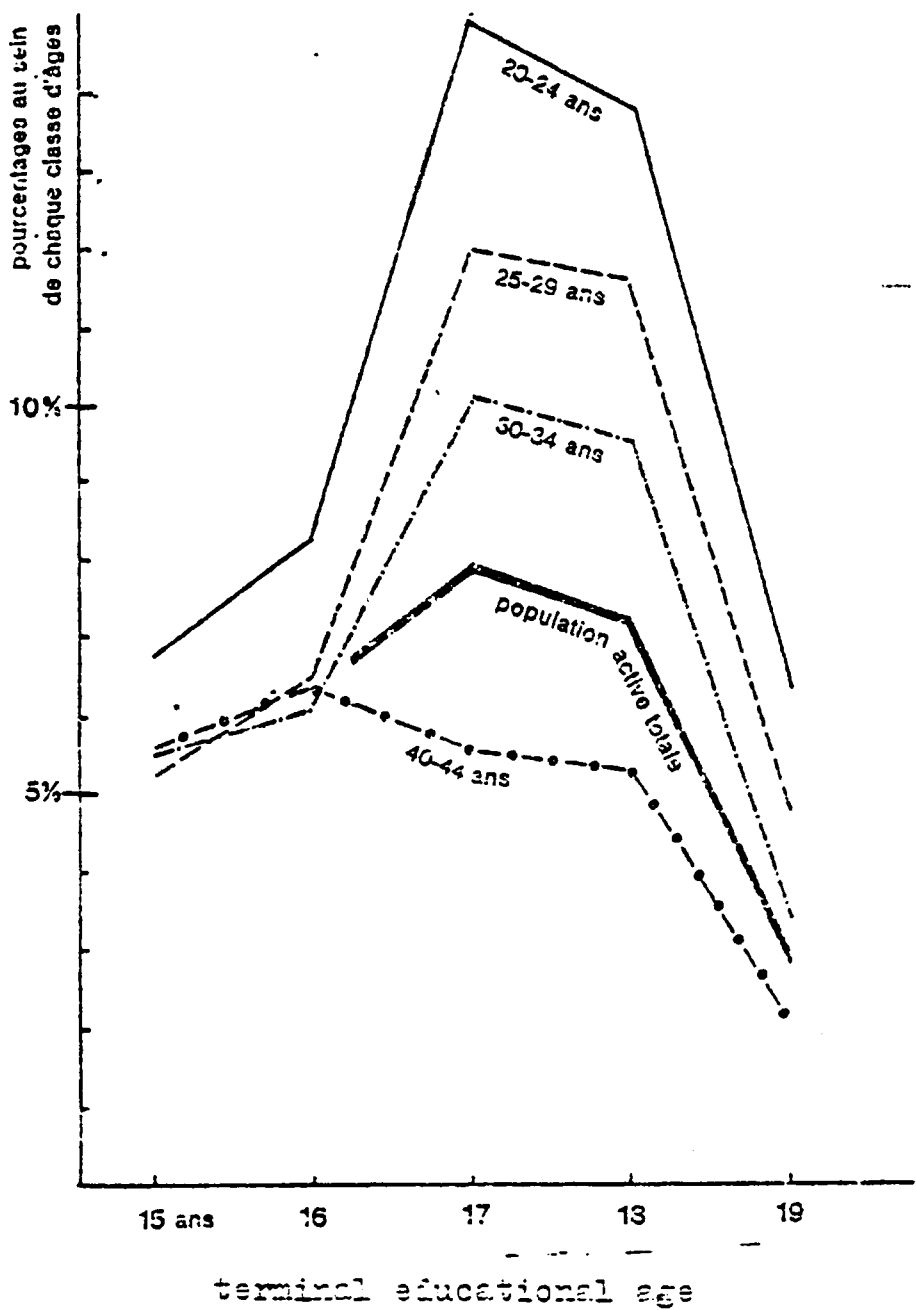
Table X : Density of qualified manpower, selected occupations, 1954-75.

| Occupational category                       |   | DENSITY OF QUALIFIED MANPOWER |      |      |      |
|---------------------------------------------|---|-------------------------------|------|------|------|
|                                             |   | 1954                          | 1962 | 1968 | 1975 |
| Farmers                                     | M | -                             | 0.2  | 0.4  | 0.6  |
|                                             | W | -                             | -    | 0.1  | 0.3  |
|                                             | T | 0.14                          | 0.16 | 0.2  | 0.5  |
| Agric. workers                              | M | -                             | 0.1  | 0.2  | 0.3  |
|                                             | W | -                             | -    | 0.2  | 0.2  |
|                                             | T | 0.05                          | 0.09 | 0.2  | 0.3  |
| Profess. manager. workers                   | M | -                             | 44.4 | 49.6 | 52.6 |
|                                             | W | -                             | 48.6 | 52.8 | 60.7 |
|                                             | T | 47.8                          | 45.1 | 50.2 | 54.5 |
| Middle level execut.                        | M | -                             | 5.9  | 7.7  | 11.8 |
|                                             | W | -                             | 6.2  | 8.9  | 13.8 |
|                                             | T | 5.6                           | 6    | 8.2  | 12.8 |
| Clerical workers                            | M | -                             | 1.2  | 1.5  | 2.5  |
|                                             | W | -                             | 0.5  | 0.6  | 1.1  |
|                                             | T | 0.87                          | 0.7  | -    | 1.8  |
| Industr. workers                            | M | -                             | 0.1  | 0.2  | 0.3  |
|                                             | W | -                             | 0.1  | 0.2  | 0.4  |
|                                             | T | 0.09                          | 0.1  | 0.2  | 0.3  |
| Service person.                             | M | -                             | 0.5  | 0.5  | 1.5  |
|                                             | W | -                             | 0.1  | 0.2  | 0.6  |
|                                             | T | 0.05                          | 0.2  | 0.3  | 0.8  |
| Other categ.                                | M | -                             | 3.9  | 5.2  | 6.2  |
|                                             | W | -                             | 3.1  | 4.1  | 6.3  |
|                                             | T | 3                             | 3.7  | 5    | 6.2  |
| <u>Density over total active population</u> |   |                               |      |      |      |
| M                                           |   | -                             | 3.2  | 4.3  | 6.5  |
| W                                           |   | -                             | 1.7  | 2.8  | 5.5  |
| T                                           |   | 2.1                           | 2.6  | 3.8  | 6.1  |

Source: INSEE, Recensements de la population 1954, 62, 68 and 75.

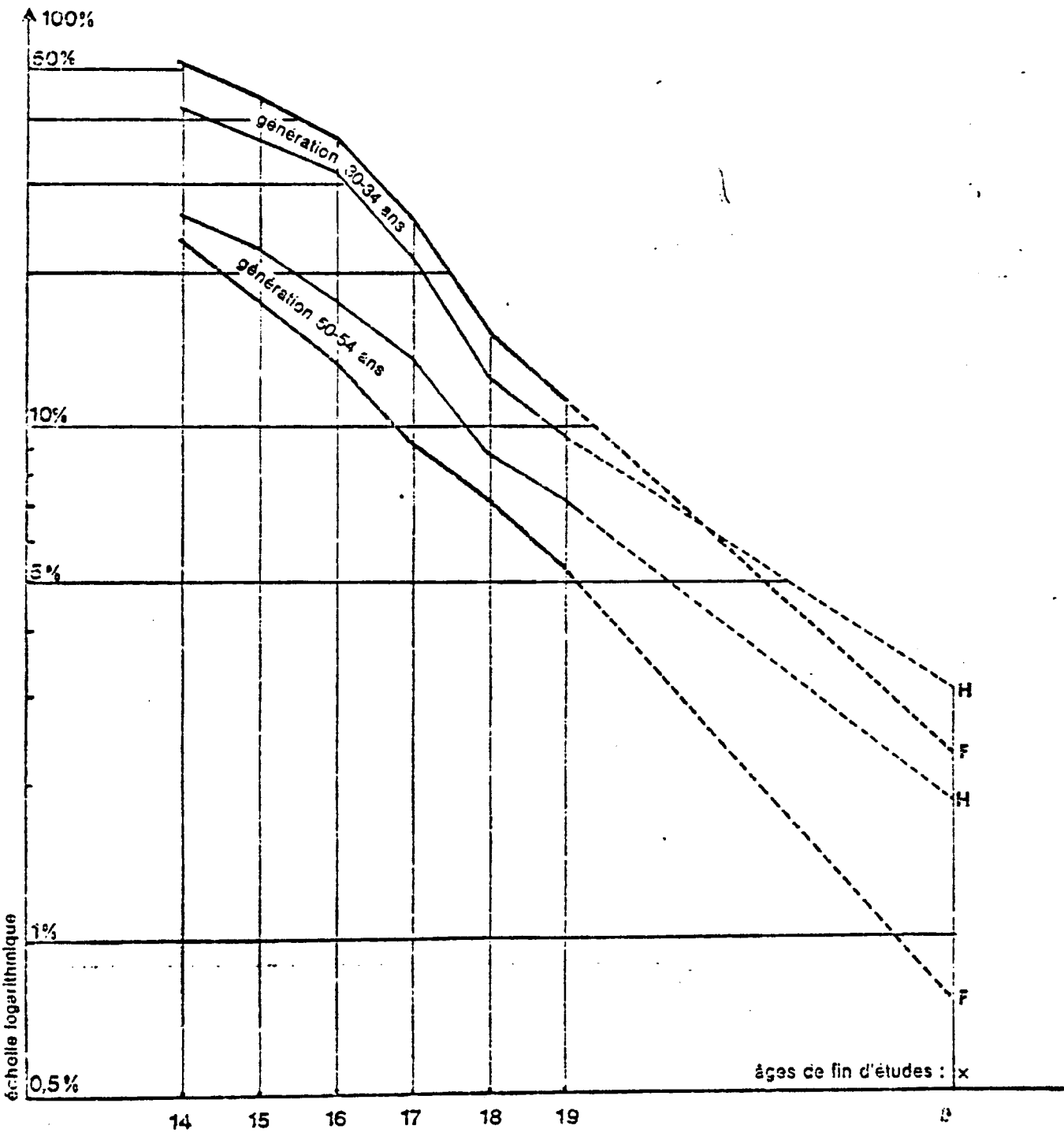
Volumes Population active and Formation.

Graph I : Educational profile of four age groups according to terminal educational age (men and women together) 1968.



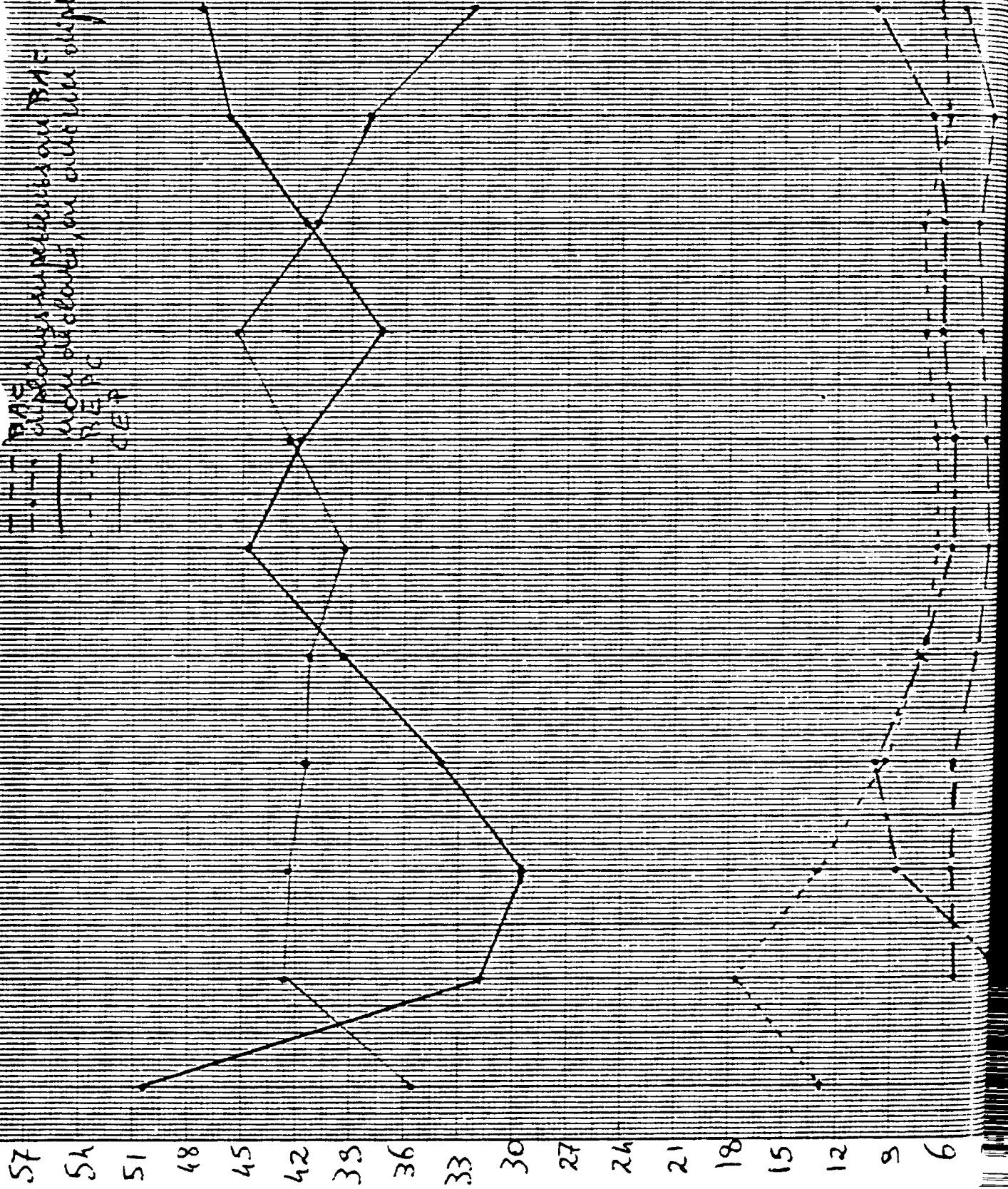


Graph II : Cumulative distribution, by terminal educational age, by age group (proportion of active persons, by age group, and by sex, whose terminal educational age is higher than x).1968.

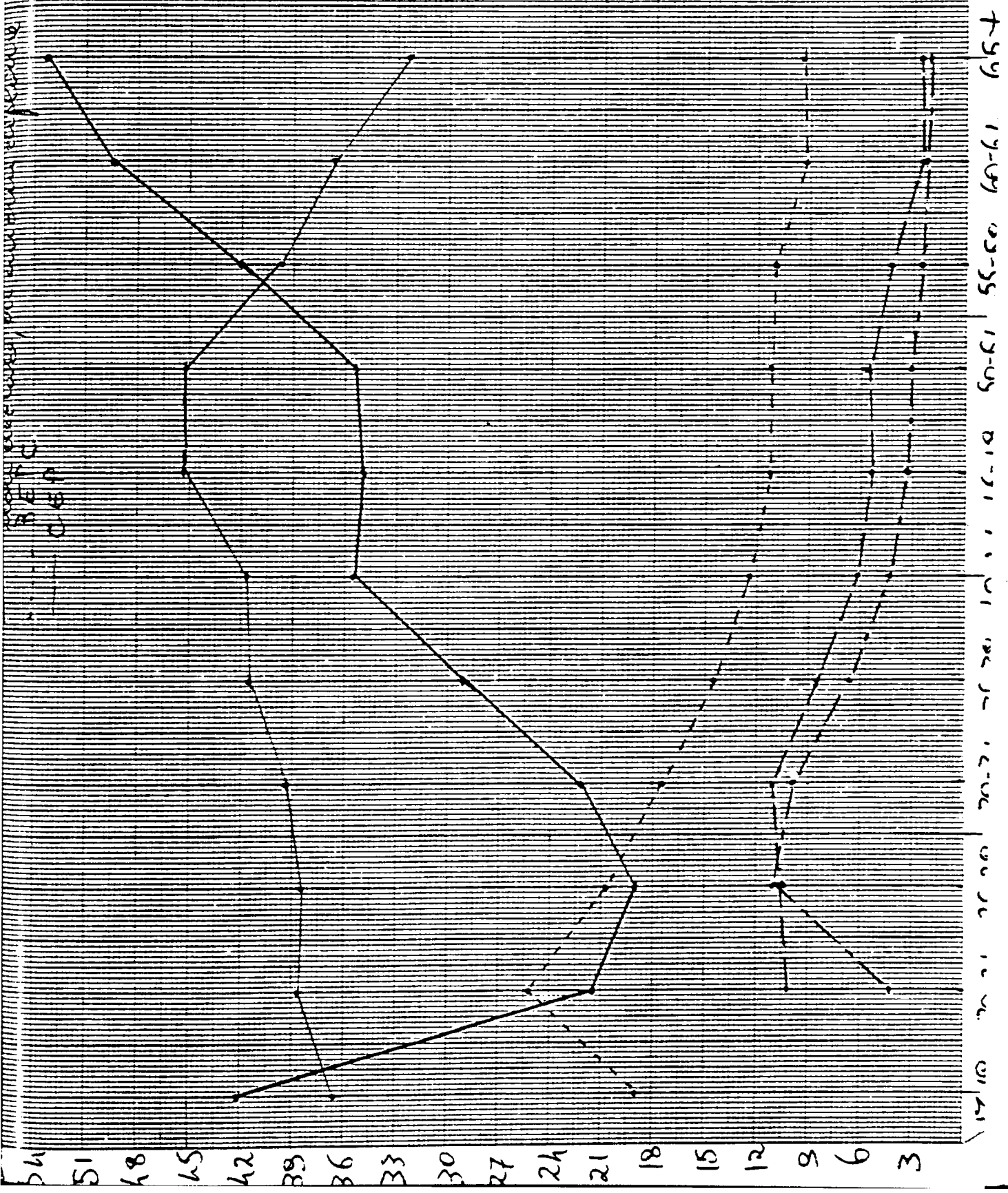


1975-1976, Total active population 5000  
 The following table shows the results of general census  
 1975, and the age distribution of the total population.

The following table shows the results of general census  
 1975, and the age distribution of the total population.



Sample 11: Penetration of water into soil from 10  
 cm depth. Higher water content of general absorption,  
 but not of penetration on the ground surface.

