UNIVERSITY COLLEGE OF RHODESIA AND NYASALAND

POLYGONS

PART TWO
A STUDY OF LABOUR TURNOVER

EVELYN M. BELL

OCCASIONAL PAPER NO. 3
DEPARTMENT OF AFRICAN STUDIES
SALISBURY
1963

POLYGONS: A SURVEY OF THE AFRICAN PERSONNEL OF A RHODESIAN FACTORY

PART TWO

Labour Turnover during the three-year period, June 1, 1957 - May 31, 1960

EVELYN M. BELL

UNIVERSITY COLLEGE OF RHODESIA AND NYASALAND
Department of African Studies Occasional Paper No. 3
Salisbury 1963

CONTENTS

Acknowledgements

Chapter I	Introduction: Background to the Study	1
Chapter II	Source of Material. Definitions	5
Chapter III	Engagement and Discharge at Polygons	6
	Reasons for Separation from Employment	7
Chapter IV	Method of Presentation	10
Chapter V	The Survival Curves, I	14
Chapter VI	Survival and Separation Rates, June 1957 – May 1960	21
Chapter VII	Survival Curves, II, related to biographical factors:-	39
	1. Country of Origin	41
	2. Tribal Origin	49
	3. Age	52
	4. Marital State	57
	5. Wage	61
	6. Skill Grade	68
	7. Accommodation	77
	8. Department	85
Chapter VIII	Summary and Conclusion	87
Appendix I	Description of the Two Methods used for the determination of Survival Curves	90
Appendix II	Additional Tables	105
Appendix III	Computation of Service Survival Rates from Separation Figures, by J. Clyde Mitchell	106
Bibliography	. . . . .	119

ACKNOWLEDGEMENTS

I should like to record my thanks to Professor J.C. Mitchell, of the Department of African Studies at the University College of Rhodesia and Nyasaland, for his insistence on the value of pursuing this study and for his continued encouragement and help with both the method and procedure used in it; also:-

to Mr. R.W.M. Johnson of the Department of Economics at the University College of Rhodesia and Nyasaland, for his helpful criticism of the preliminary draft;

to the staff at Polygons for their very willing co-operation and advice;

to members of the Southern Rhodesia Department of Labour and the Central Statistical Office, Salisbury;

to Mr. D. Msarirambi, of the University College of Rhodesia and Nyasaland, for his patient help with the mechanical processing of data;

to Mrs. H. Neale and Mrs. M. Johnson for their help in the preparation of the work in draft form;

and to the many others who have so willingly answered queries and supplied me with necessary information.

CHAPTER I

INTRODUCTION: BACKGROUND TO THE STUDY

The first part of this study, "POLYGONS: a Survey of the African Personnel of a Rhodesian Factory", appeared as Occasional Paper No. 2 of the Department of African Studies at the University College of Rhodesia and Nyasaland in August 1961. This set out in some detail the background against which this second part of the study was made. The following brief recapitulation may however be necessary for the appreciation of the labour turnover study presented here.

The field work for the study was done during the period May-June 1959, and, though many of the conditions prevailing in the factory at the time have remained constant, there have been over the past two years some minor changes in the organisation and administration of matters relating to African personnel and it has therefore been found expedient to report most of the findings in the past tense.

The Factory is situated in the heavy industrial area of Salisbury. It is modern in design and well laid out, and the manufacturing processes incorporate a degree of mechanisation commensurate with economical and efficient operation and the volume of output required.

Conditions within the factory are clean, the buildings well lit and ventilated and work procedures efficiently organised. Care and attention are paid by the management to the welfare, working conditions and safety of the personnel. During the three years when contact was maintained with the African Affairs Department at Polygons for the purpose of this study it was evident that a policy of continually improving management/works relationships was being actively followed and a good deal of effort being made to reduce the turnover of labour to the lowest possible degree.

The Personnel

This study covers the period June 1957 to May 1960. During the second half-year of 1957 the average monthly total of African employees at Polygons was 584; at June 30th 1959, 606 Africans were in employment; during 1960 the average monthly total was 671.

These men were recruited from local, i.e. Southern Rhodesian sources, from Nyasaland and from Mozambique, with occasionally very small numbers from Northern Rhodesia, the Republic of South Africa and Bechuanaland. At the end of June 1959 the proportion in employment from each of the main territories from which labour was drawn was as follows:-

Southern Rhodesia	56.3
Mozambique	22.0
Nyasaland	21.0

Men from Nyasaland were migrant workers subject to the Migrant Workers Act (No. 9 of 1948, repealed June 1st 1960) which made it necessary for them to return to their homes for a period, after working for two years in Southern Rhodesia.

The African employees were deployed throughout the factory in four major departments in approximately the following proportions:-

Technical	69%
Commercial	12%
Personnel	5%
Marketing	8%

Of the remainder, 2% were in the labour pool and 4% were temporary employees.[1]

Men in the Technical Department were concerned with the actual manufacturing processes, with packing, storing, security and factory maintenance and the handling of raw materials. The majority were, therefore, in this department. European technical and administrative staff directed the work in all departments.

Welfare

Considerable attention was paid by the management to the welfare of all employees.

Canteen facilities were provided. One cooked meal per man per shift was served at midday or during the night shift. This amounted to 1600 calories per meal, and a deduction of 12/3d per month was made for this from each man's wage. Tea or coffee was served free of charge twice during each shift and accompanied by the statutory fifteen minute break. At the actual time of the study bananas or oranges, according to season, were issued to each man once a week. During the summer months a non-alcoholic drink, mahewu, of high calorific content, was issued before the midday meal.

Magazines, periodicals, newspapers and games were available for the men when off duty; and cigarettes, matches, soft drinks, bread and buns were on sale in the canteen.

Clothing for work was issued to each employee. The men changed in a large locker room with showers and their own clothes remained locked up while they were at work. A laundry and two tailors in the factory ensured the cleanliness and maintenance of working clothes.

Medical Care was provided at a clinic within the factory. This was staffed by a European nursing sister, with experience in industrial nursing, assisted by a qualified and trained African medical orderly. A doctor visited the clinic twice weekly. Immediate advice and treatment was given in all cases of sickness or injury, and before resuming work after sickness employees had to report to the clinic and obtain a certificate of fitness. Routine tests for bilharzia were made for all employees on confirmation of their appointment and all had previously been X-rayed for tuberculosis by the Salisbury Municipality mass radiography unit before applying for work.

Accommodation for all employees was the responsibility of Polygons and was provided in African townships by arrangement with the Salisbury Municipality. Rents for all employees earning less than £17 per month were paid by Polygons. There were three main types:-

---

1 Proportions as at June 30, 1959. (Bell, 1961: 14)

1) Hostel accommodation at Harare, where each man shares a room with four others. Beds, mattresses, but not bedding, are provided as also are communal cooking facilities. The whole of one hostel was occupied by Polygons' men and a warden was employed by Polygons to supervise it. Cleaners were also supplied by the company in addition to the municipal staff.

2) Accommodation at Harare in single quarters, which gives an employee a place in a room with other men. Such quarters are known as Old Bricks, New Lines, Jo'burg Lines, Tanks, Nissen Huts. Nissen Huts are shared by six men; Tanks by three men; rooms at Old Bricks by four men; New Lines accommodate four men in one room. These quarters are quite distinct from hostel accommodation, are subject to but little supervision and give more personal freedom to the occupier than is found in the hostels. They are intended for single men but many men do, in fact, have their wives or reputed wives with them and their children also. Consequently overcrowding is common.[1]

3) Accommodation in cottages and houses - detached and semi-detached - at Harare, Mabvuku and Old Highfield.