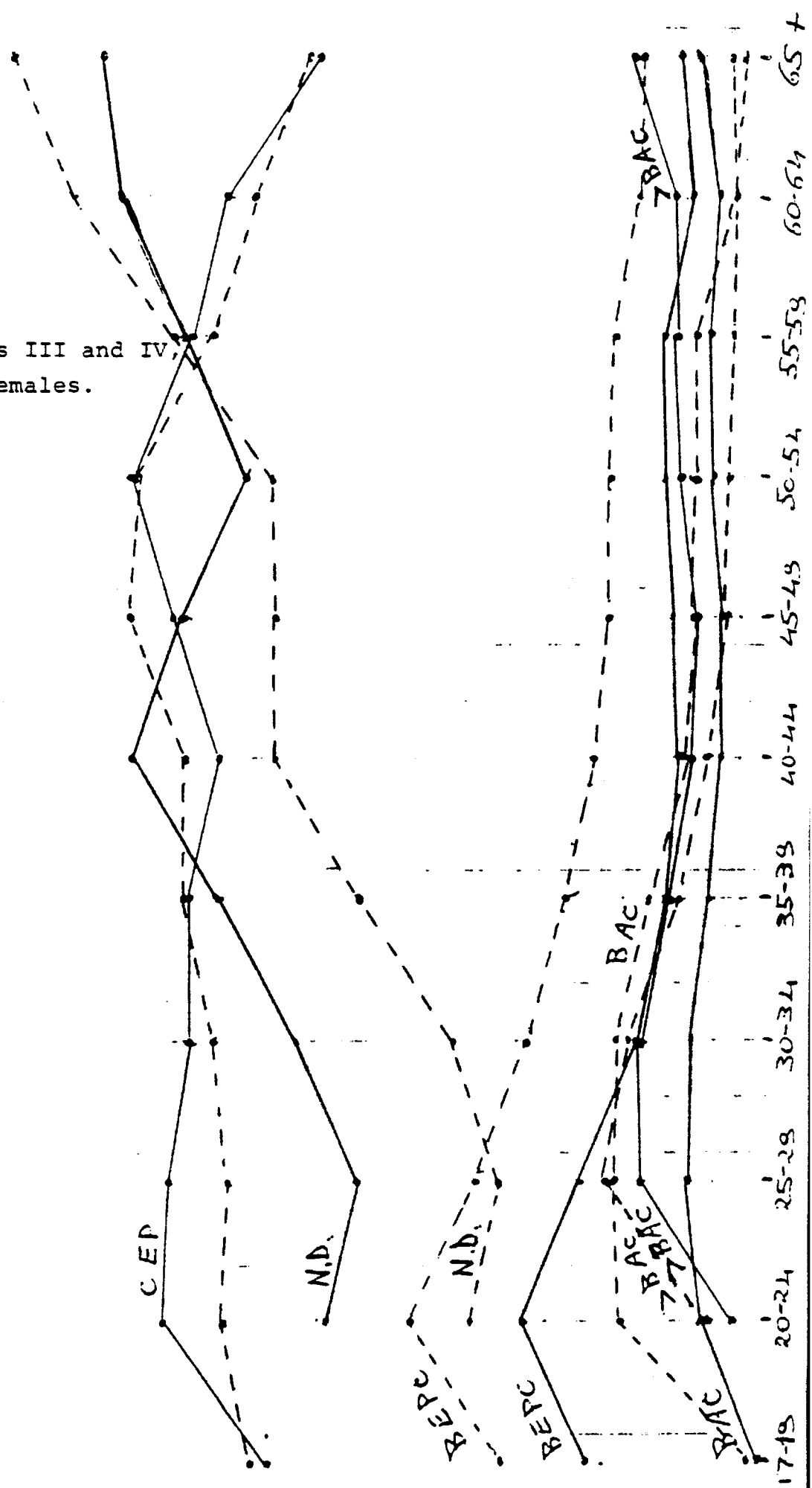


72  
68  
64  
60  
56  
52  
48  
44  
40  
36  
32  
28  
24  
20  
16  
12  
8  
4

Males  
Females

—  
---

Graph V :  
As in graphs III and IV,  
males and females.



Graph VI: Census 1975.

Agricultural workers, by highest  
declared diploma of general edu-  
cation, and age. Males.

MA  
BAC

84  
81  
78  
75  
72  
69  
66  
63  
60  
57  
54  
51  
48  
45  
42  
39  
36  
33  
30  
27  
24  
21  
18  
15  
12  
9  
6  
3

17-19  
20-24  
25-29  
30-34  
35-39  
40-44  
45-49  
50-54  
55-59  
60-64  
65+

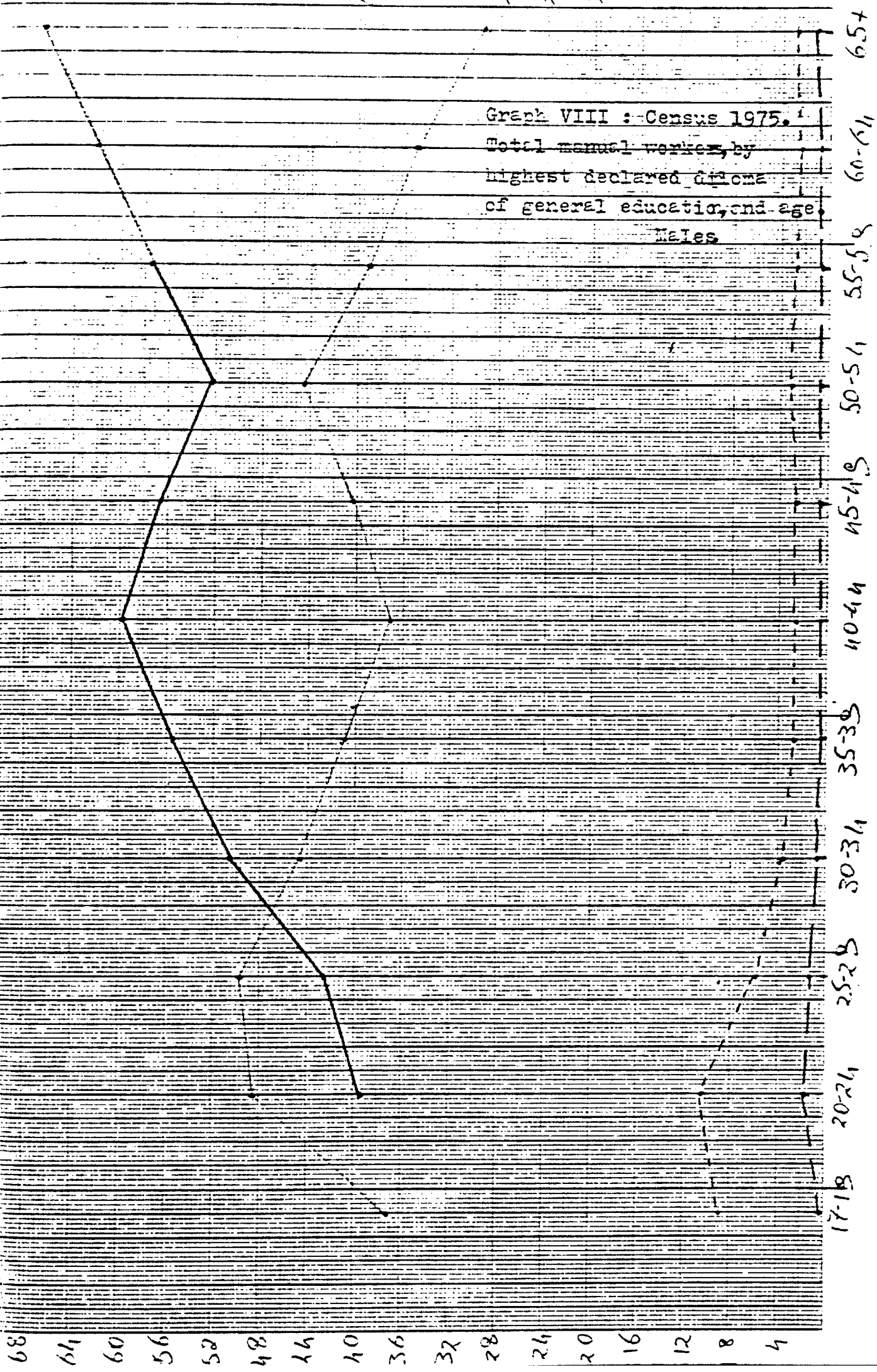
Graph VII : Census 1975. Miners, by highest  
declared diploma of general education and age  
Males.

SEP  
D  
BAC

102  
99  
96  
93  
90  
87  
84  
81  
78  
75  
72  
69  
66  
63  
60  
57  
54  
51  
48  
45  
42  
39  
36  
33  
30  
27  
24  
21  
18  
15  
12  
9  
6  
3

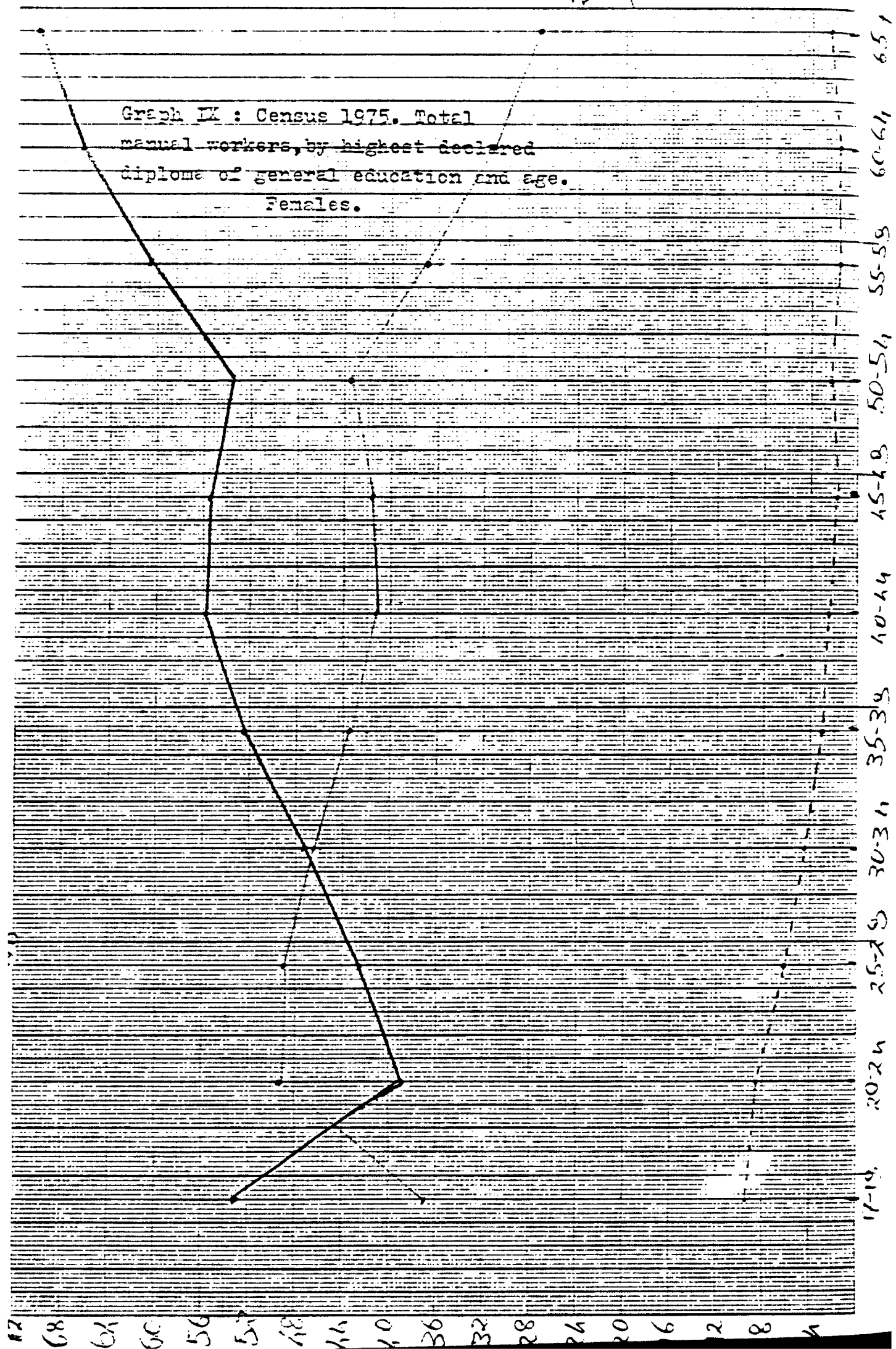
17-19 20-24 25-29 30-34 35-39 40-44 45-49 50-54 55-59 60-64 65-69

Graph VIII : Census 1975.  
 Total manual workers, by  
 highest declared diploma  
 of general education, and age.  
 Males





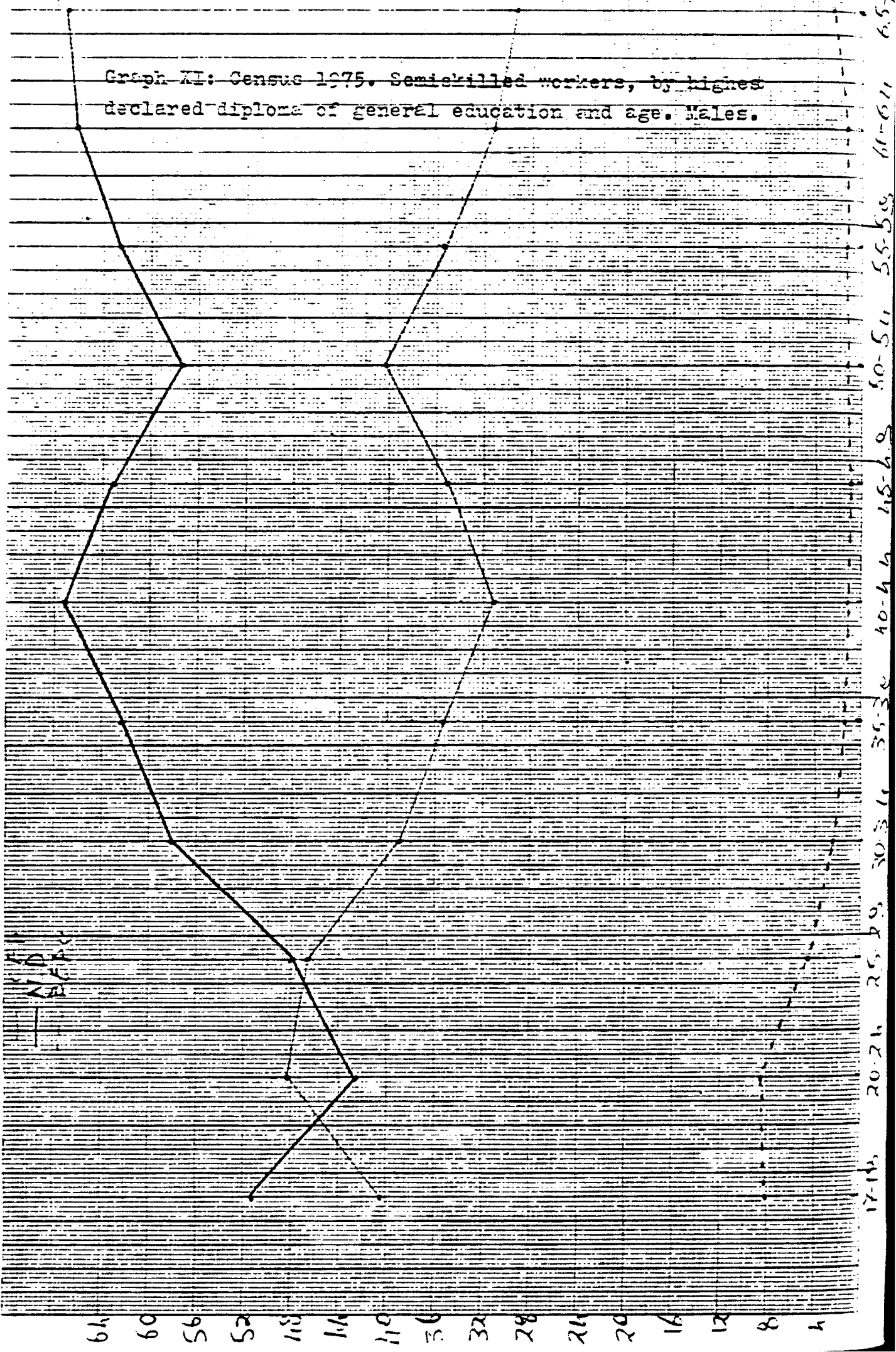
Graph IX : Census 1975. Total  
manual workers, by highest declared  
diploma of general education and age.  
Females.



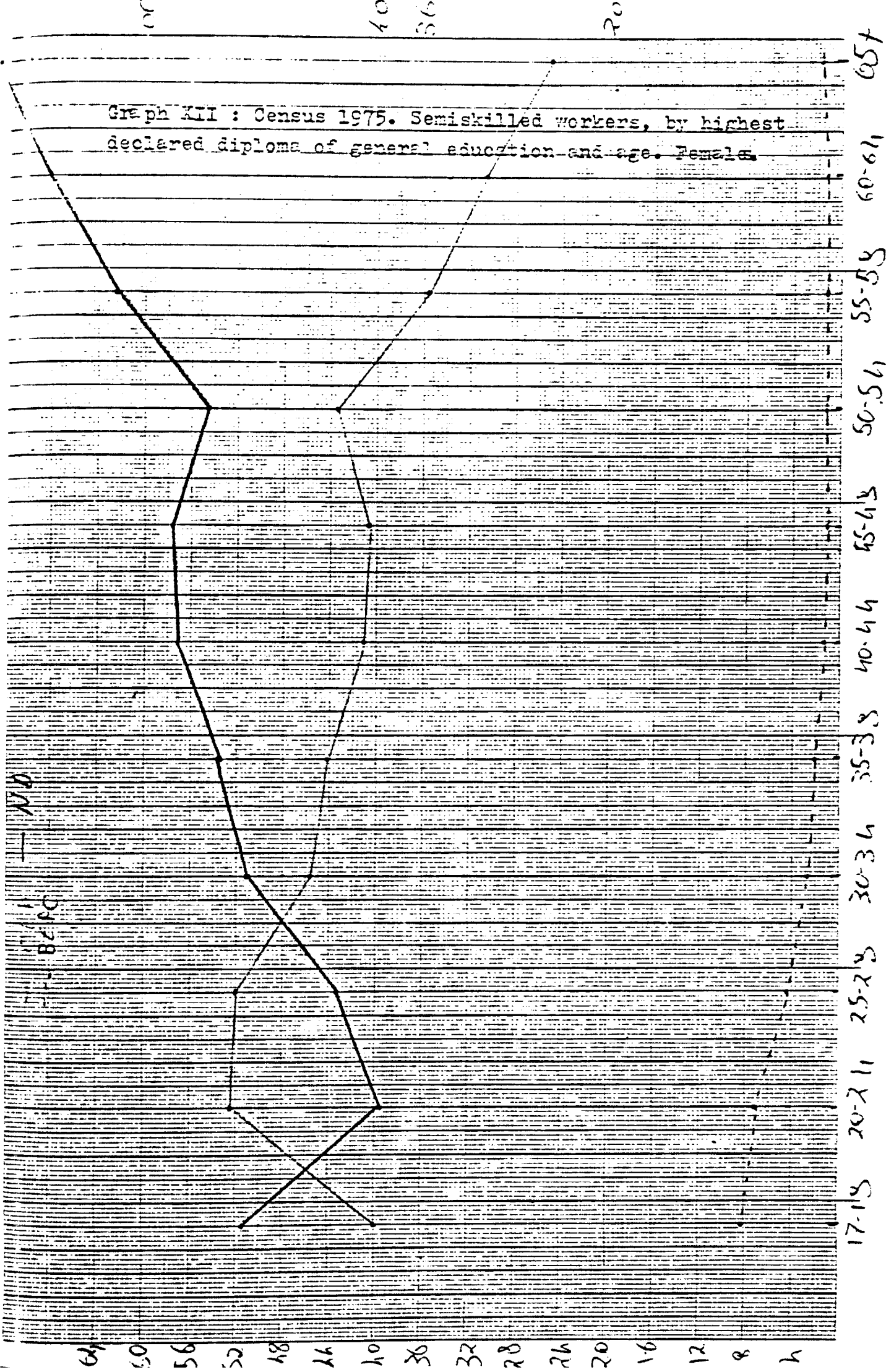




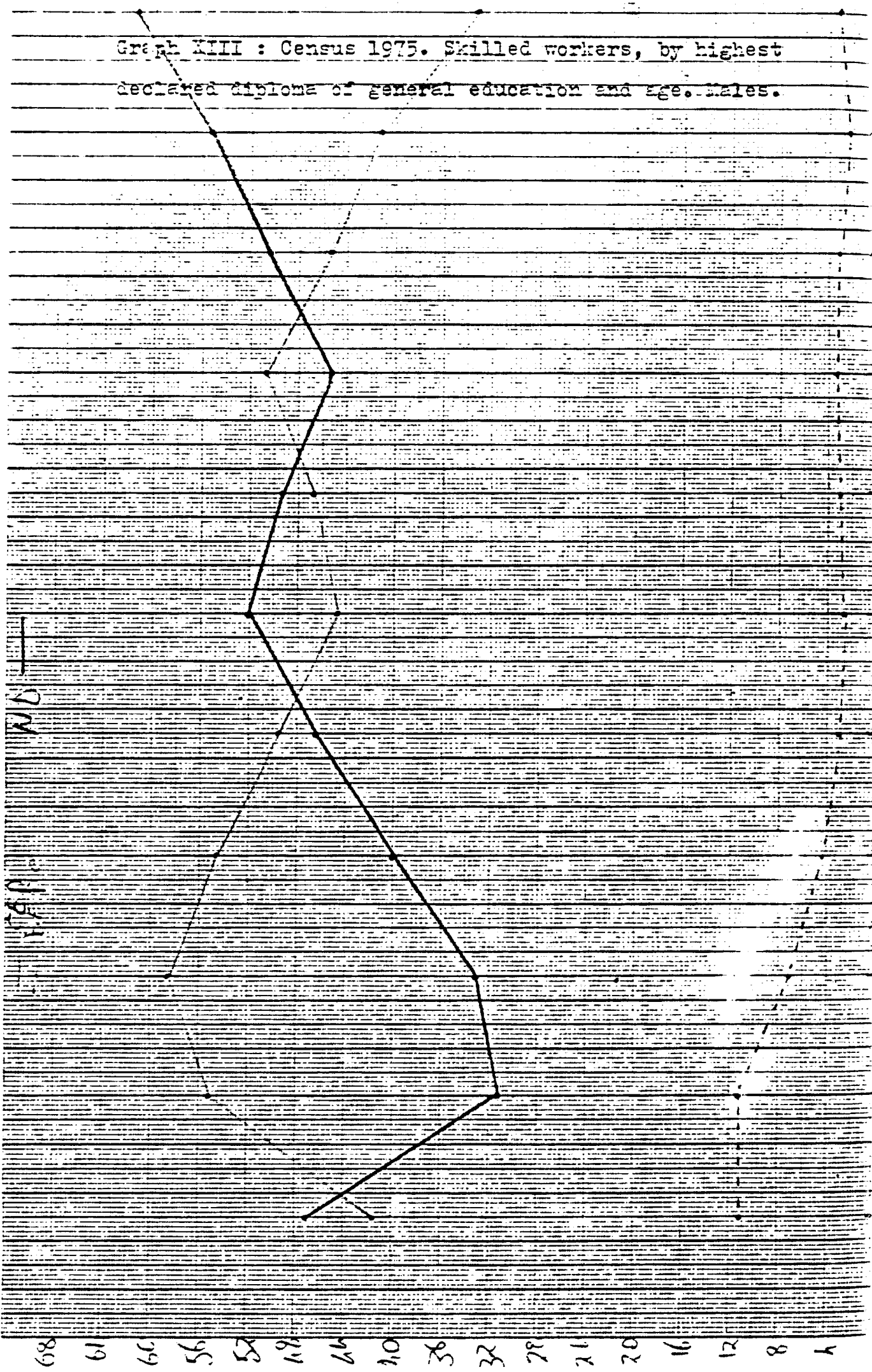
Graph XI: Census 1975. Semiskilled workers, by highest declared diploma of general education and age. MALES.



Graph XII : Census 1975. Semiskilled workers, by highest declared diploma of general education and age. Females



Graph XIII : Census 1975. Skilled workers, by highest declared diploma of general education and age. Males.

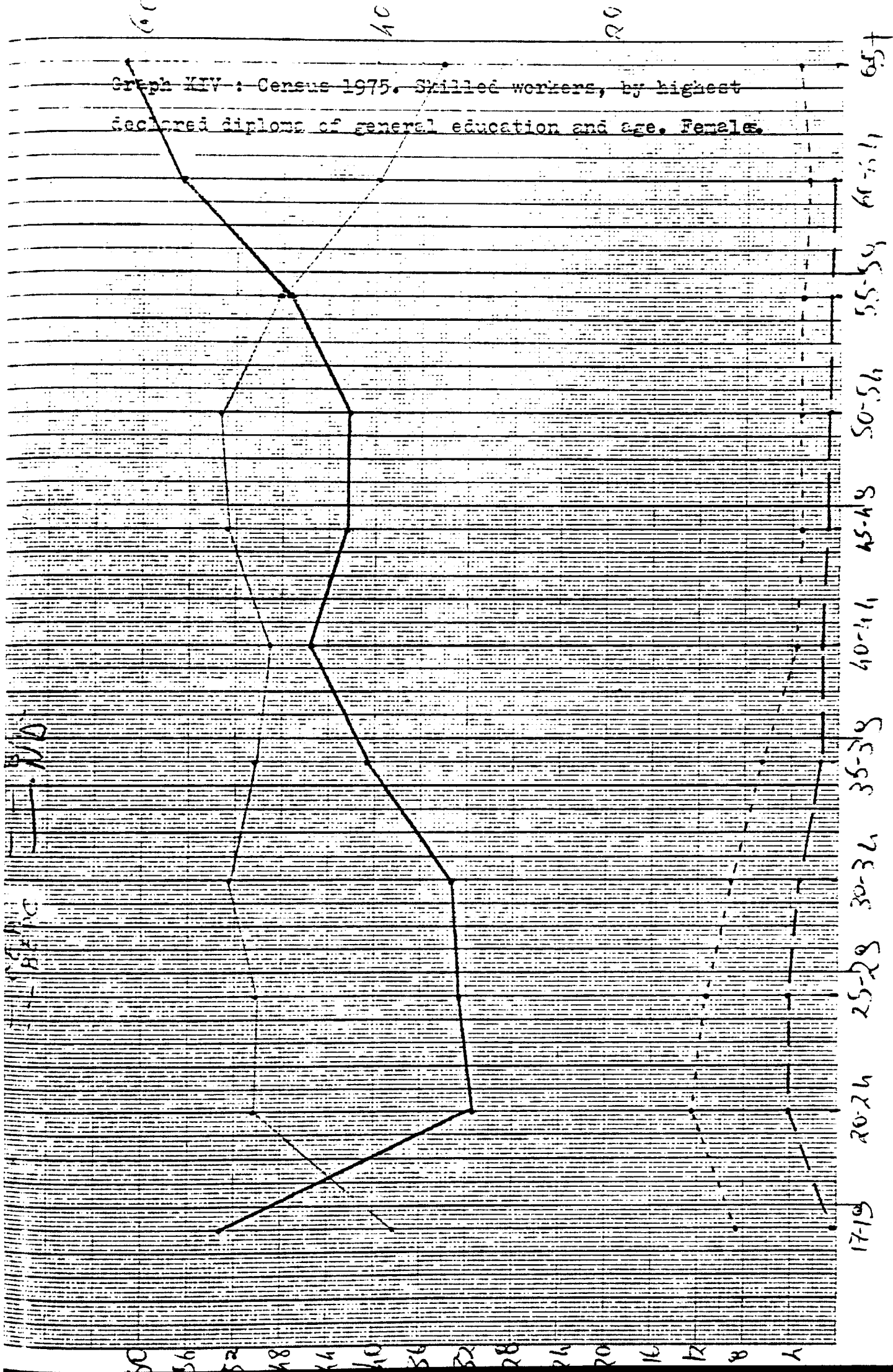


65+ 60-64 55-59 50-54 45-49 40-44 35-39 30-34 25-29 20-24 17-19

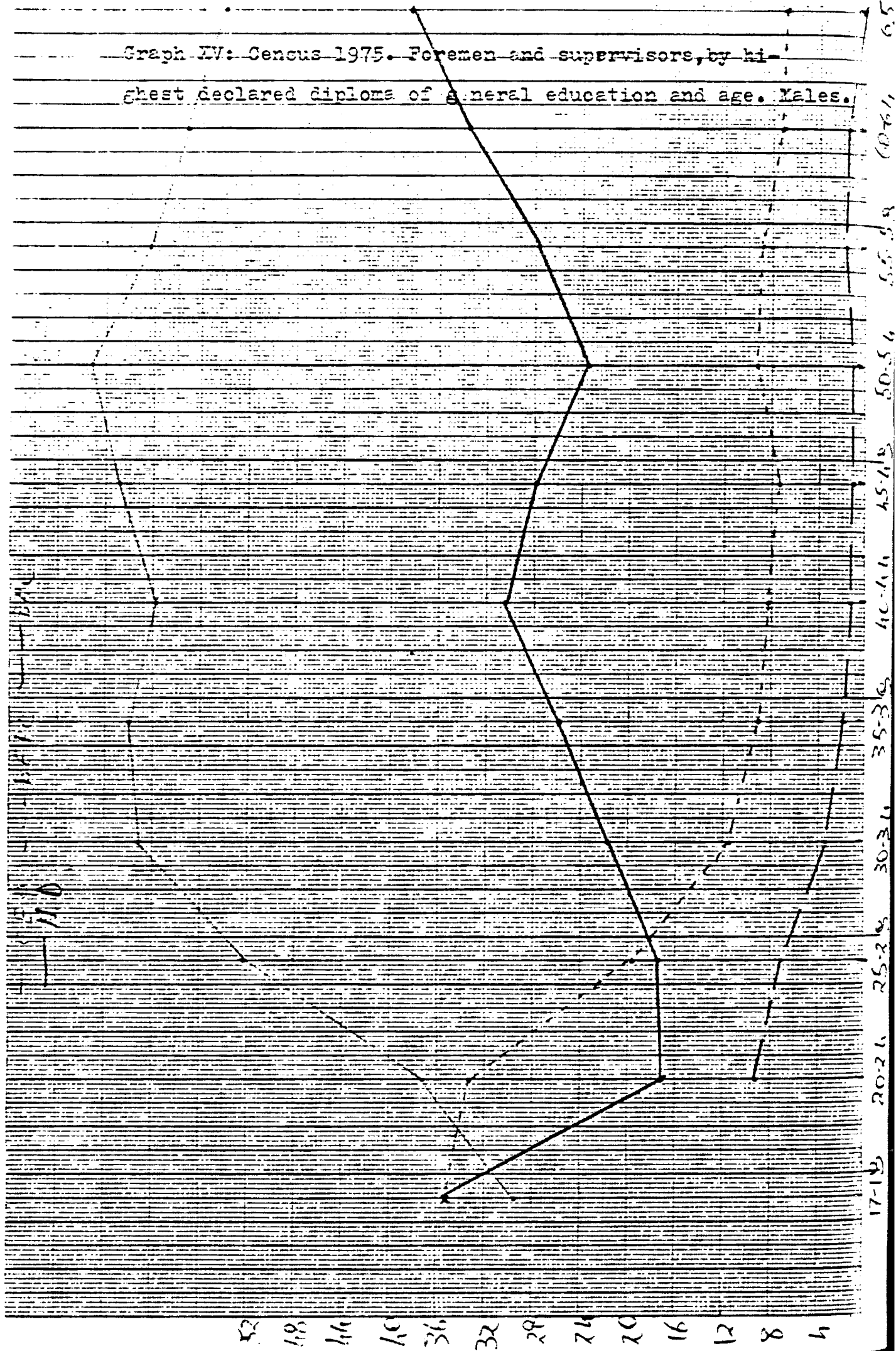
60 56 52 48 44 40 36 32 28 24 20 16 12 8 4

68 64 60 56 52 48 44 40 36 32 28 24 20 16 12 8 4

Graph XIV : Census 1975. Skilled workers, by highest declared diploma of general education and age. Female.



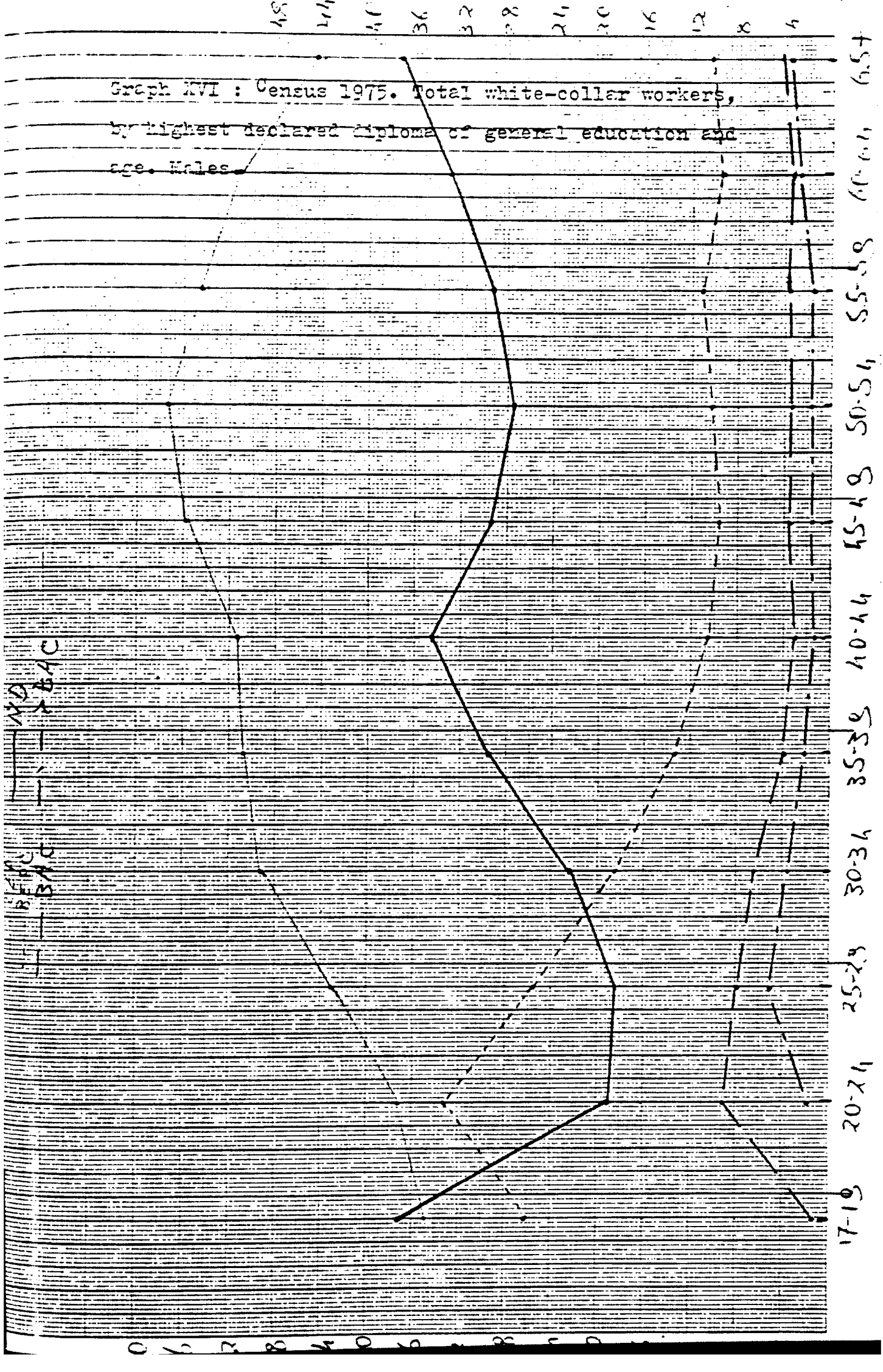
Graph IV: Census 1975. Foremen and supervisors, by highest declared diploma of general education and age. Males.





Graph XVI : Census 1975. Total white-collar workers,  
by highest declared diploma of general education and  
age. Males.