Accommodation is also found in the township of New Highfield where a home ownership scheme operates and where lodgers are permitted. A few of Polygons' men were purchasing their own houses here and others were found quarters as lodgers with Highfield residents.

Polygons paid the Salisbury Municipality a flat rate of 31/6d per man accommodated, except in the case of those employees earning more than £17 per month who were responsible for their own rent.

Pensions were awarded under a non-contributory scheme, the cost being borne entirely by Polygons. The normal retiring age was 65 and any employee retiring after a minimum of fifteen years service qualified for a pension.

Service Awards in the form of badges were made on completion of each year of service and special badges were presented after five and ten years of service. After fifteen years service with Polygons an employee would receive a watch from the company.

Sport and Recreational Facilities were available for the personnel at the Harare Township Sports Ground, in the hostels where many of the men were accommodated, and at the factory.

An African Affairs Department dealt with all matters relating to African personnel. It was staffed by an African Affairs Officer (a European) and an African Affairs Supervisor. These two men were responsible for the engagement and discharge of personnel. Five assistant African clerks dealt with personnel records, issue of clothing, salaries and wages and accommodation.

Works Committees, three in number, permitted the ventilation of ideas, suggestions and grievances through elected African representatives. The African Advisory Committee consisted of the African Affairs Officer, the African Affairs Supervisor and six elected African members of factory personnel. This Committee was concerned with job relations, supervisor/

---

1 Samkange: 1960, instances examples of this.

worker relations, amenities for workers and social matters affecting the African personnel. The Joint Advisory Council was a body representative of both the European and African Advisory Committees. Both Chairman and vice-Chairman of the African Advisory Committee were members of this body.

The Safety Committee consisted of both African and European representatives nominated in proportion to numerical strength from the various departments in the works. It dealt with matters relevant to the safety of workers within the factory such as protection from machinery, ladders, accident prevention. It considered suggestions and adopted recommendations after due discussion and approval.

CHAPTER II

SOURCE OF MATERIAL. DEFINITIONS

It was hoped and expected that the sociological survey of Polygons personnel, as first undertaken, would throw some light on the possible reasons underlying labour turnover in the factory, if only by the presentation of as much information as possible about the men. It was not originally intended to include any specific study of labour turnover; but during the survey period, while either waiting to interview men or on those days when it was not convenient to interview them the chance was taken of collecting data from company records of past employees for the period June 1 1957 to April 30 1959, a period immediately preceding the time of the survey. This information, together with engagement and discharge data for the two-month survey period, May and June 1959 and the eleven months following up to May 30 1960, provided a considerable body of information covering a three-year period.

The information relates to 1059 men, all of whom faced the possibility of periods of service varying from one month to three years or more, but who for diverse reasons left their employment after work spells of varying length during the three year period. The data were collected exclusively from company record cards, which was inevitable as most of the men had already left Polygons' employment, so that no personal case material is included. But it was nevertheless possible to amass useful biographical detail such as the territorial origin of the men, their tribe, age, marital state, department in which employed, skill grade, wage, accommodation, number of increments, mobility within the factory, as well as the fundamental dates, of engagement and separation, and the reason for leaving as recorded by the company. Any one, or a combination of any of these factors, might have some bearing on the problem of separation and it became clear that here was material obviously relevant to a study of labour turnover. Hence this particular study was undertaken.

SEPARATION, DISCHARGE, RESIGNATION AND ENGAGEMENT

These four terms are used frequently throughout the study and therefore need precise definition.

The term SEPARATION is used to connote the termination of a man's spell of employment for any reason whatsoever.

The term DISCHARGE is used for the termination of a man's spell of employment by the management. Such a separation is involuntary on the part of the worker i.e. not of his own choice.

The term RESIGNATION is used for the termination of a spell of employment by the worker himself though his reason for doing so may be voluntary i.e. entirely of his own choice or involuntary i.e. forced upon him by circumstances beyond his control, as in the event of sickness or compulsory return of a migrant labourer.

Separation, therefore, includes both discharge and resignation.

The term ENGAGEMENT denotes the enrolment of a new man to the labour force and may be the replacement of a separated employee or a new appointment to the staff. The alternative term "accession" is frequently used elsewhere in this same sense.

CHAPTER III

ENGAGEMENT AND DISCHARGE AT POLYGONS

Bound up with the question of turnover is the process of engagement and discharge at the factory; and also the many reasons given for separation. A short summary of this is therefore necessary before setting out the main thesis.

The system of engagement and discharge used by Polygons at the time of the survey and during the two previous years was a relatively simple one.

Responsibility for the engagement and discharge of all African personnel rested on the two senior members of the African Affairs Department - the African Affairs Officer, a European, and the African Affairs Supervisor, an African. It was the task of the African Affairs Supervisor to screen all applicants for work before recommending them to the African Affairs Officer as suitable for employment in specific jobs or departments. Men seeking the lower grade jobs in the factory, i.e. the unskilled and semi-skilled, presented themselves at the factory gate in varying numbers throughout any month and from them the African Affairs Supervisor selected possible men to fill vacancies as they occurred from day to day, though his busiest time was always the end and beginning of any month. Each applicant was asked if he had previously been employed by Polygons; his Employment Certificate (Situpa) was examined for details of other previous employment, his age and origin, both territorial and tribal. If he was required for a heavy manual task his record of previous work was scrutinised to check on his experience of, and survival in, work of this kind (drum moving, sack stacking, coal heaving are examples of this type of work) and it was only for this type of work that particular physical attributes were deemed necessary and men selected accordingly. For sack moving and stacking, for example, men of compact muscular physique were preferred to tall, lanky types. Men with previous company service and a good record were given first consideration. No aptitude tests were applied. It was usually assumed that most of the simpler jobs would be managed successfully after a short probationary period in a department, amongth men who already knew the work, and after some short explanation of the nature of the job given by the departmental head or supervisor. New men were frequently put into the labour 'pool' and drafted from there to departments having vacancies, sometimes being moved from one to another until they fitted into a job which they could do to the satisfaction of both themselves and their supervisors.

If a vacancy to be filled entailed any degree of responsibility enquiries were made as to educational standard and allied previous experience, and references were required from all men seeking employment in grade II and upwards to grade VII.[1] After selection by the African Affairs Supervisor the applicant was usually referred also to the African Affairs Officer and signed on by him as a member of the staff.

---

[1] Bell, 1961: 33, 34.

Vacancies in the higher grades of employment were advertised on works notice boards and in both the European and African press. Applicants for these presented themselves for interview to the African Affairs Supervisor and the African Affairs Officer, either on request after a written application, or immediately, if the applicant was already on the works staff in another capacity. Such applicants had to fill in forms of application giving details of education and previous experience; and supply references.

All work was subject to job evaluation and a new employee was assigned to an appropriate job grade (one of seven) and his wage rate fixed accordingly. He was allotted accommodation, clothing for work and a locker. He was also given a bilharzia test. The African Affairs Supervisor explained the type of work which was being offered, stated the hours of work and overtime conditions, explained shift work, stated wages and the system of increments, leave and sick leave, medical attention and holidays.

There was no system of written and signed contracts; but when each employee, after engagement, went to the Municipality for his Certificate of Service, this stated whether he was employed on a daily, weekly or monthly basis and was regarded as contractual and served instead of a written contract issued by Polygons.

Normally a month's notice of termination of appointment was required on either side, but a month's pay in lieu of notice might, in certain circumstances, be given by the company.

In exceptional circumstances of gross negligence and indiscipline employees could be dismissed without notice, but all cases of misdemeanour were very carefully examined and every effort was made to keep a man, especially if his previous record had been satisfactory. Any employee whose work or behaviour was not proving satisfactory was given several warnings by his departmental supervisor and the African Affairs Department before any actic was taken.