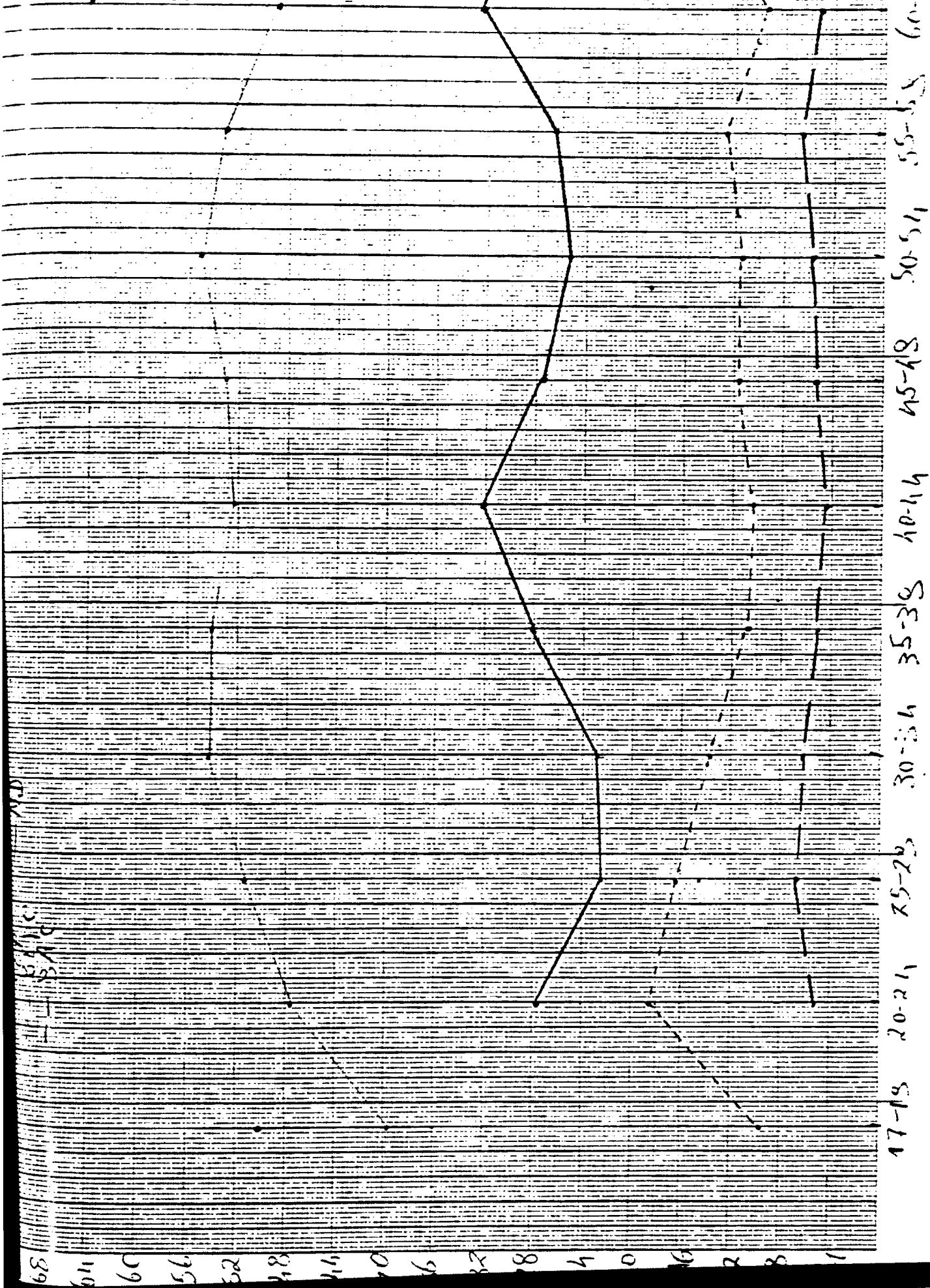
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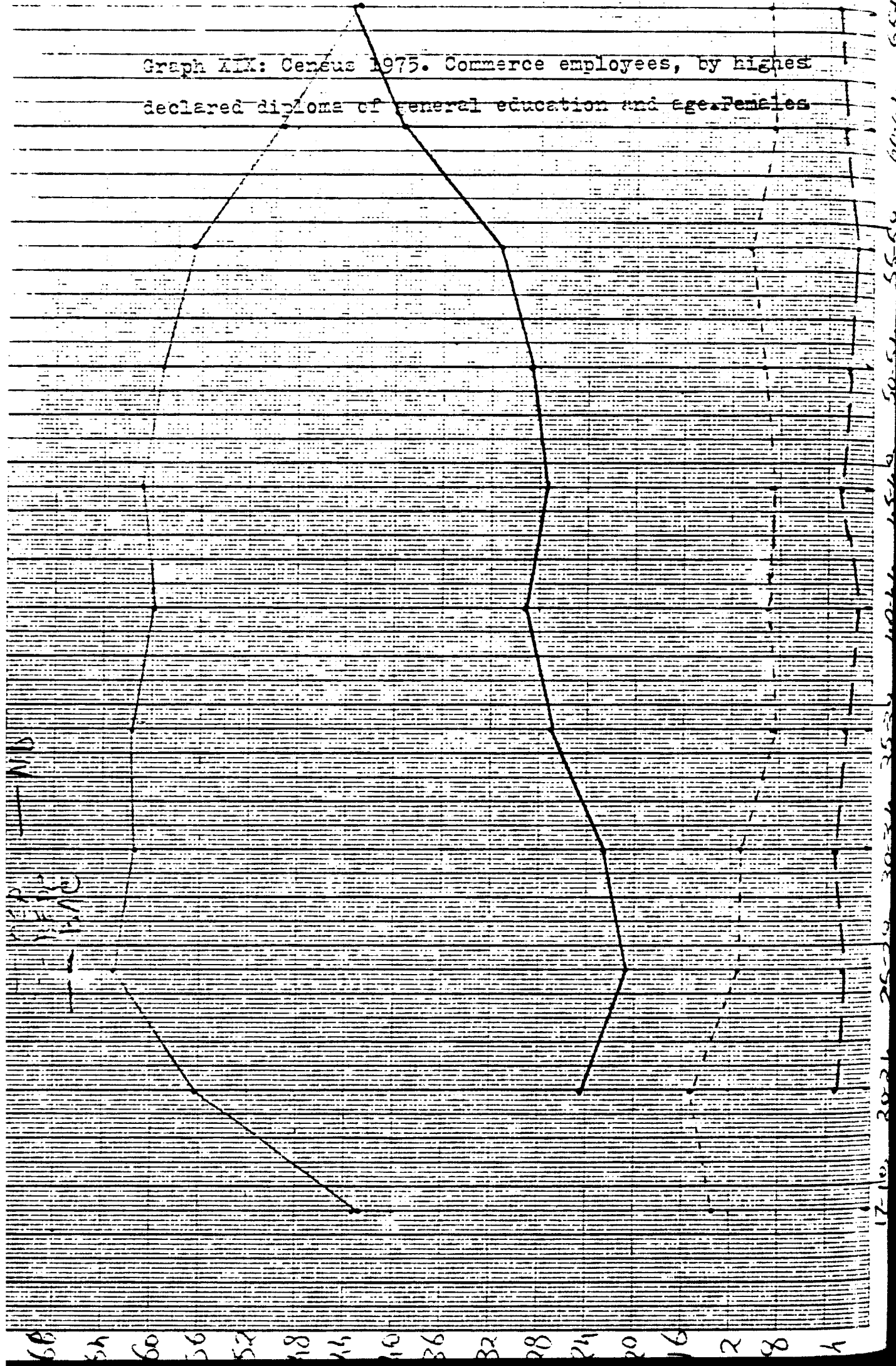




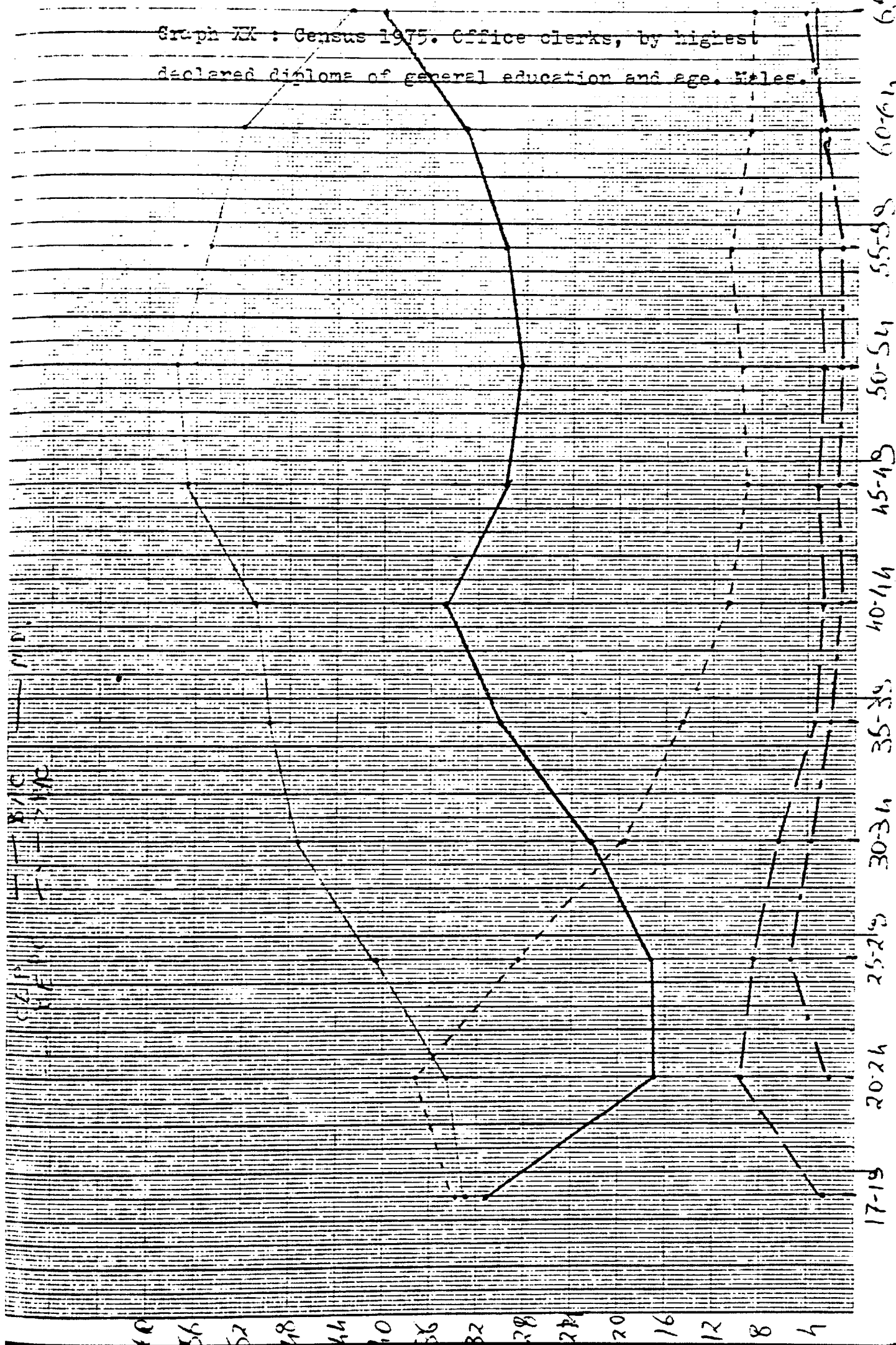
Graph XVIII : Census 1975. Commerce employees, by  
highest declared diploma of general education and age  
Males.



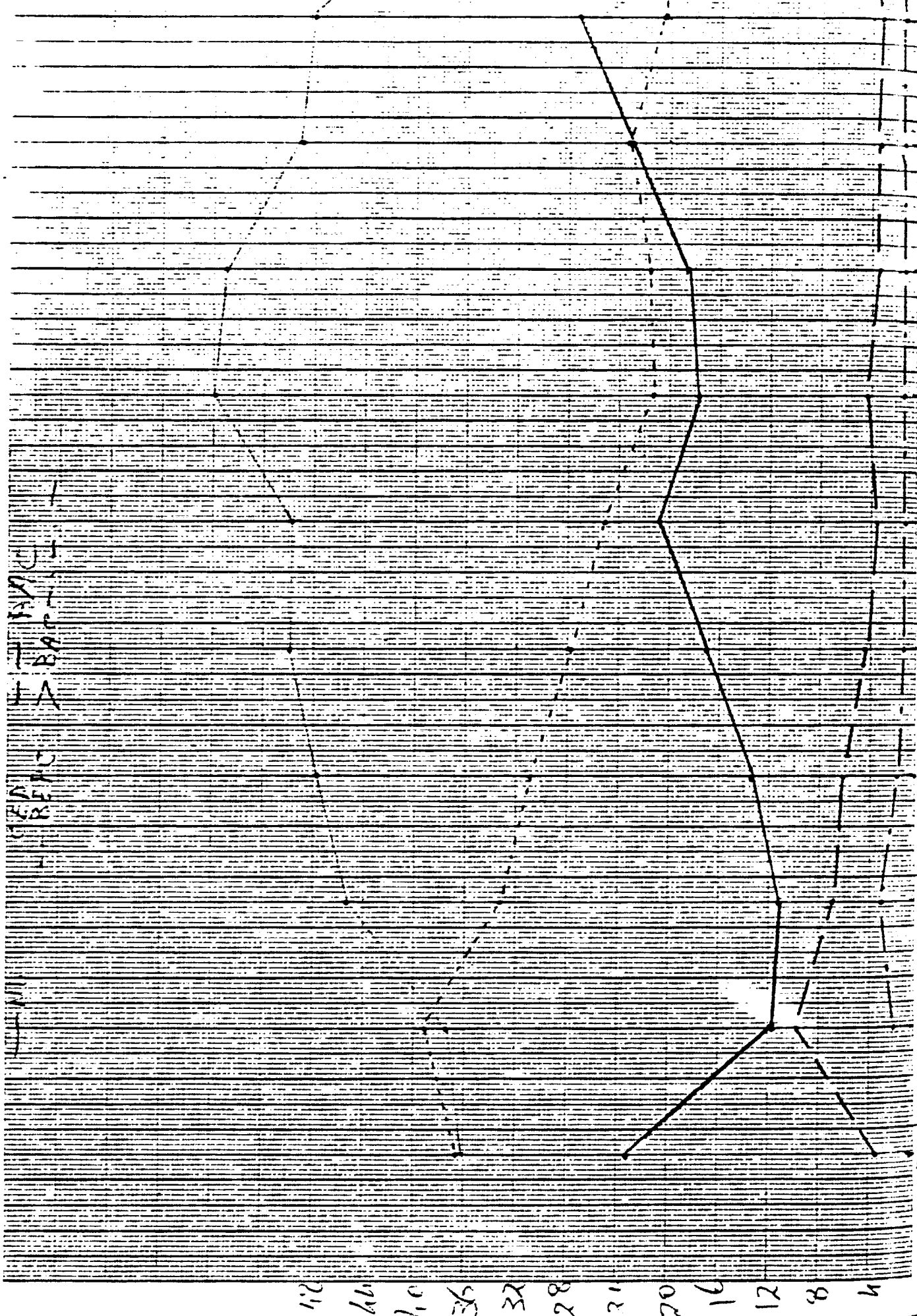
Graph XIX: Census 1975. Commerce employees, by highest declared diploma of general education and age. Females



Graph XX : Census 1975. Office clerks, by highest declared diploma of general education and age. Males.



Graph XXI : Census 1975. Office clerks, by highest declared diploma of general education and age. Females.



Graph XXII : Census 1975. Technical workers, by highest declared diploma of general education and age. Males.

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Graph XXIII : Census 1975. Middle-range executives,  
by highest declared diploma of general education  
and age. males.

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Chapter VIII: Changes in the Structure of the Labour Force  
by Level of Education. The German Case.

1. The German system of education.<sup>1)</sup>

Education was under State control already in the Kingdom of Prussia. A successful attempt was made as early as 1871 to introduce compulsory school attendance from the age of 6 to 14. However, since the policy for education remained for a long time in the hands of the different Laender, this caused a lack of coordination at the national level.

The policy under the Nazis was one of centralization and unification. The main features in that period were the discrimination against the women (the number of women on the total number of students was limited to 10 percent) and against the Jews, and the restricted access to secondary education.

The new Federal Republic of Germany maintained the inherited system of education virtually unchanged until the end of the 60's.

Legal requirements vary among Laender. Compulsory education normally lasts for twelve years, nine of them of full-time, and three of part-time education. Secondary education was, and is, split into three types, each giving access to different types of higher education.

The "Hauptschulen" give access to schools of vocational

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1) For the following account, I rely upon F. Flora, 1975.

higher education; "Realschulen" lead to schools of specialization; and the "Gymnasium" allows entrance to University (see fig. VIII.1).

The German educational system is characterized by the division into schools of general education (Allgemeine Ausbildung) and schools of vocational education (Berufliche Ausbildung).

It was only at the beginning of the 60's that new Universities were founded. The proportion of young people attending University, however, is a relatively small proportion of the population in higher education, since in 1964 was opened the possibility to accede to schools of higher vocational education.

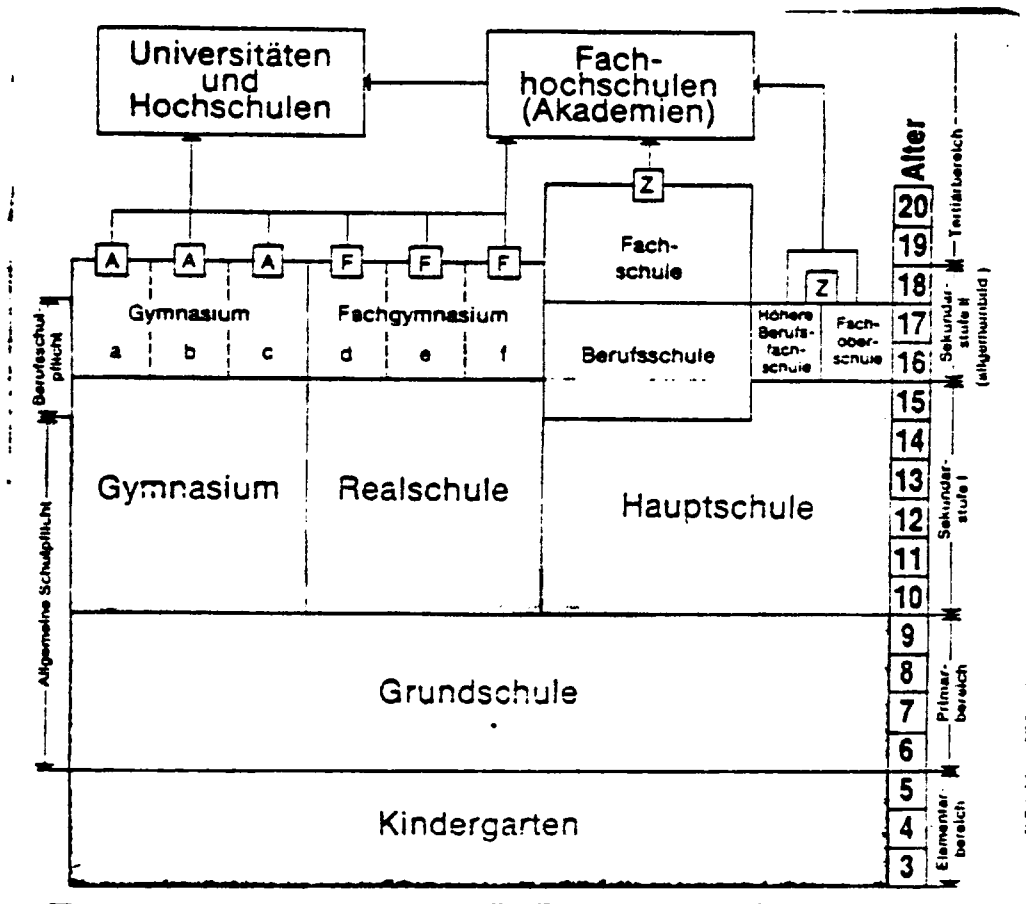
#### General education

The system consists of:

- 1) Preparatory schools and nurseries.
- 2) Grundschulen: Four years (in Berlin six years) of elementary school.
- 3) Hauptschulen: Fifth to ninth (resp. seventh to ninth) school year. Grundschulen and Hauptschulen together are often called under the name of Volksschulen.
- 4) Realschulen: Access from the Grundschulen (six or four years respectively, i.e. up to the tenth class). The diploma of the Realschulen gives the right to enter the high schools of vocational education.
- 5) Gymnasien: Access from the Grundschulen. Duration eight (resp. six) years. Lead to higher education.
- 6) Gesamtschulen: Comprehensive schools.



Figure VIII.1: The Structure of the System of Education in the Federal Republic of Germany



Legenda to figure VIII.1:

A = Allgemeine Hochschulreife; F = Fachgebundene Hochschulreife;  
Z = Zeugnis Fachhochschulreife

### Schools of vocational education

After completion of the compulsory nine years of general education, students below the age of eighteen who take on a job must attend part-time vocational education.

Full-time vocational education for the duration of one year was introduced in 1972.

The "dual" system of vocational education is based on an

individual contract between the apprentice and the firm. For three years the apprentices are supposed to attend theoretical instruction at school and to work part-time in the firm.<sup>1)</sup>

The system of vocational education includes:

- 1) Berufsaufbauschulen. Part- or full-time. The diploma delivered is equivalent to a Realschule diploma.
- 2) Berufsfachschulen. Non-compulsory secondary education.
- 3) Fachoberschulen. Access from the Realschulen or equivalent level qualifications. After two years, the diploma leads to higher vocational education.
- 4) Fachgymnasien. Access as above. Duration three years. The diploma allows entrance to higher education of any sort.
- 5) Fachschulen. Specializing by profession (e.g. technical schools).

#### Higher education

After completion of secondary education, the German system foresees:

- 1) Universities.
- 2) Gesamthochschulen. Comprehensive third-level education.
- 3) Pädagogische Hochschulen. Teachers' training institutions.
- 4) Fachhochschulen. They include the former Ingenieurschulen and vocational schools of higher education.
- 5) Theological schools.
- 6) Art schools, academies.

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1) For a detailed account of the "dual" system of vocational education in Germany, see G. Bechtle, 1978.

### 1.1. Sources of the German data

In the 1961 Census of the German population (Volks- und Berufszählung) for the first time data were collected as to the level of education of the population and of the professionally active.

The question however only applied to persons with higher education, both general and vocational or technical.

With the growth in the number of school entrants in the 60's the need for better disaggregated data was felt. This led to the introduction, in the 1970 Census of the Population, of a wider section on education. The published data were provided for German persons (nationals only) by highest level of diploma achieved, by type of schooling, participation in the active economic life, sex and age groups.