Dismissal was immediate in the case of proved theft or dishonesty, when a man was given what was due to him in leave pay, and his wage up to the date of discharge. Complaints of employees against the management and other employees, and of supervisors of any man in their departments were brought to the African Affairs Department, as also were disputes between men, for investigation and settlement, if possible. All possible effort was made to maintain good relations.

Sometimes, however, a definite misdemeanour gave management an opportunity to dismiss an employee who had not been pulling his weight or whose work or behaviour had deteriorated.

Any employee who had to resign because of ill health might receive a month's pay in lieu of notice and leave pay to the amount accruing to him.

REASONS FOR SEPARATION FROM EMPLOYMENT

Frequent reference is made throughout this study to the reasons for separation from employment, and some explanation of the basis on which these reasons were classified is outlined here. During the examination of data available at Polygons and during interviews with employees, 46 reasons for separation emerged. These were all reasons recorded by the employer or by the interviewer and were determined in each case after discussion with the employee

They were finally assigned, not without some difficulty, to two major categories, with the following sub-divisions:-

I. INVOLUNTARY -

i) for reasons of circumstance beyond the control of the employee;

ii) for reasons connected with work;

iii) for reasons of discipline.

II. VOLUNTARY -

i) personal;

ii) personal but work-connected.

Specific reasons for separation fall into the above categories as follows:-

I. i. a) Ill-health or death of worker;
b) death of kinsman;
c) sickness of kinsman;
d) to plough
e) family matters to deal with land/housing, etc.;
f) migrant's compulsory return;
g) home difficulties;
h) retirement due to age.

I. ii. a) Trial period unconfirmed;
b) unsatisfactory work;
c) unsatisfactory timekeeping;
d) reduction of staff; redundancy;
e) refusal of medical treatment;
f) refusal to work overtime;
g) refusal to accept transfer;
h) desertion;
i) completion of contract;
j) undesirable or prohibited by Municipality to work.

I. iii. a) Unsatisfactory conduct;
b) smoking in factory, in prohibited areas;
c) drunk on duty;
d) assault;
e) sleeping on duty;
f) dishonesty: theft;
g) disobedience of instructions;
h) overdue from leave;
i) absent without leave;
j) other.

II. i. a) To change occupation;
b) to continue education;
c) to return to rural area;
d) to improve wage position;
e) just plain "going home";
f) going home to marry;
g) going home to visit or rest;
h) accommodation problems;
i) summoned home by wife or family;
j) other - own request.

II. ii. a) Dissatisfaction with wages;
b) dissatisfaction with work;
c) dissatisfaction with conditions;
d) difficulties with associates;
e) difficulties with supervisor;
f) tired of work;
g) wanted a change;
h) had earned enough.

All cases in which the reason was unspecified or did not fall into any of the above were classified separately as III OTHER.

It was occasionally difficult to assign some of the reasons to their appropriate category. "To plough", for example, could have signified both compulsive duty and therefore involuntary, or a personal decision on the part of the employee; but having regard to local custom and conditions this reason was put under I i. "Going home" or "to return to rural area" might have been in some instances another form of expression of a migrant's return but as so stated by the employee was taken to signify that the man was exercising his own judgment in the matter, though the compulsion of tribal, home and family circumstances might have made his decision an almost involuntary one.

CHAPTER IV

METHOD OF PRESENTATION

Labour turnover rates[1] are usually calculated to relate the number of engagements and separations within a firm over a specified period to the average number of persons in employment either at the beginning or the end of the same specified period, the result being expressed as a percentage rate or a rate per 1,000 employees. Rates are usually calculated for monthly, quarterly or annual periods. The British Ministry of Labour[2] presents, quarterly, the "accession rate" as a simple percentage of the number of engagements per 100 men employed at the beginning of a given four-weekly period; and the "separation rate" as the number of separations per 100 men employed at the beginning of the same period.

$$\frac{\text{Number of separations}}{\text{Number in employment at beginning of 4-week period}} \times 100$$

Another method, adopted by Biesheuvel and used by the South African National Institute for Personnel Research, and which was the basis of the contribution made by the Institute to the CCTA/CSA Joint Project No. 5: "An Investigation into Absenteeism and Labour Turnover in Africa", is designed to take note of both functions together - separation and engagement - as expressed in the following formula:

$$\frac{\text{(Min) Engagements/Separations}}{\text{average labour force}} \times 100$$

the numerator being the lesser of the two figures.

This method was derived from Armsen (1956: p.83) who suggested the following formula:

$$\text{Labour turnover rate over a specified period} = \frac{\text{Min } (b,c)}{\frac{1}{2}[a + (a+b-c)]}$$

when a = the labour force at the beginning of the period
b = no. of accessions (engagements) during the period
c = no. of separations during the period
Min (b,c) = whichever is the smaller, b or c.

At Polygons monthly labour turnover is calculated as the percentage of separations during any given month of the number of men in employment at the beginning of that month.

$$\frac{\text{Separations}}{\text{Number in employment at beginning of month}} \times 100$$

---

1 International Labour Review, Vol. LXXXI No. 6, June 1960. I.L.O. p.513 "Labour Turnover - its Meaning and Measurement" gives a useful review of methods of calculating labour turnover - their advantages and limitations.

2 Ministry of Labour Gazette.

The annual rate is calculated as a percentage of total separations throughout a given year of the average total number of men employed.

$$\frac{\text{Annual total separation}}{\text{Monthly average of men in employment} \times 12} \times 100$$

Silcock (1954: 438) quotes a similar "rate of turnover" formula as:

$$100 \times \frac{\text{number of leavers per year}}{\text{average number of persons employed during the year}}$$

Such methods give crude turnover rates which are of limited value unless accompanied by further analysis of the reasons for separation by individual firms; or unless they are related comparatively to particular categories of workers, as "skilled or unskilled", "male or female", "married or single", etc. Crude turnover figures mask what may be regarded as "legitimate turnover" occasioned by retirement or by change of employment which may in some instances be of advantage to both the employee, if he improves his position, and to the employer who may find a new employee better suited to the job. Furthermore, any relationship between the length of service of the employees and the rate of separation is also hidden. The percentage turnover figures may be made up of employees of long standing separating on retirement; or it may be almost entirely made up of men leaving during the first month of service; or, as is most usual, of men leaving after varying periods of service.

An approach to the measurement of turnover which overcomes this difficulty to some extent is one in which the progressive separation rate of a chosen group of new entrants to a firm or industrial undertaking is measured in relation to the time they spend in the job. The "rate of separation" can be calculated as the percentage of the whole group who leave at the end of the first month, the second month and so on. At the end of a given period, say, one year, it is possible to see what percentage of the group under review have separated over the twelve month period, and their progressive "rate of separation" month by month. Conversely, a "rate of survival" can be found by calculating monthly the proportion who remain and survive to the end of the prescribed period. This method relates the separation rate to the length of service factor among a selected group of employees,[1] and consideration of the best use of the data obtained at Polygons led to the conclusion that a development of this method of examination of progressive survival and separation rates would be the most useful contribution to the study of labour turnover, as it would aim primarily at retaining these two important factors.

The method has therefore been elaborated to examine the pattern of turnover over a period of time, to seek out the possible factors underlying it and to definitely relate separation to the length of time spent in employment. High turnover of men who have completed only short terms of service must surely strain the induction machinery of a factory, and increase

---

1 Arbous (1951 : 24) recognised the necessity of relating this factor to turnover and, using such a method in his enquiry into absenteeism and turnover, in a metallurgical undertaking found that of a group of starters, numbering 140 in a year, ±60% had less than six weeks service, and of all leavers ±71% had less than six months service.

costs[1] by reducing efficiency and productivity; and to understand the nature of the problem it seemed necessary to find out amongst which length of service groups turnover was greatest and/or least. If this length of service factor could also be related to those personal biographical variables[2] which have been observed by others to be associated with turnover in greater or less degree - age, marital status, nett earnings (Glass, 1960: 6), skill grade (Silcock, 1954: 430), tribe (Elkan, 1956: 7), quality and nature of working conditions (Hauser, 1960: 162) then it seemed that considerable light would be thrown on to the question of turnover at Polygons. In passing it is significant to note, in this and most other studies of labour turnover, the absence of one factor which might have been expected to have appeared in any list of relevant variables - that of educational standard and degree of intelligence of the employee. Unfortunately, no consistent record of schooling and educational standard had been kept by Polygons.[3]

Elkan (1956: 31) suggests the association of this variable with turnover but records the educational standards of a sample of 26 men only, over a six month period, with observations on the relevance of this factor to separation. Hakkinen and Toivainen (1960: 20)[4] studying labour turnover among underground workers found some correlation between turnover and intelligence standard; but the two factors are frequently omitted from such studies and this leads to the conclusion that the necessary information was not always available rather than that they are irrelevant to the problem. Examination of turnover in the way suggested above, if made by an individual firm, would enable it to assess what were the most important variables influencing the movement of men and to determine whether it lay within the firm's competence to control or change them to any degree; or whether such variables were of a nature so deep-seated as to defy quick and easy solutions to turnover problems.

There may be occasions, also, when it would be useful to study turnover historically, over a period of months or years, to see if there were any pattern or variation in turnover; to see if such variation could be related to specific policies, events or sociological factors; and to record, also, any increases or decreases in the rate of separation as related to the length of service of the personnel.

In Salisbury, and Rhodesia generally, where industry and agriculture have for many years relied on a considerable proportion of migrant labour,

---

1 A useful note on this appears in "Productivity" vol. 2 no. 2, p. 3, Southern Rhodesia Department of Labour, September 1962.

2 What Arbous (1951: 17 and 25-26) called "personal indicative information". He concluded that "as age, length of service, economic income and outside responsibilities increase, so separation rate decreases" and that in an analysis of the reason for leaving more complete and accurate data was required in order to understand the factors causing turnover.

3 A record of educational standard was made for all employees interviewed and this, linked to the employees' labour history will be presented in the third and final section of Polygons survey, in course of preparation.

4 1960: 20. "Leavers are slightly more intelligent than those who stayed".

the picture has inevitably been one of a constant high level of turnover,[1] with a constant reservoir of labour available for replacement. But changed policies with regard to the employment and availability of migrant labour have led to changes which have so far been observed only superficially, and it was felt that the sample provided by Polygons might provide factual evidence of such processes of change; as also of the possible effects of developments in urban housing and land tenure legislation.

To try and meet these requirements two methods of labour turnover study are presented here. They were devised after consultation with Professor Mitchell, who suggested:

(1) that the data could be analysed mathematically on a time/turnover basis which would make possible a quasi-historical examination of separation or survival rates;

(2) that the survival rate could be calculated relative to the various available biographical factors associated with the employees, again maintaining the length of service factor.

The following study therefore presents:

(1) turnover in terms of changes which have taken place over the three year period under review. Graphs and statistical tables show the rate of survival and separation during six 6-monthly periods, dating from Period I, June 1 1957 to November 30 1957, to Period VI, December 1 1959 - May 31 1960;

(2) turnover in relation to biographical factors shown in a series of survival curves based on the percentage of the 1059 men surviving in employment over twelve length-of-service periods, varying in length from 0 - 3 months, 4 - 6 months, up to 34 - 36 months, and relevant to the following eight biographical factors:-

1. Territorial origin
2. Tribal origin
3. Age
4. Marital state
5. Wage
6. Skill grade
7. Accommodation
8. Department and group in the factory.

---

[1] a) At Polygons annual turnover rates for five years were: 1957 - 62.5%; 1958 - 43.0%; 1959 - 33.5%; 1960 - 21.0%; 1961 - 27.5%,

b) Annual separation rates in the Copper Mines of Northern Rhodesia, based on Chamber of Mines Year Book, 1961, Tables 20, 21, for surface workers were: 1957 - 25.4%; 1958 - 33.02%; 1959 - 19.97%; 1960 - 19.97%; 1961 - 16.49

c) Annual separation rates for Manufacturing Industry in the Republic of South Africa, based on discharge and resignation rate (Republic of South Africa, Monthly Bulletin of Statistics, 1958, 1961, 1962, Table B.18) were, in 1957 - 27.7%; 1960 - 21.2%; 1961 - 17.4%,

d) In New Zealand the average annual separation rate over all industries for the period 1953 - 1958 was 17%. (Report on Prices, Charges and Labour Statistics 1958. Department of Statistics, Wellington).

CHAPTER V

THE SURVIVAL CURVES, I

The first method, that of historical study, was based on the construction of survival curves and involved the use of punched cards and electronic sorting and tabulating machinery. It is described in detail in Appendix I. It was designed to yield material from which could be constructed six graphs, called hereafter "survival curves", one for each of six 6-monthly periods into which the three year period June 1957 to May 1960 was divided for the purpose of this part of the study, i.e.,

Period I	June 1957 - November 1957
" II	December 1957 - May 1958
" III	June 1958 - November 1958
" IV	December 1958 - May 1959
" V	June 1959 - November 1959
" VI	December 1959 - May 1960.

Each curve would show what percentage of an original total of men starting employment in each of these periods might be expected to survive periods of employment of lengths varying from six months or less to five years, on the basis of current wastage rates. Such curves could be compared and would be expected to show not only the survival rate related to length of service but also the crucial periods of a worker's service; when separation was most likely to occur; at what point was stabilisation to be expected; and, by analysis of those who separated, according to specific biographical factors, what were the main reasons underlying separation during the different periods.

What follows is presented both for the intrinsic value of the results obtained and for the testing of a method which might be put to use elsewhere, particularly at times, and in industries, where an analysis of development and change is sought.

The basis for the construction of the survival curves was provided by six series of percentages which resulted from the calculations made by the application of Method I, each series being relevant to its appropriate six-monthly period.[1]

---

[1] Appendix I, Page 94.

For example, for an original total of men leaving employment during Period I, June 1957 - November 1957, the following survival table was prepared:-

Table I[1]

66.14	had	survived	a	6-month	period	of	employment	
38.08	"	"	"	12	"	"	"	"
25.48	"	"	"	18	"	"	"	"
15.39	"	"	"	24	"	"	"	"
12.22	"	"	"	30	"	"	"	"
10.45	"	"	"	36	"	"	"	"
10.45	"	"	"	42	"	"	"	"
9.04	"	"	"	48	"	"	"	"
9.01	"	"	"	54	"	"	"	"
8.58	"	"	"	60	"	"	"	"

These percentages are each points on a graph over a hypothetical five year period[2] and, when plotted, yield a survival curve for Period I, June to November, 1957. Similar data yield survival curves for the other five 6-monthly periods.[3] For purposes of comparison the survival curves have been grouped together in threes, one set for the periods covering the second halves of the years studied, i.e. June to November, Graph 1; and the second set for the periods covering the first halves of the years studied, December to May, Graph 2.