A further source of information is the biennial Mikrozensus, which provides varying information on the level of general and vocational education of the total and the active population. The Mikrozensus, however, is conducted on a very small sample of the population (0.1 to 1.0 percent) and is therefore more liable to inaccuracies.

In the framework of the 1973 and 1975 E.E.C. Labour Force Sample Surveys, part of the survey was also devoted to general and vocational education and to further education outside the school system.<sup>1)</sup>

Comparisons across time of the findings from these dif-

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1) See Eurostat 4/75: Bildung und Ausbildung.

ferent sources are difficult, due to differences in the aggregation of diplomas or different levels of education, or to the different coverage of the enquiry. Table VIII.1 shows the correspondence, in the 1970 Census and the 1976 Mikrozensus, between the levels of diploma obtained.

Table VIII.1

| 1970 Census                                                           | 1976 Mikrozensus                                                                                               |
|-----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Volksschule                                                           | Volks-(Haupt-)schulabschluß                                                                                    |
| Berufsschule                                                          |                                                                                                                |
| Mittlere Reife                                                        | Realschulabschluß (Mittlere Reife) oder gleichwertiger Abschluß                                                |
| Abitur                                                                | Fachhochschulreife<br>Abitur (Hochschulreife)                                                                  |
| Praktische Berufsausbildung (Lehre, Anlernzeit o. dgl.) <sup>1)</sup> | Abschluß einer Lehr-/Anlernausbildung oder gleichwertiger Berufsfachschulabschluß<br><br>Berufliches Praktikum |
| Berufsfach-/Fachschule (auch Technikerschule)                         | Meister-/Techniker- oder gleichwertiger Fachschulabschluß                                                      |
| Ingenieurschule                                                       | Fachhochschulabschluß (auch Ingenieurschulabschluß)                                                            |
| Hochschule (auch Lehrer-ausbildung)                                   | Hochschulabschluß (auch Lehrer-ausbildung)                                                                     |
| <sup>1)</sup> Nur im 10- <sup>ter</sup> -Teil                         |                                                                                                                |

Source: Wirtschaft und Statistik, Heft 9/78.

## 2. The structure of the German labour force.

### 2.1. Developments in the German system of education

The analysis of demographic movements outlined in Chapter V put into evidence how, among the countries of this study,

the Federal Republic of Germany had the smallest demographic increase after the Second World War; followed in due course by a decline, up to the mid-sixties, of the ratio of the younger to the older age groups.

In addition, as one might have expected, the FRG had the smallest increase in school enrolments during the 50's, also due to the relatively high and homogeneous level of education of the German labour force at the beginning of the period.

With these considerations in mind, one comes to expect that the case of the FRG is somewhat different from the two examined earlier.

As a matter of fact, a strong development, comparable to the developments which had taken place in the Italian, French and British systems from the beginning of the 50's, only took off in Germany after the mid-sixties.

Another difference with the previous case-studies is the relatively bigger growth of the vocational sector of education. If we take for instance students at third level of education (Hochschulstudierende), their number between 1960 and 1974 increased relatively more in the schools of vocational higher education (Fachhochschulen) than in the schools of general education (Hochschulen) (see fig. VIII.2 and VIII.3).

However, the bulk of this expansion occurred after 1965, when finally new high schools and Institutes of Higher Education began to be built in the FRG.

This is clearly reflected in the number of new entrants to higher education. If we let the number of new entrants in 1958-59 = 100, the index oscillates and actually decreases up to 1965-66, to jump to 136 in 1966-67 (see Table VIII.2).

Table VIII.2: New Entrants to University-Type Higher Education. FRG 1958-59 to 1966-67

| 1958-59 | 1959-60 | 1960-61 | 1961-62 | 1962-63 | 1963-64 | 1964-65 | 1965-66 | 1966-67 |
|---------|---------|---------|---------|---------|---------|---------|---------|---------|
| 100     | 96      | 104     | 107     | 111     | 106     | 104     | 99      | 136     |

Source: OECD.

Thus, contrary to the other European countries examined in this study, the number of certificates, degrees and diplomas awarded actually decreased in some years up until 1969 (see Table VIII.3).

As a consequence, the labour market situation of diploma holders and graduates in the FRG remained a lot better than the situation of their Italian, French or British counterparts. The specific unemployment rate for graduates was consistently lower than the unemployment rate for the total labour force; up until the recession of 1973-74, there remained a close correspondence between the output of high-school graduates and the demand for them in the economy, with, in 1971, even excess demand.<sup>1)</sup>

With the growth in the number of high school graduates in recent years, and the deeper world recession that struck

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1) See M. Tessaring, 1978.

Fig.VII(2a) Schools of general education (1960=100).

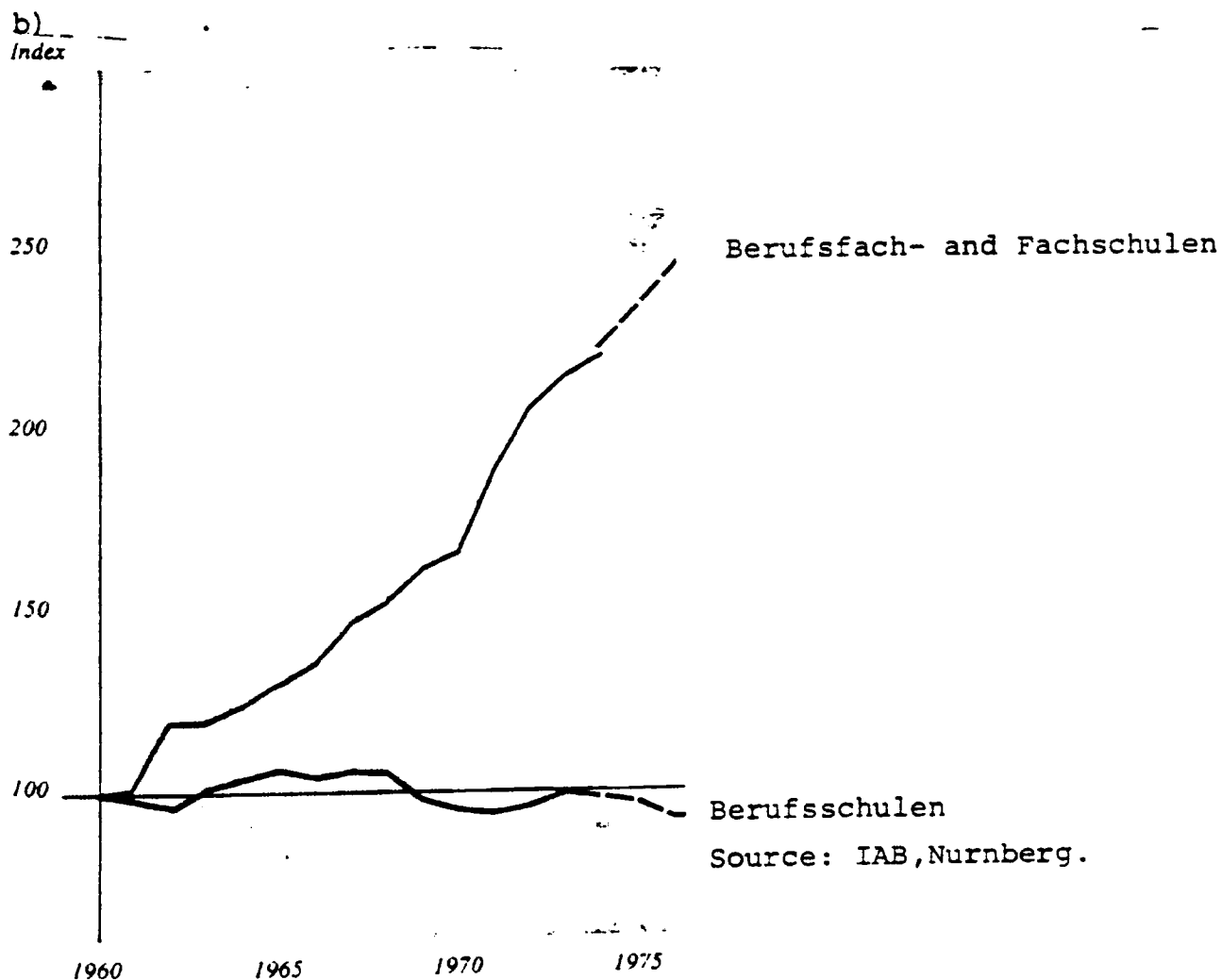
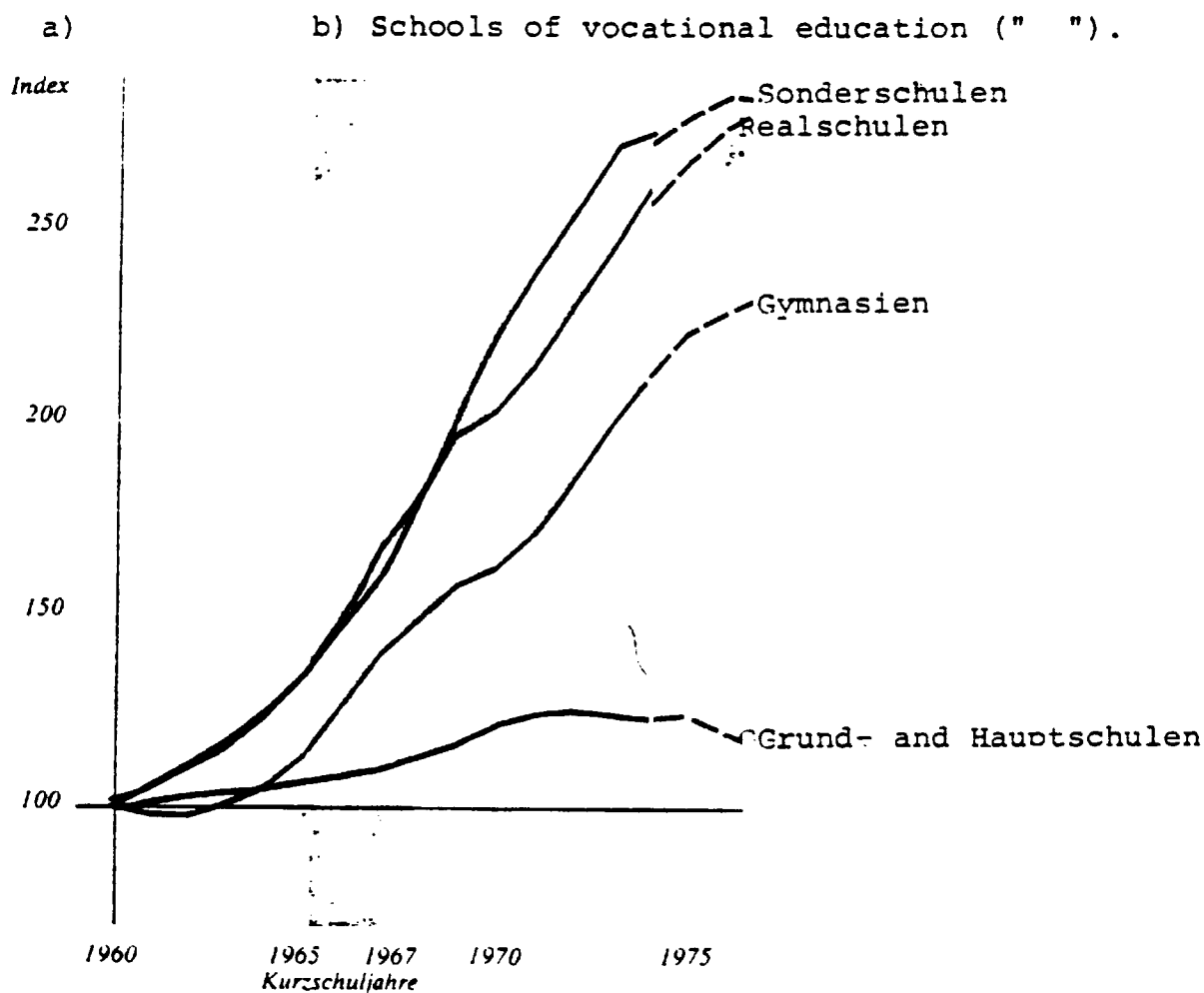
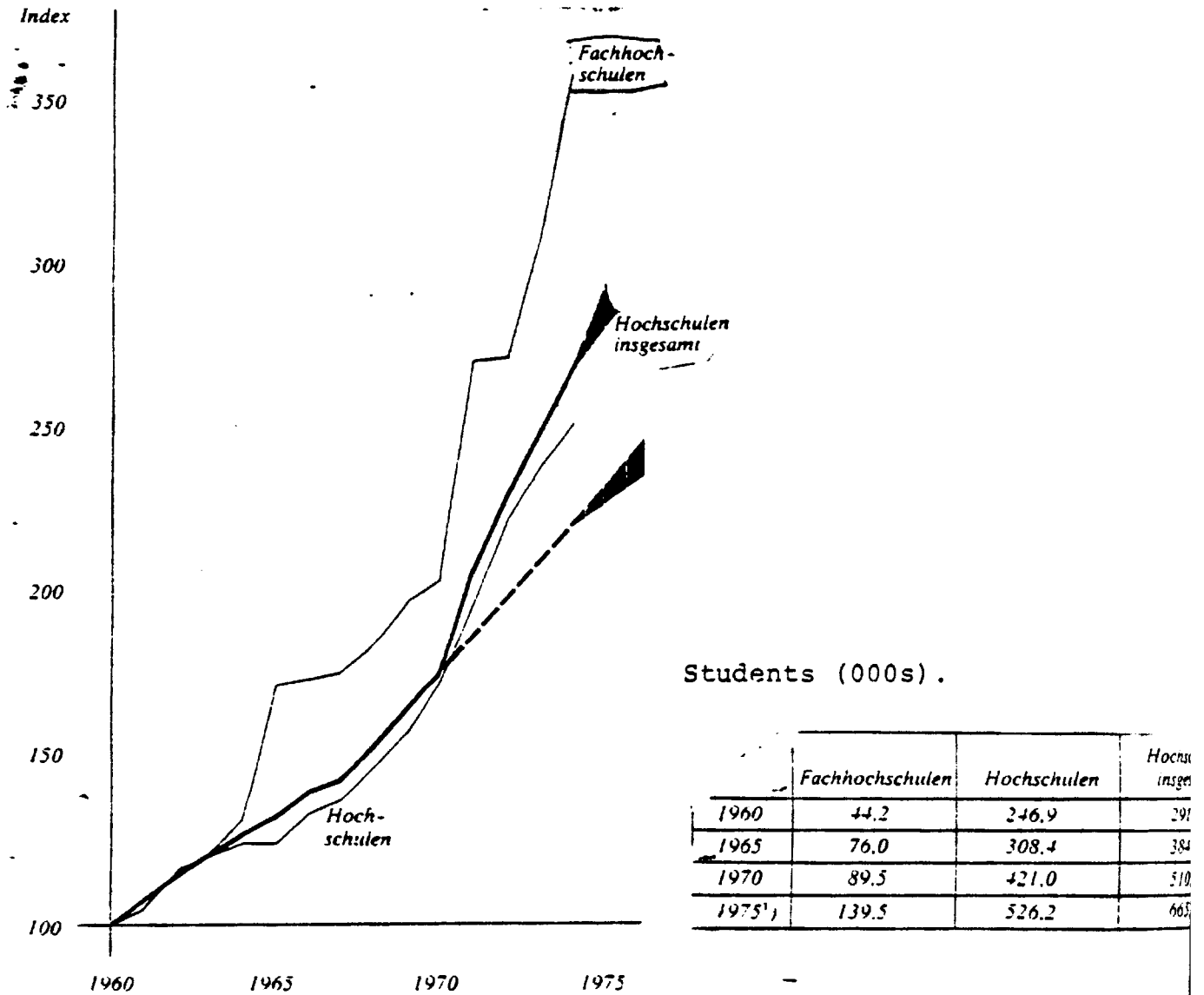


Fig. VIII.3: Students in Higher Education since 1960  
(1960 = 100)



Source: Hochschulausbildung und Arbeitsmarkt. Quintessenzen aus der Arbeitsmarkt und Berufsforschung nr.3, IAB, Nurnberg.

also the German economy, the labour market situation of German graduates has also gradually worsened.

Following the scheme of the two previous case-studies, after this brief exposition of the developments in the German



Table VIII.3: Certificates, degrees and diplomas awarded  
(TOTAL) (000) FRG 1960-70

|                                    | 1960 | 1965  | 1966  | 1967  | 1968  | 1969 | 1970 |
|------------------------------------|------|-------|-------|-------|-------|------|------|
| Compulsory secondary schooling     |      | 3.4   | 2.5   | 2.6   | 2.2   |      |      |
| Non compulsory secondary education |      | 186.2 | 231.1 | 250.2 | 270.8 |      |      |
| Secondary A                        | 54.4 | 51.3  | 63.3  | 73.1  | 77.2  | 80.4 |      |
| Secondary B                        |      | 134.9 | 167.8 | 177.1 | 193.6 |      |      |
| of which general                   | 72.8 | 75.8  | 80.8  | 86.8  | 98.5  |      |      |
| Higher                             |      | 77.8  | 77.3  | 36.6  | 39.1  | 96.1 |      |
| Non university                     |      | 26.7  | 23.2  | 29.3  | 27.8  | 29.8 |      |
| University                         | 36.5 | 51.1  | 49.1  | 52.2  | 51.3  | 66.3 | 66.8 |
| First diplomas                     | 20.8 | 28.3  | 30.8  | 34.8  | 36.6  | 38.5 |      |
| Doctorate                          | 6.1  | 7.4   | 8.0   | 9.6   | 10.6  | 10.6 |      |
| Teacher training                   | 9.6  | 15.4  | 10.3  | 13.9  | 14.1  | 17.3 |      |

Source: OECD 1975. Education Statistical Yearbook. Vol.

## II: Country Tables.

educational system, I turn to examine their repercussions on the labour force structure of qualifications.

### 2.2. The structure of the German labour force. Statistical analysis

According to the cited study by Denison (1967), 76.5 percent of the German male population had seven or eight completed school years in 1964. Up to 85.4 percent were holders of an elementary school diploma at most, without completion of the intermediate level, and with very small differences across the distribution by age groups (see Table VIII.5). Further, it was to be noted that the younger age groups had about the same propensity as the generation of their parents to stay on at school after the compulsory leaving age.

During the whole of the 60's (more precisely, between

Table VIII.4: Percentage distributions of the labour force by sex and years of school completed (mean years of education). FRG, 1964

| Years of school completed | Males | Females |
|---------------------------|-------|---------|
| 0                         | 0.4   | 0.4     |
| 1-4                       | 0.8   | 0.8     |
| 5-6                       | 1.1   | 1.1     |
| 7                         | 38.3  | 36.3    |
| 8                         | 38.2  | 36.2    |
| 10-11                     | 15.4  | 22.1    |
| 12                        | 0.4   | 0.4     |
| 13-15                     | 2.2   | 0.9     |
| 16 or more                | 3.3   | 1.8     |
|                           | 100.0 | 100.0   |
| Mean years                | 8.29  | 8.23    |

Source: E.G. Denison, 1967.