---

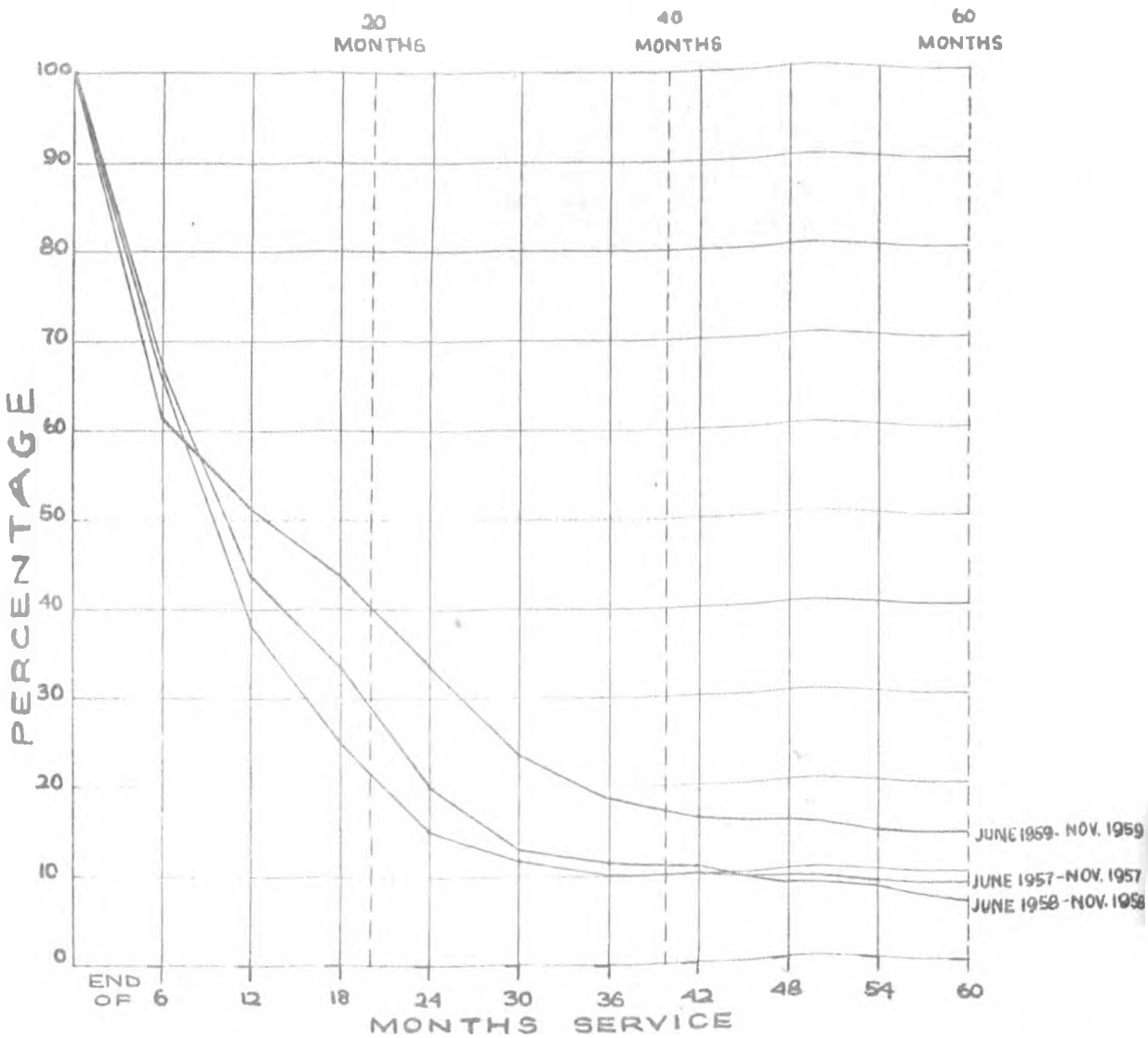
1 Appendix, Table A 2.

2 The computations were stopped arbitrarily at the end of five years' service. Beyond this point the numbers were too small to justify continuing the computation.

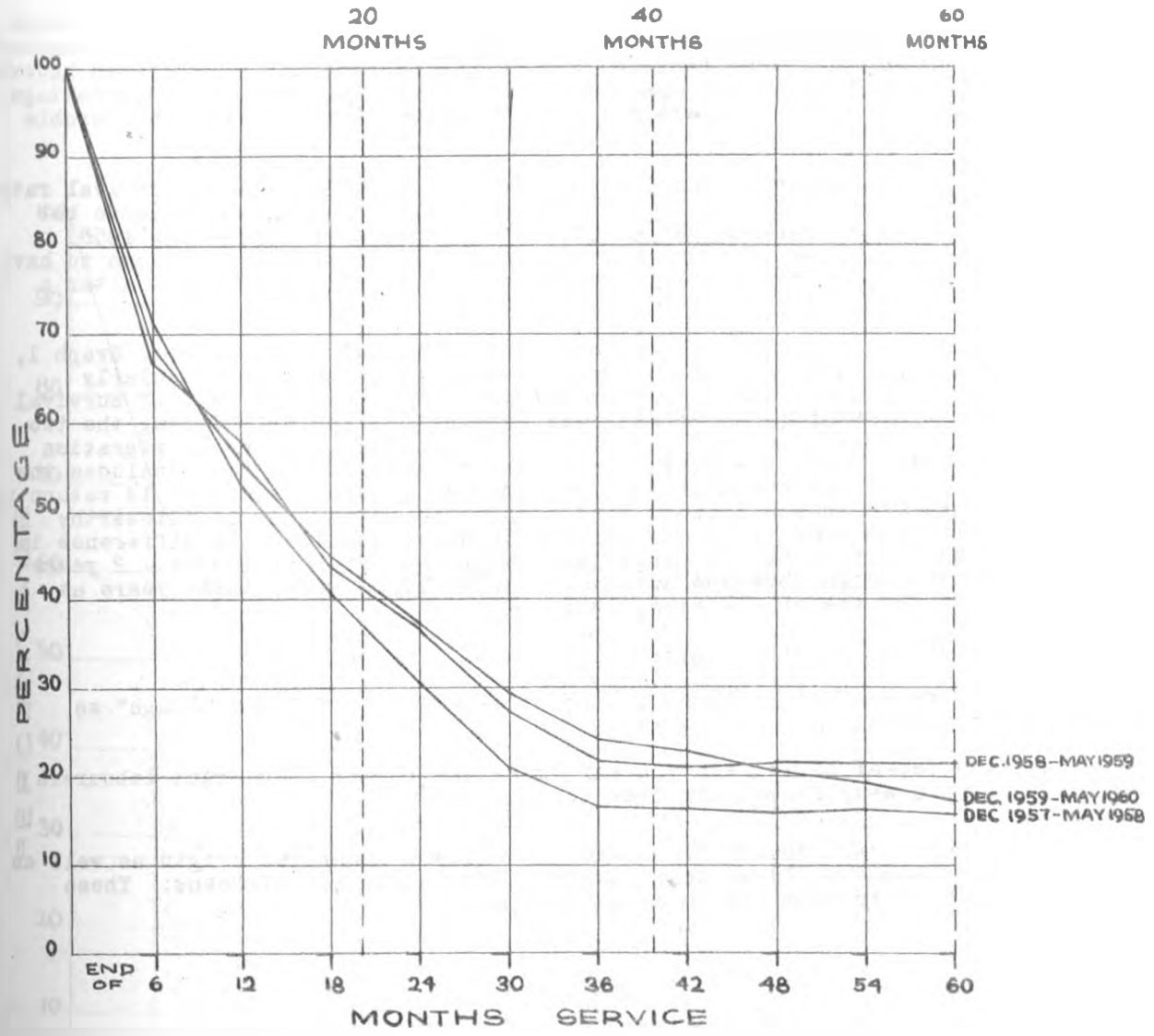
3 Appendix, Table A 3.

GRAPH 1

CURVES SHOWING THE PERCENTAGE SURVIVAL OF PERSONNEL DURING THE JUNE TO NOVEMBER, AND DECEMBER TO MAY, 6 MONTH PERIODS OF THE THREE YEAR TERM, JUNE 1957 TO MAY 1960, RELATED TO THE LENGTH OF SERVICE PERIOD



GRAPH 2


20 MONTHS
40 MONTHS
60 MONTHS
100
90
80
70
60
50
40
30
20
10
0
PERCENTAGE
END OF 6
12
18
24
30
36
42
48
54
60
MONTHS SERVICE
DEC. 1958 - MAY 1959
DEC. 1959 - MAY 1960
DEC 1957 - MAY 1958

From these graphs, 1 and 2, it can be seen that the largest number of men separated during the first six months of employment; that, on an average few men survived a two year period of service and that after the three year service point has been passed the survival rate was likely to remain at a low level but fairly constant, which suggests that after three years in the job there was a tendency towards stabilisation, though by this time the actual numbers of men surviving were small.

Throughout the whole three year period it was evident that the induction period (the first six months) was the crucial one, when men showed the greatest tendency to separate. This tendency was certainly somewhat exaggerated however by the inclusion of temporary employees in the data examined. The percentage loss of personnel during these six months is shown to have been considerable and similar in all six periods, an average of 32.8%.

During the December to May periods, Graph 2, the decline in survival rate after the first twelve months of service was similar in all three years but with a lower rate overall in the earliest year, December 1957 - May 1958. The pattern of survival over these first half-yearly periods, is shown to have been fairly constant with a slight increase in the rate of survival after a year's service shown for the years 1959 and 1960.

During the latter half of the years (periods June to November), Graph 1, it is evident that the rate of survival is generally lower, particularly amongst men who had had twelve months service and over. The rate of survival continued to drop sharply up to 2½ years service particularly during the two earlier years. This undoubtedly reflects the seasonal pattern of migration for which evidence is quoted later. The second half of the year includes the months of September and October when many migrants were accustomed to return to their homes to plough and prepare land before the rains. It is noteworthy that the curve for June 1959 - November 1959 shows considerable difference in survival rate. A far smaller percentage separated after 18 months - 2 years service and showed an improved survival rate of 17.8% after three years as against 7.89% for the same period, 1958.

This probably results from:-

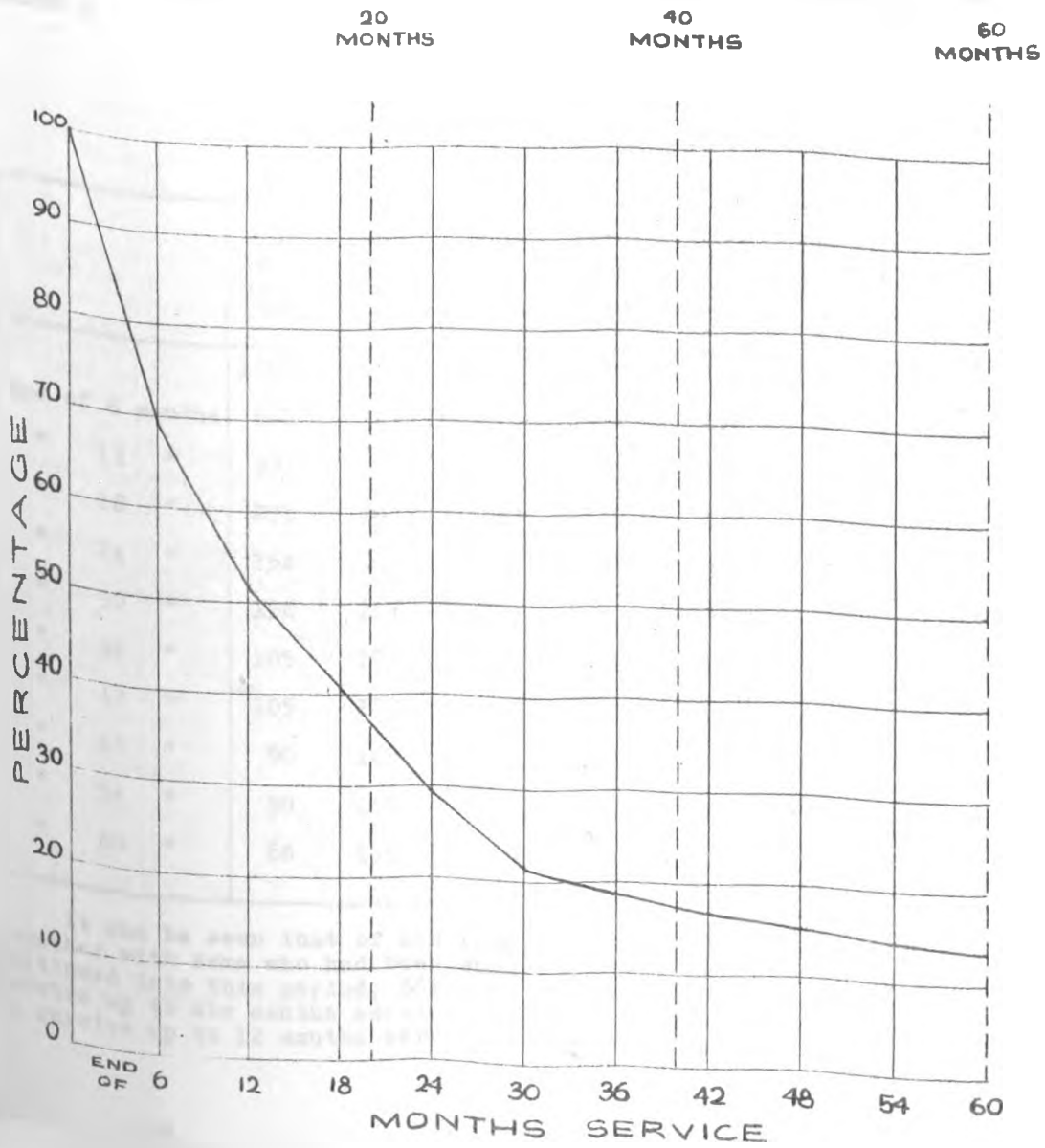
(1) the refusal of Polygons to accept a desire to "go and plough" as an adequate reason for leaving;

(2) the repeal of legislation enforcing the return of migrant labourers after two years away from their home territory.

The first factor would affect men of Southern Rhodesian origin as well as aliens; the second would affect Nyasaland and Mozambique Africans. These factors are further examined on Page 28 et seq.

GRAPH 3

AVERAGE PERCENTAGE RATE OF SURVIVAL OF PERSONNEL OVER 6 SIX-MONTHLY PERIODS, JUNE 1957 – MAY 1960, RELATED TO THE LENGTH OF SERVICE PERIOD



An examination of the average percentage survival rate which the curve in Graph 3, on the basis of available data, forecasts, would seem to show that, of men engaged during the years June 1957 - May 1960, 86.3% would have separated by the end of five years, leaving only 13.7% to continue for a longer term of service. During the last two years of the five the drop in survival rate would have been expected to average 3.5%. 10.2% of the original total of men would be expected to remain on to the end of five years.

If the whole five years are divided into three equal periods the survival rate at the end of the first 20 months of service is seen to be 36.8%; at the end of 40 months, 45%; at the end of 60 months, 82.5%. This highlights the greater tendency to stability in the third period, i.e. after considerable length of service. Most of the men who survived at Polygons for over 3½ years showed a tendency to remain on for a longer period still.