Table VIII.5: Germany: Percentage distributions of the labour force, 14-64 years of age, by sex and level of education, April 1964

| Type of school departure <sup>b</sup>                        | Years of school assigned |                 | Males by age group (In years) |        |        |        | Males  | Females |
|--------------------------------------------------------------|--------------------------|-----------------|-------------------------------|--------|--------|--------|--------|---------|
|                                                              | Class                    | Mean            | 14-29                         | 30-39  | 40-49  | 50-64  | Total  | Total   |
| 1 "Abitur" (including evening "Abitur")                      |                          |                 | 2.6                           | 7.2    | 8.0    | 6.5    | 5.6    | 2.8     |
| 2 Higher education completed                                 | 16 or more               | 17              | (1.5)                         | (4.2)  | (4.4)  | (4.3)  | (3.4)  | (1.9)   |
| 3 Other                                                      | 13-15                    | 14              | (1.1)                         | (3.0)  | (3.6)  | (2.2)  | (2.2)  | (.9)    |
| 4 "Nach Erreichen der mittleren Reife jedoch vor dem Abitur" | 10-11 and 12             | 11.5            | .6                            | .8     | .9     | 1.0    | .8     | .8      |
| 5 "Nach Erreichen der mittleren Reife"                       | 10-11                    | 10              | 8.2                           | 7.8    | 9.1    | 8.0    | 8.2    | 10.3    |
| 6 "Volksschule bzw. vor mittleren Reife" (متوسطة)            |                          |                 | 88.6                          | 84.2   | 82.0   | 84.4   | 85.4   | 86.1    |
| 7 "Berufsschule, Verwaltungs-, Fachschule"                   | 10-11                    | 10 <sup>c</sup> | (4.5)                         | (6.5)  | (7.1)  | (6.6)  | (6.0)  | (11.9)  |
| 8 "Technikerschule" and "Ingenieurschule"                    | 10-11                    | 11              | (.7)                          | (1.2)  | (1.2)  | (1.1)  | (1.1)  | (.0)    |
| 9 Other                                                      | 7 and 8                  | 7.5             | (83.4)                        | (76.5) | (72.6) | (76.7) | (73.2) | (74.1)  |
| 10 All categories                                            |                          |                 | 100.0                         | 100.0  | 100.0  | 100.0  | 100.0  | 100.0   |

Sources: Federal Statistical Office, *Wirtschaft und Statistik*, No. 3, 1966, p. 178 (G:1), figures in parentheses are derived from *Ibid.*, p. 167<sup>d</sup>; see text for explanation of notation. Terms in quotes are taken used in the original source.

a. Excluding foreign and refugee workers.

b. Approximate English translations of the education categories covered are as follows: Line 1: high school graduates (including those graduating from evening courses); Line 4: intermediate school graduates without completion of high school; Line 5: intermediate school graduates; Line 6: elementary school graduates without completion of intermediate school; Line 7: vocational, technical and administrative training schools; Line 8: technical and engineering training schools.

c. Eleven years for those educated in the postwar period but probably less for those educated earlier.

Source: see Table VIII.4.

the 1964 Mikrozensus and the 1970 Census of the population), the improvement in the educational structure of the German population was relatively minor. This applies to both general and vocational education (see Tables VIII.6 and VIII.7 resp.).

In 1970, 36.8 percent of all German active persons had neither a formal vocational instruction nor had they acquired it on the job.<sup>1)</sup> This relatively high proportion derives mostly from the age structure of the employed and the labour force participation rate of women. On the other hand, at least 72.5 percent of the population had completed the minimum compulsory level of education in 1970.

Table VIII.6: Educational Level of the Male Labour Force  
(highest diploma achieved), 1964 and 1970

| Schulabschluß                                   | 1964 | 1970 |
|-------------------------------------------------|------|------|
| Volks- und Berufsschule                         | 79,0 | 72,5 |
| Mittlere Reife                                  | 6,0  | 7,9  |
| Abitur                                          | 1,3  | 2,1  |
| Berufsfach- oder Fachschulabschluß              | 8,0  | 10,9 |
| Ingenieurschulabschluß                          | 1,9  | 2,3  |
| Hochschulabschluß                               | 4,3  | 4,3  |
| Männliche Erwerbstätige insgesamt<br>(gerundet) | 100  | 100  |

Source: Statistisches Bundesamt, Bevölkerung und Kultur,  
Fachserie A Volkszählung vom 27. Mai 1970, Heft 13.

1) It has to be observed that only German nationals were censused in 1970, to the exclusion of about two million foreign workers. Had these last been included in the statistics, the percentage with no vocational instruction would have been around 40 percent. The non-inclusion of foreign workers obviously distorts the comparison between the 1964 and the 1970 figures.

The 1970 Census of population data provide a disaggregation of the German active population by age group. Thus it is possible to observe the difference across age groups in the proportions at each level of education. As one can see from Table I and graphs I and II in the Annex, in every age

Table VIII.7: Percentage of the labour force, by type of vocational education, 1964 and 1970

| Art der Berufsausbildung                      | 1964**)  | 1970***) |
|-----------------------------------------------|----------|----------|
| Keine Berufsausbildung                        | 36,4     | 36,8     |
| Betriebliche Berufsausbildung                 | 42,4     | 48,8     |
| Schulische Berufsausbildung                   | 16,0     | 14,0     |
| (darunter:<br>mit Hochschulbildung)           | (4)      | (4)      |
| ohne Angabe                                   | 5,1      | 0,3      |
| Erwerbstätige insgesamt<br>(gerundet)         | 100      | 100      |
| Erwerbstätige insgesamt<br>(absolut in 1 000) | 24 155,3 | 24 606,7 |

Source: see Table VIII.6.

group proportionally more women than men were qualified at most at Mittlere Reife level, that is, they left school after ten completed years of education. At a lower level, i.e. at Volksschule level, the same holds true only for the older age groups, since a good proportion of the younger ones were still undergoing education.

For the higher levels of education (Abitur), again excluding the younger age groups still in education, the proportions are quite negligible for every age group. The same holds for the diplomas of higher education.

By 1970, only about 4 percent of the economically active population held a third level diploma (as opposed to about 3 percent in 1961). As a proportion of each successive age group, the percentage of so-defined qualified males was constant around 5 percent between the age groups 30 to 65. The women's proportion of graduates in each age group between 35 and 65 was as constant as the men's at about 3 percent. A notable exception is the women's age group 25-30, where the percentage qualified was about 6 percent.

The reason was explained in the previous account of the development in the German system of education: up until 1965, there were almost no new schools or institutes of higher education built in the FRG.

As to the vocational schools, for the younger age groups proportionally more women than men have achieved a diploma, and vice versa for the older age groups.

The educational profiles of the German active population in 1970 appear rather flat, that is, without great changes in the proportions qualified at each level of education from one age group to the following. Only the very first two or three age groups, which include persons still in education, show a somewhat higher propensity to longer studies (see graph I).

More recent data on the structure of the German labour force by age by level of education were provided with the 1974, 1976 and 1978 Mikrozensus.

Table II in the Annex shows the percentage distribution, in 1976, of the active population by age groups, by sex and

by level of education. Graphs III and IV plot the distributions separately for men and for women. Table III shows the changes in the same distributions between 1974 and 1976.

Although the educational profiles in 1976 still appear rather flat, in the sense of no great difference between the educational achievements of one age group and the following ones, the generations below the age of 35 in 1976 are distinctly better qualified than their predecessors. If we take the totals and compare them with the results of the 1970 Census, or with the results of the 1974 Mikrozensus<sup>1)</sup> one can observe an improvement at every level of education, both general and vocational. In particular, the level of qualification of German women seems to have improved between 1970 and 1976.<sup>2)</sup>

Table IV further traces, following different sources, the development of the structure of qualifications of the German active population 1957-78. One can observe how the percentage of the active population without any formal qualification has been decreasing to reach, in 1978, just about one third of the economically active population. About half of the population has completed some form of vocational education; in addition, more than 7 percent of the labour force

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- 1) Taking also into account methodological differences in the collection of the data.
- 2) See, for a detailed comment on the results of the 1976 MZ, "Erwerbstätigkeit und Ausbildung" in Wirtschaft und Statistik, Heft 9/78. These results are also confirmed by the results of the 1978 MZ. See also Wi/Sta, Heft 12/79.

in 1978 had completed higher education, following an upward trend.

It has not been possible, with the German data, to further disaggregate the active population by professional grouping and/or by branch of activity, by age and by level of education.

The data in fact are only provided as to whether active or inactive, employed or unemployed. Data by branch of activity, position or job occupied and by sector are not further disaggregated by age.

However; it is possible, with the help of these data, to give an assessment of the evolution of the German labour force by level of education with respect to the two different hypotheses that have been discussed in Part I.

#### The "new working class" issue in Germany

The evolution of the structure of the German labour force was the object of a report by the Bildungskommissionen in 1975.<sup>1)</sup>

The question raised concerned the direction of this evolution, whether in the sense of a general improvement in the level of education of the labour force or rather a polarization of the requirements on the part of the employers, and therefore in the actual supply, of formal qualifications: briefly, of whether a new working class was emerging in the FRG as opposed to a massive change of the "generation leap" type.

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1) See: Die Bildungskommissionen, Bericht 1975.

In favour of the new working class hypothesis in Germany played the relatively minor improvement in the general level of education of the German labour force during the 60's. On the other hand, the growing inflow of immigrant workers at a very low level of education ensured the covering of positions of very low skill requirements.

To give an assessment of the relevance of the two hypotheses in the case of the FRG, one can again use an indicator of the density of qualified manpower by profession and by branch of activity. This is the percentage of highly qualified manpower over total manpower.

By and large, between 1964 and 1973 the growing sectors and occupations of the economy were also increasing their share of qualified manpower and conversely. However, the rationalization and modernization processes under way in the German economy led to some exceptions to this rule.

In 1976 (see Table V in the Annex) the proportion of the active population holding a secondary school diploma (Fachhoch- or Hochschulreife) was highest among the technical professions and in the service professions (resp. 23 and 13 percent as against an average of 8.8 percent for the total labour force).

A similar picture obtains if we consider the Realschule level of diploma, where the same two professional groupings are well above the average proportion. However, a high proportion of Realschule graduates is also present in the catch-all category of "Sönstige Arbeitskräfte", which includes ap-



prentices of several jobs and family helpers, where the number of women is particularly high.

If we then consider the highest level of diplomas (Hochschulabschluss), the proportion is obviously small in every category (averaging 5 percent). Above the average are again the professional groupings of the service professions (8.5 percent) and the technical professions (7.3 percent), whilst for all the other groups the proportion of Hochschule graduates is well below the average.

As to the higher vocational diplomas, it was the technical professions that held the highest proportion, in particular because some of the schools of vocational education (e.g. Ingenieurschulen) are specially designed to fit these professions.

Since a question in the 1970 Census also concerned the profession of the interviewee<sup>1)</sup> it is possible to compare the educational structure of the German population at the two points in time, and to examine its evolution (see Table VI).

Of the 23.7 million that constituted the German labour force in 1976, 5.1 percent reported a third-level diploma of general education and 2.3 percent a diploma of higher vocational education. The percentages were respectively 4.3 and 1.6 percent in 1970, with a labour force of 24.6 million. Thus, whilst the number of active persons actually shrunk by 3.7 percent, the proportion of qualified manpower increased by 35.5 and 12.7 resp.

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1) Although it was limited to a representative sample of 10 percent of the German active population.

The highest growth was achieved among the office personnel, where the proportion qualified increased fivefold. But this only meant that the percentage went from 0.4 to 1.5 percent, that is, an extremely small proportion. The managerial and administrative personnel's proportion increased by 250 percent, and the entrepreneurs' and businessmen's by 160 percent. This was mainly the consequence of the easing in the obtention of certain types of diplomas, and of the quick absorption of these graduates in the economy and in the administration.<sup>1)</sup>

In some professions (teachers and professors, statisticians, entrepreneurs and businessmen), the growth in the percentage highly qualified paralleled the growth in absolute numbers.

Conversely, professions like architects, physicians and mathematicians lost ground in both absolute and relative terms.

Exceptions to this rule are the groups of wholesale and retail dealers and buyers, where the proportion of persons holding a vocational higher degree doubled since 1970, although the absolute number of persons in the profession, as well as the percentage of graduates, decreased in connection with the recession of 1973-74.

As to the female graduates, their numbers increased enormously in percentage terms, starting however from minor proportions in the labour force.

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1) Some of these diplomas were acknowledged retroactively, thus rendering more difficult the comparison of the 1970 and 1976 distributions.

The trend to a higher level of qualification is distinctly stronger for women than for men, thus tending to close the gap in education between the two groups.

As to the level of qualification by sector or by branch of activity, it is naturally the service sector that retains the highest proportion of higher education graduates, even when not considering civil servants and teachers in the statistics.

In every sector, however, persons with no completed qualification whatsoever still represented between one third and one fourth of occupied persons in 1976. This holds especially for the building and for the raw materials/energy sectors.<sup>1)</sup>

However, for all sectors one can observe some improvement in the qualification structure, especially between 1974 and 1976.

This concerns in particular the age groups below 40 in 1976, due to the increasingly higher percentage of graduates in the age group 25-29, following the expansion of the third-level sector of education at the end of the 60's.

All in all, however, the changes in the age and qualifications structure of the German labour force up to 1976 were not particularly striking, although some progress was shown with respect to the 1970 distribution.

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1) For this and the following account, I rely upon W. Clement, M. Tessaring and G. Weissshuhn, 1980, cit.



## Annex to Chapter VIII

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- Table II: Mikrozensus 1976. Active persons by age group and highest completed course of diploma (%).
- Table III: German employed persons by completed level of education, by age groups, 1974 to '76 (%).
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- Table V: Distribution by profession of the qualified labour force, 1976.
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- Graph I: Census 1970. Active persons by date of birth and highest completed level of education (%).
- Graph II: Census 1970. Active population (000s) by highest level of education. Pyramid by age group.
- Graph III: Mikrozensus 1976. Active population by age group by highest level of diploma (males).
- Graph IV: Idem (females).



**Table I : Germany 1970: active persons by birth date and highest completed level of education (%).**

| Date of birth | Sex | Highest level of education (general) |             |        | Vocational schools |                 | Hochschule |
|---------------|-----|--------------------------------------|-------------|--------|--------------------|-----------------|------------|
|               |     | Volkssch.                            | Mittl.Reife | Abitur | Berufsfach         | Ingenieurschule |            |
| 1951 +        | M   | 85.8                                 | 10.5        | 0.3    | 3.4                | -               | -          |
|               | W   | 80.0                                 | 13.8        | 0.1    | 6.1                |                 |            |
|               | T   | 83.0                                 | 12.0        | 0.2    | 4.7                |                 |            |
| 1950-46       | M   | 75.5                                 | 12.2        | 2.9    | 8.7                | 0.4             | 0.4        |
|               | W   | 68.0                                 | 16.1        | 1.7    | 12.8               |                 | 1.3        |
|               | T   | 72.3                                 | 13.8        | 2.4    | 10.5               | 0.3             | 0.8        |
| 1945-41       | M   | 68.6                                 | 9.4         | 1.9    | 12.7               | 3.1             | 4.3        |
|               | W   | 62.2                                 | 16.0        | 1.9    | 13.7               | 0.2             | 6.1        |
|               | T   | 66.4                                 | 11.7        | 1.9    | 13.0               | 2.1             | 4.9        |
| 1940-36       | M   | 70.2                                 | 6.4         | 1.6    | 13.4               | 3.1             | 5.4        |
|               | W   | 71.6                                 | 10.9        | 1.2    | 11.9               | 0.1             | 4.4        |
|               | T   | 70.6                                 | 7.7         | 1.5    | 12.9               | 2.2             | 5.1        |
| 1935-31       | M   | 73.9                                 | 5.4         | 1.4    | 11.9               | 2.6             | 4.8        |
|               | W   | 78.6                                 | 8.7         | 1.0    | 8.8                | 0.1             | 2.8        |
|               | T   | 75.3                                 | 6.4         | 1.3    | 11.0               | 1.9             | 4.2        |
| 1930-26       | M   | 72.5                                 | 6.5         | 2.1    | 11.2               | 2.6             | 4.9        |
|               | W   | 77.5                                 | 8.9         | 1.8    | 8.7                | 0.1             | 3.0        |
|               | T   | 74.2                                 | 7.3         | 2.0    | 10.4               | 1.8             | 4.3        |
| 1925-21       | M   | 71.4                                 | 6.6         | 3.1    | 11.2               | 2.6             | 5.1        |
|               | W   | 75.9                                 | 9.4         | 1.8    | 9.7                | 0.1             | 3.2        |
|               | T   | 73.2                                 | 7.7         | 2.6    | 10.6               | 1.6             | 4.3        |

Table I (follows)

|         |   |      |      |     |      |     |     |
|---------|---|------|------|-----|------|-----|-----|
| 1920-16 | M | 69.7 | 8.3  | 3.2 | 11.2 | 2.3 | 5.3 |
|         | W | 74.7 | 12.3 | 1.6 | 8.8  | —   | 2.7 |
|         | T | 71.7 | 9.9  | 2.6 | 10.2 | 1.4 | 4.2 |
| 1915-11 | M | 70.0 | 8.1  | 3.1 | 11.5 | 2.3 | 5.0 |
|         | W | 76.2 | 11.3 | 1.7 | 8.3  | —   | 2.5 |
|         | T | 72.3 | 9.3  | 2.6 | 10.4 | 1.5 | 4.1 |
| 1910-06 | M | 71.7 | 7.5  | 2.1 | 10.7 | 2.6 | 5.5 |
|         | W | 78.2 | 9.9  | 1.1 | 7.8  | —   | 3.0 |
|         | T | 73.5 | 8.1  | 1.8 | 9.9  | 1.9 | 4.8 |
| 1905-01 | M | 69.9 | 8.0  | 2.3 | 10.5 | 2.2 | 7.2 |
|         | W | 81.7 | 8.1  | 0.9 | 6.9  | —   | 2.3 |
|         | T | 73.6 | 8.0  | 1.9 | 9.3  | 1.5 | 5.6 |
| 1900-   | M | 70.8 | 7.6  | 2.9 | 8.6  | 1.7 | 8.5 |
|         | W | 84.6 | 6.3  | 0.8 | 5.9  | —   | 2.4 |
|         | T | 76.1 | 7.1  | 2.1 | 7.6  | 1.0 | 6.1 |
| TOTAL   | M | 72.5 | 7.9  | 2.1 | 10.9 | 2.3 | 4.3 |
|         | W | 74.0 | 11.9 | 1.4 | 9.8  | 0.1 | 2.8 |
|         | T | 73.0 | 9.3  | 1.9 | 10.5 | 1.5 | 3.8 |



Table II : Mikrozensus 1976. Active persons by age group and highest completed course of diploma (%).

| Alter von ... bis unter ... Jahren | Erwerbstätige insgesamt | Allgemeine Schulausbildung       |                                |                                         |                          | Darunter (Sp.1) mit beruflichem Ausbildungsabschluß |                                 |                       |                                 |
|------------------------------------|-------------------------|----------------------------------|--------------------------------|-----------------------------------------|--------------------------|-----------------------------------------------------|---------------------------------|-----------------------|---------------------------------|
|                                    |                         | in Schulausbildung <sup>1)</sup> | mit allgemeinem Schulabschluß  |                                         |                          | Lehr-/Anlern-ausbildung <sup>2)</sup>               | Fachschulabschluß <sup>3)</sup> | Fachhochschulabschluß | Hochschulabschluß <sup>4)</sup> |
|                                    |                         |                                  | Volksschul-/Hauptschulabschluß | Realschul- oder gleichwertiger Abschluß | Fachhoch-/Hochschulreife |                                                     |                                 |                       |                                 |