CHAPTER VI

1. Survival Rates

It was found possible to use the data accumulated in the six sets of computations relevant to each of the six-monthly periods, of which Table I is an example, (see also Appendix, Table A 3) to construct a table forecasting the probable number of men out of an original 1000 who might be expected to survive periods of service ranging from six months to five years, on the assumption that separation rates during those periods would remain constant over the next five years (Table 2).

TABLE 2

HYPOTHETICAL SURVIVAL PER 1,000 MEN EXPOSED TO A FIVE YEAR PERIOD OF EMPLOYMENT - BASED ON SEPARATION RATES AS SPECIFIED

	June to Nov. 1957	Dec. 1957- May 1958	June to Nov. 1958	Dec. 1958- May 1959	June to Nov. 1959	Dec. 1959- May 1960	Average total for period June 1957 - May 1960
	1000	1000	1000	1000	1000	1000	1000
End of 6 months	661	719	670	671	626	686	672
" 12 "	381	531	445	575	514	554	500
" 18 "	255	404	330	443	448	450	388
" 24 "	154	304	199	368	330	370	288
" 30 "	122	217	129	275	236	299	213
" 36 "	105	173	110	227	176	245	173
" 42 "	105	173	106	219	167	234	167
" 48 "	90	165	90	219	155	204	154
" 54 "	90	165	82	219	148	196	150
" 60 "	86	155	79	218	147	170	143

It can be seen that of men engaged between June and November 1957, together with some who had been engaged before this but whose employment spell continued into this period, 661 out of a possible 1,000 could be expected to survive up to six months service, 381 out of a possible 1,000 could be expected to survive up to 12 months service; 255 could be expected to survive up to

18 months service and so on to the end of a five year period when 8% might be expected to survive out of a possible 1,000 men. Table 2 shows that during the years under review the chances of survival were less during the latter half of the year than during the first half of the year. At the end of five years the following figures show the possible percentage survival during the two half-yearly periods:-

June to November		December to May
8.6%	compared with	15.5%
7.9%	" "	21.8%
14.7%	" "	17.0%

This again brings out the seasonal separation tendency indicated by the survival curves in Graphs 1 and 2 and illustrates also the decline in this tendency during the most recent of the three years, June 1959 - May 1960, when there was not only a marked decrease in the seasonal difference in the number of men who might have been expected to survive up to five years of service (3% June 1959 - May 1960 as against 7% in 1957 - 1958) but also an improvement in the survival rate itself from 15.5% to 17.0%.

Table 2 hypothesises an average loss of over 300 men per 1,000 during the first six months of service over the whole three year period and with maximum separation again during the latter half of each year; and a continued heavy separation rate up to the end of the first twelve months of service - over 200 for each of the June - November half-yearly periods of the first two years, but with an improvement shown during this period in the most recent year of the study.

It is clear that by the end of three years of service the majority of an original 1,000 employees will have departed, leaving a relatively stable small minority to continue for longer terms of employment.

The most striking feature of Table 2 is the marked improvement in survival prospects during the year 1959. During the latter half of the two previous years this had been almost 50% lower at the end of five years. Compared with the previous year, also, the survival rate during the first half year, December 1958 - May 1959 was much improved. This might well have been related to improved wage rates which came into force on 1st January 1959, when the minimum wage was fixed at £6.10. 0. per month and a system of regular increments geared to length of service was inaugurated (Bell, 1961: p.56). At the same time Polygons made corresponding increases for all grades throughout the factory. All the men who had survived into the longest service period had advanced in wages from under £5 per month to over £8, £9, £10 and £12 per month.[1] This improvement was maintained up to three years of service for the first half of 1960 but showed a tendency to decline again after longer periods of service. It would appear that the wage awards encouraged survival up to 3 or 3½ years of service but did not seem to effect markedly the pattern of survival beyond that point.

---

1 Additional study of wage rates appears on page 30.

2. Separation Rates

In addition to the computation of these survival rates it was possible to work out from the same data the monthly percentage rate of separation for the three year period under review in the following manner:-

1st month of study - June

$$\frac{\text{Number of separations June 1957}}{\text{Number in employment at beginning of 1st month of study, June}} \times 100 = \text{Monthly \% separation for June}$$

2nd month of study - July

$$\frac{\text{Number of separations July 1957}}{\text{Number in employment at beginning of 2nd month of study, July 1957} - \text{June separations} + \text{July engagements}} \times 100 = \text{Monthly \% separation for July}$$

et seq.

In practice it was easier to work with the divisor of the separation rate of the previous month to obtain the divisor for the next month, i.e.,

$$\frac{b}{a - c + m} \times 100 = \text{monthly \% rate of separation}$$

b = no. of separations during given month
a = divisor in separation rate for previous month
c = no. of separations during previous month
m = no. of engagements for same given month (b)

The results, which take into account both the number of separations and the number of engagements during each month, appear in Tables 3 and 4.

Table 3 presents the monthly percentage rate of separation for the three years, June 1957 - May 1960, with an average for the period; Table 4 a comparison of the average percentage rate of separation for two triennial periods, June 1957 - May 1959 and June 1960 - May 1962. The same data for these two triennial periods are presented graphically in Graph 4.

Table 3

MONTHLY PERCENTAGE RATE OF SEPARATION FOR THE THREE YEAR PERIOD JUNE 1957 - MAY 1960 WITH AVERAGE % FOR THE PERIOD

	Monthly %	Monthly %	Monthly %	Average over 3-year period %.
June 1957	2.89	1958 5.41	1959 3.70	4.00
July	5.55	5.34	3.60	4.83
August	4.43	5.11	3.57	4.37
September	7.00	5.07	3.62	5.23
October	5.55	6.12	2.91	4.86
November	5.10	3.97	3.55	4.21
December	7.05	2.72	3.19	4.29
Jan. 1958	3.16	1959 3.33	1960 4.15	3.55
February	2.31	1.82	2.84	2.32
March	5.19	5.17	2.99	4.45
April	2.95	3.64	3.15	3.25
May	3.88	3.47	4.54	3.96

(figures include temporary employees)