Männlich

|                 |        |      |      |      |      |      |      |     |      |
|-----------------|--------|------|------|------|------|------|------|-----|------|
| 15 - 20 ...     | 1 204  | 1,4  | 78,7 | 17,8 | 2,1  | 31,4 | /    | /   | /    |
| 20 - 25 ...     | 1 505  | 0,6  | 70,8 | 20,7 | 7,9  | 69,4 | 4,8  | 1,0 | 0,0  |
| 25 - 30 ...     | 1 741  | 0,4  | 72,3 | 16,1 | 11,2 | 62,5 | 7,4  | 3,7 | 6,4  |
| 30 - 35 ...     | 1 886  | 0,4  | 70,4 | 15,9 | 13,3 | 56,0 | 10,0 | 4,3 | 8,6  |
| 35 - 40 ...     | 2 478  | 0,4  | 75,8 | 13,2 | 10,7 | 56,0 | 10,2 | 3,7 | 6,8  |
| 40 - 45 ...     | 1 973  | 0,3  | 79,2 | 11,1 | 9,3  | 54,8 | 10,4 | 3,2 | 5,2  |
| 45 - 50 ...     | 1 877  | /    | 78,1 | 12,0 | 9,7  | 55,8 | 9,9  | 3,1 | 5,0  |
| 50 - 55 ...     | 1 475  | /    | 76,4 | 12,1 | 11,3 | 56,5 | 9,8  | 3,1 | 5,7  |
| 55 - 60 ...     | 937    | /    | 75,0 | 13,9 | 10,9 | 55,5 | 9,9  | 2,7 | 6,2  |
| 60 - 65 ...     | 690    | /    | 70,1 | 16,4 | 13,2 | 51,9 | 11,2 | 3,5 | 7,4  |
| 65 und mehr ... | 347    | /    | 71,7 | 13,3 | 14,8 | 34,5 | 13,8 | 2,6 | 10,5 |
| insgesamt ...   | 16 172 | 0,47 | 74,0 | 14,6 | 10,1 | 55,4 | 8,7  | 3,0 | 5,4  |

Weiblich

|                 |       |     |      |      |      |      |     |     |     |
|-----------------|-------|-----|------|------|------|------|-----|-----|-----|
| 15 - 20 ...     | 1 010 | 1,3 | 68,3 | 29,1 | 1,6  | 37,2 | 0,5 | /   | /   |
| 20 - 25 ...     | 1 292 | 0,4 | 63,4 | 29,2 | 6,9  | 66,4 | 3,1 | 1,0 | 2,9 |
| 25 - 30 ...     | 1 076 | /   | 65,5 | 22,8 | 11,4 | 55,4 | 3,6 | 1,6 | 8,4 |
| 30 - 35 ...     | 943   | /   | 65,8 | 23,8 | 10,0 | 54,7 | 3,4 | 1,3 | 7,9 |
| 35 - 40 ...     | 1 188 | /   | 75,2 | 18,1 | 6,4  | 48,1 | 2,7 | 0,8 | 4,8 |
| 40 - 45 ...     | 975   | /   | 80,6 | 14,0 | 5,0  | 39,2 | 2,3 | 0,8 | 3,4 |
| 45 - 50 ...     | 983   | /   | 79,3 | 13,9 | 6,5  | 37,4 | 2,4 | 0,9 | 3,6 |
| 50 - 55 ...     | 1 008 | /   | 78,1 | 15,7 | 5,9  | 40,5 | 2,2 | 0,8 | 3,6 |
| 55 - 60 ...     | 590   | /   | 76,0 | 18,6 | 5,1  | 38,5 | 2,6 | 0,9 | 3,2 |
| 60 - 65 ...     | 287   | /   | 75,9 | 17,5 | 6,2  | 33,4 | 2,1 | /   | 3,6 |
| 65 und mehr ... | 228   | /   | 81,7 | 13,9 | 3,9  | 24,7 | 2,6 | /   | 2,5 |
| insgesamt ...   | 9 580 | 0,5 | 72,3 | 20,7 | 6,5  | 46,5 | 2,5 | 0,9 | 4,2 |

Insgesamt

|                 |        |     |      |      |      |      |     |     |     |
|-----------------|--------|-----|------|------|------|------|-----|-----|-----|
| 15 - 20 ...     | 2 214  | 1,4 | 73,8 | 22,9 | 1,9  | 34,1 | 0,4 | /   | /   |
| 20 - 25 ...     | 2 856  | 0,5 | 67,5 | 24,6 | 7,4  | 68,0 | 4,1 | 1,0 | 1,7 |
| 25 - 30 ...     | 2 817  | 0,4 | 69,7 | 18,6 | 11,2 | 59,8 | 5,9 | 2,9 | 7,1 |
| 30 - 35 ...     | 2 829  | 0,4 | 68,9 | 18,5 | 12,2 | 55,6 | 7,8 | 3,3 | 8,4 |
| 35 - 40 ...     | 3 666  | 0,3 | 75,6 | 14,8 | 9,3  | 53,4 | 7,8 | 2,8 | 6,2 |
| 40 - 45 ...     | 2 947  | 0,4 | 79,7 | 12,1 | 7,9  | 49,7 | 7,7 | 2,4 | 4,6 |
| 45 - 50 ...     | 2 861  | 0,3 | 78,5 | 12,7 | 8,6  | 49,4 | 7,3 | 2,4 | 4,5 |
| 50 - 55 ...     | 2 483  | 0,2 | 77,1 | 13,6 | 9,1  | 50,0 | 6,7 | 2,1 | 4,8 |
| 55 - 60 ...     | 1 527  | /   | 75,4 | 15,7 | 8,7  | 48,9 | 7,0 | 2,0 | 5,0 |
| 60 - 65 ...     | 977    | /   | 71,8 | 16,7 | 11,1 | 46,5 | 8,5 | 2,8 | 6,3 |
| 65 und mehr ... | 578    | /   | 75,7 | 13,5 | 10,4 | 30,6 | 9,3 | 1,9 | 7,3 |
| insgesamt ...   | 25 752 | 0,4 | 73,9 | 16,8 | 8,8  | 52,1 | 6,4 | 2,2 | 5,0 |

Table III: German employed persons by completed level of education and age groups, 1974 to 1976 ( in percentage ).

| Alter<br>von ... bis<br>Jahren | Ausbildungsabschluss             |                                           |                                                             |                   |                                                 |                     |            |                                  |                                           |                                                             |                   |                                                 |                     |            |                                  |                                           |                                                             |                   |                                                 |                     |            |
|--------------------------------|----------------------------------|-------------------------------------------|-------------------------------------------------------------|-------------------|-------------------------------------------------|---------------------|------------|----------------------------------|-------------------------------------------|-------------------------------------------------------------|-------------------|-------------------------------------------------|---------------------|------------|----------------------------------|-------------------------------------------|-------------------------------------------------------------|-------------------|-------------------------------------------------|---------------------|------------|
|                                | 1974                             |                                           |                                                             |                   |                                                 |                     |            | 1975                             |                                           |                                                             |                   |                                                 |                     |            | 1976                             |                                           |                                                             |                   |                                                 |                     |            |
|                                | Hoch-<br>schul-<br>ab-<br>schluß | Fach-<br>hoch-<br>schul-<br>ab-<br>schluß | abge-<br>schlos-<br>sene<br>Berufs-<br>aus-<br>bil-<br>dung | nur<br>Ab-<br>sur | ohne<br>Aus-<br>bil-<br>dungs-<br>ab-<br>schluß | ohne<br>An-<br>gabe | Sum-<br>me | Hoch-<br>schul-<br>ab-<br>schluß | Fach-<br>hoch-<br>schul-<br>ab-<br>schluß | abge-<br>schlos-<br>sene<br>Berufs-<br>aus-<br>bil-<br>dung | nur<br>Ab-<br>sur | ohne<br>Aus-<br>bil-<br>dungs-<br>ab-<br>schluß | ohne<br>An-<br>gabe | Sum-<br>me | Hoch-<br>schul-<br>ab-<br>schluß | Fach-<br>hoch-<br>schul-<br>ab-<br>schluß | abge-<br>schlos-<br>sene<br>Berufs-<br>aus-<br>bil-<br>dung | nur<br>Ab-<br>sur | ohne<br>Aus-<br>bil-<br>dungs-<br>ab-<br>schluß | ohne<br>An-<br>gabe | Sum-<br>me |
| unter 20                       |                                  |                                           | 5,3                                                         | 3,9               | 23,1                                            | 4,0                 | 10,4       |                                  |                                           | 4,9                                                         | 4,1               | 23,8                                            | 4,7                 | 10,3       |                                  |                                           | 4,7                                                         | 4,4               | 22,8                                            | 4,5                 | 9,9        |
| 20 - 24                        | 6,7                              | 3,5                                       | 14,9                                                        | 16,3              | 9,4                                             | 9,5                 | 12,5       | 0,6                              | 3,3                                       | 14,6                                                        | 19,0              | 9,4                                             | 8,7                 | 12,3       | 0,7                              | 3,5                                       | 14,5                                                        | 25,2              | 10,1                                            | 10,0                | 12,6       |
| 25 - 29                        | 11,2                             | 14,8                                      | 12,9                                                        | 10,9              | 6,2                                             | 10,3                | 10,7       | 11,7                             | 15,0                                      | 13,5                                                        | 11,4              | 6,6                                             | 9,7                 | 11,2       | 13,4                             | 15,0                                      | 13,8                                                        | 11,8              | 6,9                                             | 11,3                | 11,7       |
| 30 - 34                        | 28,1                             | 24,1                                      | 14,2                                                        | 12,1              | 7,6                                             | 13,9                | 12,5       | 25,9                             | 21,5                                      | 12,6                                                        | 10,7              | 6,5                                             | 10,9                | 11,0       | 23,2                             | 18,6                                      | 11,5                                                        | 9,1               | 5,8                                             | 10,9                | 10,1       |
| 35 - 39                        | 19,8                             | 19,6                                      | 14,1                                                        | 10,8              | 10,8                                            | 15,5                | 13,3       | 21,0                             | 20,8                                      | 14,8                                                        | 10,5              | 10,7                                            | 15,0                | 13,8       | 21,3                             | 21,2                                      | 15,0                                                        | 9,7               | 10,5                                            | 15,7                | 13,9       |
| 40 - 44                        | 11,7                             | 11,0                                      | 10,3                                                        | 7,8               | 10,4                                            | 12,2                | 10,5       | 12,1                             | 12,0                                      | 10,9                                                        | 7,7               | 10,6                                            | 13,4                | 11,0       | 12,5                             | 13,2                                      | 11,6                                                        | 7,2               | 10,9                                            | 12,9                | 11,5       |
| 45 - 49                        | 10,5                             | 10,1                                      | 9,9                                                         | 11,8              | 10,7                                            | 11,6                | 10,3       | 10,8                             | 10,3                                      | 10,2                                                        | 10,2              | 11,0                                            | 14,2                | 10,7       | 10,9                             | 10,8                                      | 10,4                                                        | 8,1               | 11,5                                            | 11,8                | 10,8       |
| 50 - 54                        | 8,0                              | 7,9                                       | 8,5                                                         | 12,6              | 10,1                                            | 10,2                | 9,1        | 8,0                              | 8,0                                       | 8,6                                                         | 12,5              | 10,0                                            | 11,5                | 9,2        | 8,1                              | 8,5                                       | 8,7                                                         | 11,2              | 10,1                                            | 10,0                | 9,2        |
| 55 - 59                        | 4,1                              | 4,0                                       | 4,7                                                         | 7,5               | 5,8                                             | 6,0                 | 5,1        | 4,7                              | 4,6                                       | 5,3                                                         | 8,0               | 6,4                                             | 6,3                 | 5,7        | 5,4                              | 5,4                                       | 6,0                                                         | 8,3               | 7,4                                             | 7,4                 | 6,5        |
| 60 - 64                        | 4,6                              | 4,3                                       | 4,4                                                         | 5,3               | 4,7                                             | 5,3                 | 4,5        | 4,0                              | 3,8                                       | 3,8                                                         | 5,1               | 4,0                                             | 4,2                 | 3,9        | 3,4                              | 3,2                                       | 3,1                                                         | 4,3               | 3,3                                             | 4,0                 | 3,2        |
| 65 - 69                        | 1,1                              | 0,6                                       | 0,7                                                         | 0,8               | 1,0                                             | 1,3                 | 0,8        | 1,0                              | 0,5                                       | 0,6                                                         | 0,8               | 0,3                                             | 1,0                 | 0,7        | 0,9                              | 0,4                                       | 0,5                                                         | 0,6               | 0,6                                             | 1,1                 | 0,6        |
| 70 - 74                        | 0,2                              | 0,1                                       | 0,1                                                         | 0,1               | 0,2                                             | 0,4                 | 0,2        | 0,2                              | 0,1                                       | 0,1                                                         | 0,1               | 0,2                                             | 0,3                 | 0,2        | 0,2                              | 0,1                                       | 0,1                                                         | 0,1               | 0,2                                             | 0,4                 | 0,1        |
| 75 und mehr                    | 0,0                              | 0,0                                       | 0,0                                                         | 0,0               | 0,0                                             | 0,1                 | 0,0        | 0,0                              | 0,0                                       | 0,0                                                         | 0,0               | 0,1                                             | 2,1                 | 0,0        | 0,0                              | 0,0                                       | 0,0                                                         | 0,0               | 0,0                                             | 0,1                 | 0,0        |
| Insgesamt                      | 100,0                            | 100,0                                     | 100,0                                                       | 100,0             | 100,0                                           | 100,0               | 100,0      | 100,0                            | 100,0                                     | 100,0                                                       | 100,0             | 100,0                                           | 100,0               | 100,0      | 100,0                            | 100,0                                     | 100,0                                                       | 100,0             | 100,0                                           | 100,0               | 100,0      |

Table IV: The development in the structure by qualification of the labour force, 1957 to 1978.

| Ausbildungsstufe          | 1957<br>MZ          | 1961<br>VBZ | 1964<br>MZ | 1970<br>VBZ <sup>1)</sup> | 1976<br>MZ | 1978<br>MZ <sup>2)</sup> |
|---------------------------|---------------------|-------------|------------|---------------------------|------------|--------------------------|
| ohne Ausbildungsabschluss | 45,2                |             | 52,0       | 40,0                      | 34,1       | 29,5                     |
| Aniernung                 | 83,6                | 91,1        |            |                           |            |                          |
| betriebliche Ausbildung   | 38,4                |             | 39,3       | 43,5                      | 52,0       | 53,5 <sup>3)</sup>       |
| Berufsfachschule          |                     |             | 5,0        |                           |            |                          |
| Fach-, Meisterschule      | 12,0                | 6,0         |            | 10,5                      | 6,4        | 6,4                      |
| Technikerschule           |                     |             | 0,7        |                           |            |                          |
| Ingenieurschule           | 1,3                 |             |            | 1,8                       | -          | -                        |
| Fachhochschule            | -                   | -           | -          | (1,9)                     | 2,2        | 2,3                      |
| Hochschule                | 3,1                 | 2,9         | 3,0        | 3,8                       | 4,8        | 5,3                      |
| ohne Angabe, Sonstige     | -                   | -           | -          | 0,7                       | 0,5        | 3,0                      |
| Insgesamt                 | 100,0               | 100,0       | 100,0      | 100,0                     | 100,0      | 100,0                    |
| absolut (in Tsd.)         | 21503 <sup>4)</sup> | 25527       | 24867      | 26410 <sup>4)</sup>       | 25752      | 26021                    |

1) Complete coverage; 2) Provisional exploitation; 3) Incl. "professional traineeship" (Praktikum); 4) Without helpers; incl. Soldiers.  
5) Active persons. Numbers in brackets: estimates.

Source: W. Clement, M. Tessaring and G. Weisshuhn, in Mitt. AB, Heft 2/80.

Table V : Distribution by profession of the qualified labour force, 1976.

| Berufsreich                                      | Geschlecht   | Insgesamt | Darunter mit                            |                                                    |                              |                                              |                                      |                                               |                                      |
|--------------------------------------------------|--------------|-----------|-----------------------------------------|----------------------------------------------------|------------------------------|----------------------------------------------|--------------------------------------|-----------------------------------------------|--------------------------------------|
|                                                  |              |           | allgemeinbildendem Schulabschluß        |                                                    |                              | berufsbildendem oder Hochschulabschluß       |                                      |                                               |                                      |
|                                                  |              |           | Volks-<br>(Haupt-<br>schul-<br>abschluß | Realschul-<br>oder gleich-<br>wertiger<br>Abschluß | Fachhoch-<br>schul-<br>reife | Lehr-/<br>Anlernau-<br>bildung <sup>1)</sup> | Fachschul-<br>abschluß <sup>2)</sup> | Fachhoch-<br>schul-<br>abschluß <sup>3)</sup> | Hochschul-<br>abschluß <sup>4)</sup> |
|                                                  |              | 1 000     |                                         |                                                    |                              | %                                            |                                      |                                               |                                      |
| Erwerbstätige                                    | insgesamt... | 25 732    | 73,9                                    | 16,8                                               | 8,8                          | 52,1                                         | 6,4                                  | 2,2                                           | 5,0                                  |
|                                                  | Männer ....  | 16 172    | 74,9                                    | 14,6                                               | 10,1                         | 53,3                                         | 8,7                                  | 3,0                                           | 5,4                                  |
|                                                  | Frauen ....  | 9 580     | 72,3                                    | 20,7                                               | 6,5                          | 46,5                                         | 2,5                                  | 0,9                                           | 4,3                                  |
| Pflanzenbauer, Tierzüchter, Fischerei-<br>berufe | zusammen...  | 1 643     | 92,7                                    | 5,2                                                | 1,3                          | 24,9                                         | 3,6                                  | 0,5                                           | 0,4                                  |
|                                                  | Männer ....  | 821       | 90,6                                    | 6,4                                                | 2,1                          | 31,9                                         | 6,1                                  | 0,9                                           | 0,7                                  |
|                                                  | Frauen ....  | 823       | 94,9                                    | 3,9                                                | 1                            | 15,8                                         | 1,0                                  | 1                                             | 1                                    |
| Bergleute, Mineralgewinner                       | zusammen...  | 152       | 97,5                                    | 1                                                  | 1                            | 53,7                                         | 1                                    | 1                                             | 1                                    |
|                                                  | Männer ....  | 149       | 97,8                                    | 1                                                  | 1                            | 53,9                                         | 1                                    | 1                                             | 1                                    |
|                                                  | Frauen ....  | 1         | 1                                       | 1                                                  | 1                            | 1                                            | 1                                    | 1                                             | 1                                    |
| Fertigungsberufe                                 | zusammen...  | 9 567     | 93,6                                    | 4,9                                                | 0,9                          | 52,3                                         | 6,0                                  | 0,1                                           | 0,1                                  |
|                                                  | Männer ....  | 6 798     | 93,4                                    | 5,1                                                | 1,0                          | 59,0                                         | 7,4                                  | 0,2                                           | 0,1                                  |
|                                                  | Frauen ....  | 1 770     | 94,6                                    | 4,1                                                | 0,6                          | 27,0                                         | 0,8                                  | 1                                             | 1                                    |
| Technische Berufe                                | zusammen...  | 1 365     | 49,0                                    | 27,8                                               | 23,1                         | 39,3                                         | 22,2                                 | 18,9                                          | 7,3                                  |
|                                                  | Männer ....  | 1 225     | 49,0                                    | 28,4                                               | 24,1                         | 37,3                                         | 23,6                                 | 20,5                                          | 8,3                                  |
|                                                  | Frauen ....  | 140       | 49,0                                    | 39,4                                               | 11,3                         | 57,5                                         | 9,7                                  | 3,8                                           | 1                                    |
| Dienstleistungsberufe                            | zusammen...  | 13 613    | 61,6                                    | 24,7                                               | 13,3                         | 56,7                                         | 5,5                                  | 2,1                                           | 8,5                                  |
|                                                  | Männer ....  | 6 998     | 59,2                                    | 22,8                                               | 17,7                         | 53,1                                         | 7,3                                  | 2,9                                           | 10,9                                 |
|                                                  | Frauen ....  | 6 625     | 64,1                                    | 26,7                                               | 8,8                          | 55,1                                         | 3,0                                  | 1,1                                           | 5,9                                  |
| Sonstige Arbeitskräfte                           | zusammen...  | 412       | 71,9                                    | 19,6                                               | 7,9                          | 41,9                                         | 4,4                                  | 1,6                                           | 2,3                                  |
|                                                  | Männer ....  | 192       | 72,8                                    | 17,1                                               | 9,2                          | 39,0                                         | 6,3                                  | 1                                             | 3,2                                  |
|                                                  | Frauen ....  | 220       | 71,0                                    | 21,7                                               | 6,7                          | 45,1                                         | 2,8                                  | 1                                             | 1                                    |

Source: Wirtschaft und Statistik, Heft 10/78.

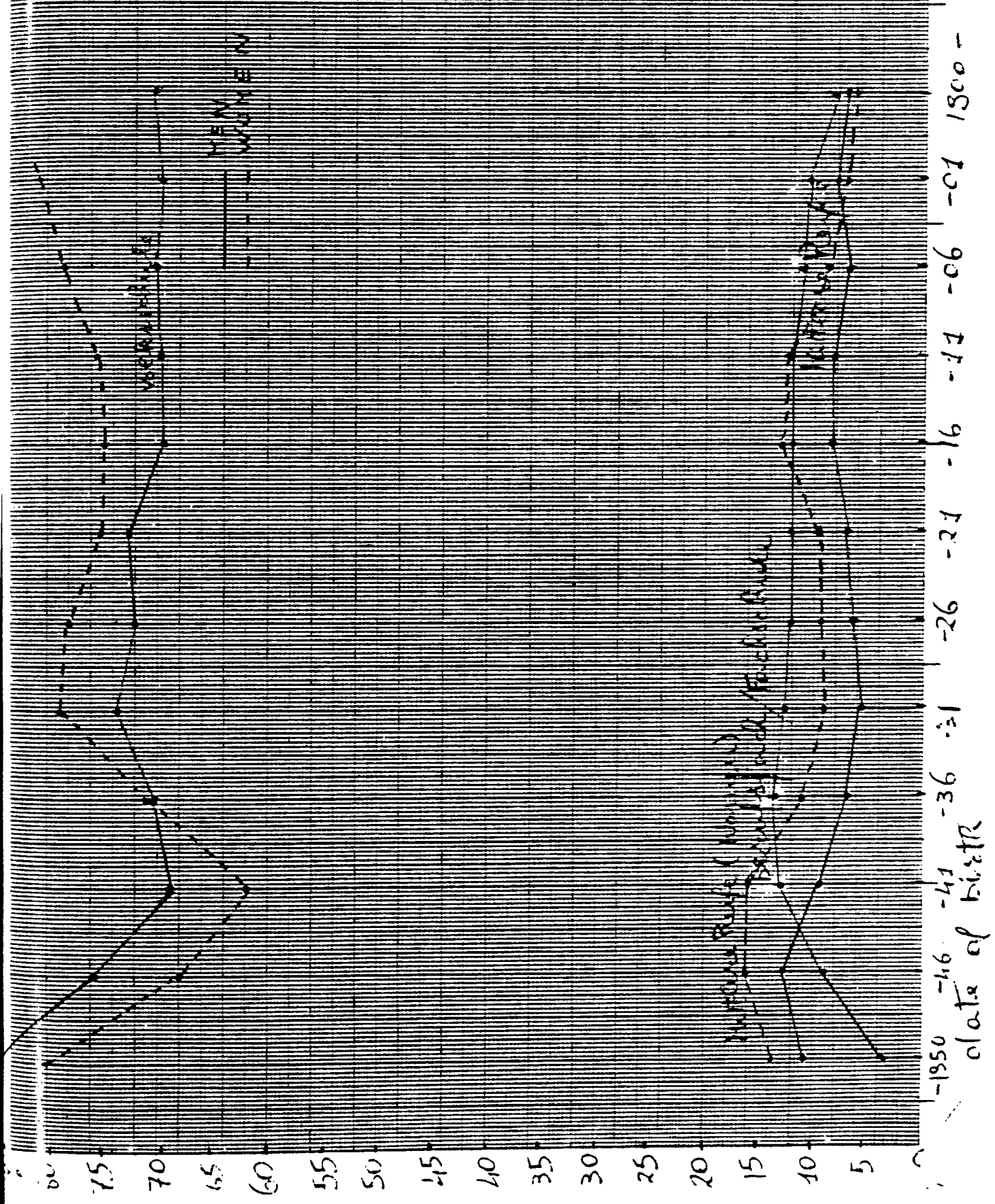
Table VI: German active persons holding a third-level degree in selected occupations. Comparison between 1970 and 1976.

| Ausgewählte Berufsordnung                                      | Geschlecht   | Insgesamt |       |                                              | Darunter mit          |       |                                              |                   |       |                                              |
|----------------------------------------------------------------|--------------|-----------|-------|----------------------------------------------|-----------------------|-------|----------------------------------------------|-------------------|-------|----------------------------------------------|
|                                                                |              | 1970      | 1976  | Zu- (-) bzw. Abnahme (-) 1976 gegenüber 1970 | Fachhochschulabschluß |       |                                              | Hochschulabschluß |       |                                              |
|                                                                |              |           |       |                                              | 1970                  | 1976  | Zu- (-) bzw. Abnahme (-) 1976 gegenüber 1970 | 1970              | 1976  | Zu- (-) bzw. Abnahme (-) 1976 gegenüber 1970 |
|                                                                |              | (100)     | (100) | %                                            | (100)                 | (100) | %                                            | (100)             | (100) | %                                            |
| Architekten, Baumeister                                        | zusammen...  | 153       | 134   | - 12,3                                       | 98                    | 71    | - 27,2                                       | 31                | 25    | - 21,1                                       |
|                                                                | Männer ..... | 148       | 131   | - 11,7                                       | 97                    | 70    | - 27,5                                       | 30                | 24    | - 22,0                                       |
|                                                                | Frauen ..... | 4         | 1     | - 100,0                                      | 1                     | 1     | 0                                            | 1                 | 1     | 0                                            |
| Übrige Ingenieure                                              | zusammen...  | 257       | 274   | + 6,7                                        | 157                   | 133   | - 15,3                                       | 36                | 38    | + 4,7                                        |
|                                                                | Männer ..... | 252       | 271   | + 7,4                                        | 156                   | 132   | - 15,4                                       | 36                | 38    | + 5,0                                        |
|                                                                | Frauen ..... | 5         | 3     | - 40,0                                       | 1                     | 1     | 0                                            | 0                 | 0     | 0                                            |
| Physiker, Physikingenieure, Mathematiker                       | zusammen...  | 13        | 11    | - 15,4                                       | 1                     | 1     | 0                                            | 12                | 10    | - 16,7                                       |
|                                                                | Männer ..... | 12        | 11    | - 8,3                                        | 1                     | 1     | 0                                            | 11                | 9     | - 18,2                                       |
|                                                                | Frauen ..... | 1         | 0     | - 100,0                                      | 0                     | 0     | 0                                            | 1                 | 1     | 0                                            |
| Groß- und Einzelhandelskaufleute, Einkäufer                    | zusammen...  | 695       | 566   | - 18,6                                       | 7                     | 12    | + 80,6                                       | 12                | 8     | - 33,3                                       |
|                                                                | Männer ..... | 446       | 391   | - 12,5                                       | 7                     | 11    | + 66,7                                       | 10                | 8     | - 20,0                                       |
|                                                                | Frauen ..... | 249       | 176   | - 29,3                                       | 0                     | 1     | + 100,0                                      | 2                 | 0     | - 100,0                                      |
| Unternehmer, Geschäftsführer, Geschäftsbereichsleiter          | zusammen...  | 300       | 544   | + 81,4                                       | 16                    | 42    | + 162,3                                      | 29                | 41    | + 41,4                                       |
|                                                                | Männer ..... | 244       | 454   | + 85,9                                       | 16                    | 40    | + 150,0                                      | 28                | 39    | + 42,9                                       |
|                                                                | Frauen ..... | 56        | 91    | + 62,0                                       | 0                     | 2     | + 100,0                                      | 1                 | 2     | + 100,0                                      |
| Leisende und administrativ entscheidende Verwaltungsfachleute  | zusammen...  | 254       | 314   | + 23,6                                       | 11                    | 39    | + 252,3                                      | 34                | 38    | + 11,8                                       |
|                                                                | Männer ..... | 234       | 273   | + 16,7                                       | 11                    | 36    | + 227,3                                      | 32                | 34    | + 6,3                                        |
|                                                                | Frauen ..... | 21        | 41    | + 101,3                                      | 0                     | 3     | + 100,0                                      | 2                 | 4     | + 100,0                                      |
| Bürofachkräfte                                                 | zusammen...  | 2 533     | 2 862 | + 13,0                                       | 9                     | 43    | + 373,9                                      | 31                | 29    | - 6,5                                        |
|                                                                | Männer ..... | 1 162     | 1 201 | + 3,4                                        | 9                     | 32    | + 255,6                                      | 22                | 23    | + 4,5                                        |
|                                                                | Frauen ..... | 1 372     | 1 661 | + 21,1                                       | 0                     | 12    | + 100,0                                      | 9                 | 6     | - 33,3                                       |
| Soldaten, Grenzschutz-, Polizeibedienstete                     | zusammen...  | 603       | 681   | + 12,9                                       | 4                     | 12    | + 200,0                                      | 6                 | 8     | + 33,3                                       |
|                                                                | Männer ..... | 599       | 675   | + 12,6                                       | 4                     | 12    | + 195,0                                      | 6                 | 8     | + 33,3                                       |
|                                                                | Frauen ..... | 4         | 6     | + 50,0                                       | 0                     | 0     | 0                                            | 0                 | 0     | 0                                            |
| Rechtsanwälte                                                  | zusammen...  | 26        | 29    | + 11,5                                       | x                     | x     | x                                            | 26                | 29    | + 11,5                                       |
|                                                                | Männer ..... | 24        | 26    | + 8,3                                        | x                     | x     | x                                            | 24                | 26    | + 8,3                                        |
|                                                                | Frauen ..... | 2         | 3     | + 50,0                                       | x                     | x     | x                                            | 2                 | 3     | + 50,0                                       |
| Rechtsvertreter, -berater                                      | zusammen...  | 32        | 39    | + 21,9                                       | 1                     | 1     | 0                                            | 32                | 32    | 0                                            |
|                                                                | Männer ..... | 30        | 37    | + 23,3                                       | 1                     | 1     | 0                                            | 29                | 31    | + 6,9                                        |
|                                                                | Frauen ..... | 2         | 2     | 0                                            | 0                     | 0     | 0                                            | 3                 | 1     | - 66,7                                       |
| Publizisten                                                    | zusammen...  | 29        | 32    | + 10,3                                       | 1                     | 1     | 0                                            | 8                 | 10    | + 25,0                                       |
|                                                                | Männer ..... | 20        | 22    | + 10,0                                       | 1                     | 1     | 0                                            | 7                 | 7     | 0                                            |
|                                                                | Frauen ..... | 9         | 10    | + 11,1                                       | 0                     | 0     | 0                                            | 1                 | 3     | + 200,0                                      |
| Ärzte (ohne Zahn- und Tierärzte)                               | zusammen...  | 99        | 116   | + 17,1                                       | x                     | x     | x                                            | 99                | 116   | + 17,1                                       |
|                                                                | Männer ..... | 75        | 91    | + 21,3                                       | x                     | x     | x                                            | 75                | 91    | + 21,3                                       |
|                                                                | Frauen ..... | 25        | 25    | 0                                            | x                     | x     | x                                            | 25                | 25    | 0                                            |
| Apotheker                                                      | zusammen...  | 26        | 33    | + 26,9                                       | x                     | x     | x                                            | 25                | 33    | + 32,0                                       |
|                                                                | Männer ..... | 13        | 16    | + 23,1                                       | x                     | x     | x                                            | 13                | 16    | + 23,1                                       |
|                                                                | Frauen ..... | 12        | 17    | + 41,7                                       | x                     | x     | x                                            | 12                | 17    | + 41,7                                       |
| Hochschullehrer, Dozenten an höheren Fachschulen und Akademien | zusammen...  | 36        | 56    | + 55,6                                       | x                     | x     | x                                            | 36                | 56    | + 55,6                                       |
|                                                                | Männer ..... | 32        | 49    | + 53,1                                       | x                     | x     | x                                            | 32                | 49    | + 53,1                                       |
|                                                                | Frauen ..... | 4         | 7     | + 75,0                                       | x                     | x     | x                                            | 4                 | 7     | + 75,0                                       |
| Übrige Lehrer                                                  | zusammen...  | 421       | 568   | + 34,9                                       | 1                     | 11    | + 1000,0                                     | 179               | 498   | + 278,2                                      |
|                                                                | Männer ..... | 211       | 277   | + 31,4                                       | 1                     | 3     | + 200,0                                      | 188               | 235   | + 25,0                                       |
|                                                                | Frauen ..... | 210       | 291   | + 38,4                                       | 0                     | 8     | + 100,0                                      | 191               | 263   | + 37,7                                       |
| Wirtschafts- und Sozialwissenschaftler, z. B. z. Statistiker   | zusammen...  | 29        | 43    | + 48,3                                       | x                     | x     | x                                            | 29                | 43    | + 48,3                                       |
|                                                                | Männer ..... | 24        | 34    | + 41,7                                       | x                     | x     | x                                            | 24                | 34    | + 41,7                                       |
|                                                                | Frauen ..... | 5         | 9     | + 80,0                                       | x                     | x     | x                                            | 5                 | 9     | + 80,0                                       |
| Seelsorger                                                     | zusammen...  | 36        | 34    | - 5,6                                        | 1                     | 1     | 0                                            | 35                | 34    | - 2,9                                        |
|                                                                | Männer ..... | 35        | 33    | - 5,7                                        | 1                     | 1     | 0                                            | 34                | 33    | - 2,9                                        |
|                                                                | Frauen ..... | 1         | 1     | 0                                            | 0                     | 0     | 0                                            | 1                 | 1     | 0                                            |

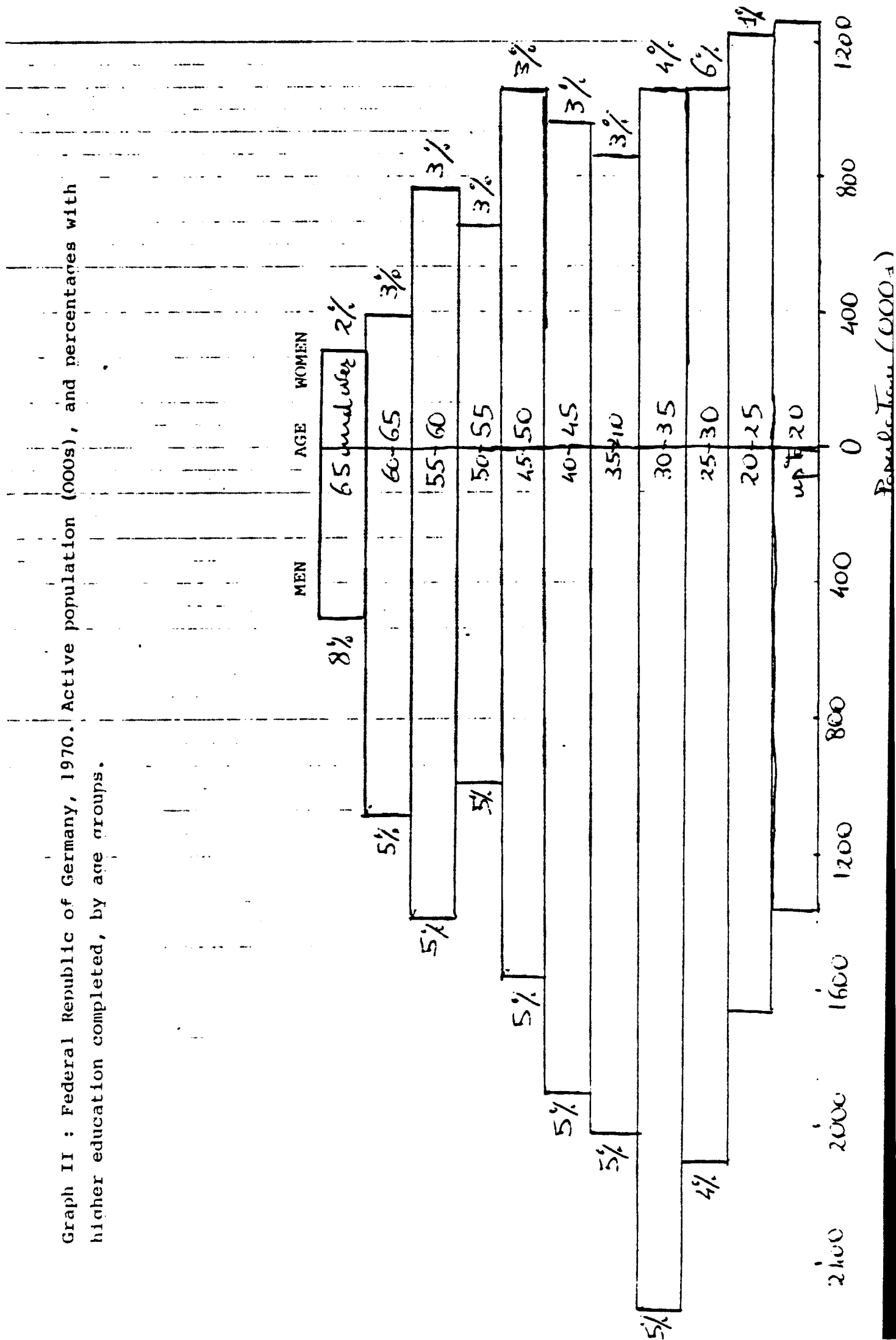
1) Ergebnisse der Volks- und Berufszählung 1970 (10 % Repräsentativität) und des Mikrocensus MA 1976. — 2) Einzahl. Ingenieurhochschulabschluß. — 3) Einzahl. Lehrerfortbildung.

Source: Wirtschaft und Statistik, Heft 10/78.

The following data were obtained from the study of the  
 relationship between the rate of birth and the rate of



Graph II : Federal Republic of Germany, 1970. Active population (000s), and percentages with higher education completed, by age groups.



15-20 20-25 25-30 30-35 35-40 40-45 45-50 50-55 55-60 60-65 65-70  
 70-75 75-80 80-85 85-90 90-95 95-100

Graph 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000

81 78 75 72 69 66 63 60 57 54 51 48 45 42 39 36 33 30 27 24 21 18 15 12 9 6 3

15-20 20-25 25-30 30-35 35-40 40-45 45-50 50-55 55-60 60-65 65-70

Graph 21: Dimension 1975. Letter notation by  
 the highest level of the graph. Letter and  
 in the group. Families. Legend as in Graph 13.

30 27 26 25 24 23 22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1



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