Table 4

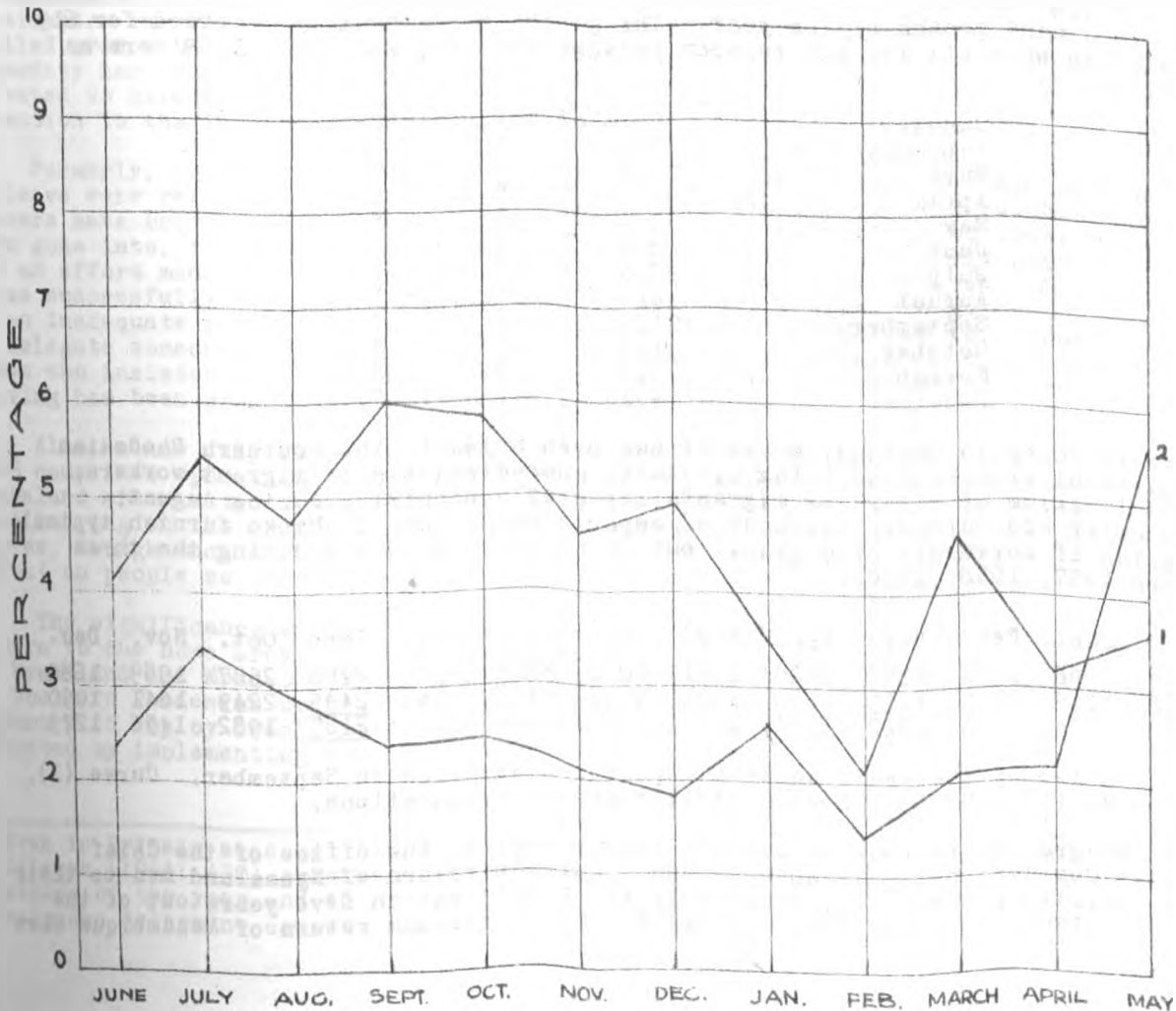
COMPARISON OF THE AVERAGE SEPARATION RATE FOR THE TWO YEAR PERIOD JUNE 1957 - MAY 1959 WITH AVERAGE FOR 1960-62

	Average 1957-59	Average[1] 1960-62
June	4.15	2.34
July	5.44	3.43
August	4.77	2.93
September	6.03	2.40
October	5.83	2.47
November	4.53	2.18
December	4.88	1.88
January	3.24	2.66
February	2.06	1.46
March	5.18	2.07
April	3.29	2.18
May	3.67	5.60

1 Figures, obtained subsequent to survey period from Polygon records June 1960 to end May 1962, exclude temporary employees.

GRAPH 4

COMPARATIVE GRAPH OF AVERAGE RATE OF SEPARATION FOR TWO 2 YEARLY PERIODS JUNE 1957 – MAY 1959 (1); JUNE 1960 –JUNE 1962 (2)



A recent improvement in the method of keeping records of the number of men in employment at the end of each month has resulted in the exclusion of temporary employees from final turnover figures, and the graph for 1960-62 therefore includes only separations of men who were in substantive employment whereas that for 1957-59 includes throughout a small percentage of temporary staff (usually between 10-15% of separations) which has contributed to the higher general level of separation shown during this period. The data cover a very limited time range and do not therefore provide a really adequate basis for speculation as to reasons for separation but from curve 1 in Graph 4 it can be seen that there was certainly a higher rate of separation during the earlier period.

The March peak is an unusual one caused by the discharge of men because of considerable staff reduction during that month for 1959. Similarly the average percentage of separation for July was increased by staff reduction, for that month in 1958, when 23% of separations were for redundancy.

Discounting these irregularities the general trend in the earlier period seems to be one of increased separation during the traditional ploughing season i.e. between the months of August - October, and a reduced rate during the remaining months of the year. The months of separation recorded for 619 employees who left for all reasons between May 1957 and April 1959 were as follows:-

January	6.2%	of	total	separations
February	3.9	"	"	"
March	9.7	"	"	"
April	6.1	"	"	"
May	3.7	"	"	"
June	8.4	"	"	"
July	10.5	"	"	"
August	10.0	"	"	"
September	11.6	"	"	"
October	11.6	"	"	"
November	9.2	"	"	"
December	9.1	"	"	"

This tendency to seasonal movement has been noted by the Southern Rhodesian Department of Labour as being specially characteristic of migrant workers, annual maxima of returning migrants repeatedly occurring during August, September and October. Records of departures by bus via Mtoko furnish typical samples of movements of migrants out of Southern Rhodesia during the three years 1957, 1958, 1959:-

	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1957	996	1084	1159	1129	1971	2010	2254	2949	2790	2587	1989	1680
1958	1213	1195	1235	1610	1961	2058	2255	2340	2435	2249	1641	1090
1959	874	661	1822	1182	1362	1387	1680	2114	2185	1982	1456	1273

In two of the years maximum departures occurred in September. Curve (1), Graph 4, (1) 1957-59, shows a similar peak of separations.

Emigration records of migrant labour kept in the office of the Chief Native Commissioner, Salisbury, show a maximum return of Nyasaland men to their home territory during the third quarter of the year in five years out of the seven between 1955 and 1961 inclusive; and a maximum return of Mozambique Eas-

Africans during the third quarter in six of the same seven years. Of the total of foreign workers leaving Southern Rhodesia during the years 1955 - 1961 maximum numbers left during the third quarter (July, August, September) in six of the seven years.

Graph 4 (2) shows a reduction in the degree of separation and an apparent elimination of markedly seasonal characteristics.[1] The abnormally high rate of separation during May was occasioned by the discharge of 71 men during the strike in 1962. Fifty-five of these were for unsatisfactory conduct so that the remaining sixteen represent what would have been the normal separation figures for that month, 1.9%.

The improvement shown by this reduced rate of separation is probably due in large measure to the adoption by Polygons of a definite policy of trying to retain men rather than of letting them go easily. During the comparatively few years of industrial development in Salisbury it has been usual to regard labour as a readily available commodity - the replacement of unskilled labour as easy. This has inevitably resulted in a tendency to exercise less than the maximum care in selection, in the knowledge that there would always be someone else available to fill the gap if a choice were unsuccessful and a man had to be dismissed. Increased realisation of the costs of labour turnover even in unskilled grades and the growing recognition that labour is human and not merely a commodity has led to more careful selection (all men at Polygons are now (1962) expected to have achieved a minimum of Standard VI education) and a greater attention to the induction of new men.

Formerly, during 1958 and 1957 and earlier, it seemed that any men wanting to leave were released with little ado; but since the end of 1958 voluntary leavers have been carefully interviewed, the reasons for wishing to leave have been gone into, the advantages of staying as against leaving clearly presented and an effort made to retain men who have given satisfactory service - in many cases successfully. Polygons having come to regard the wish to go and plough as an inadequate reason for leaving employment attempted instead to persuade men to delegate someone else to do this job for them and to remain in their work; those who insisted left and were struck off the labour cadre, but this reason for leaving has been practically eliminated among Polygons men.

Also, since July 1st 1960, when the repeal of the Migrant Workers Act of 1948 came into operation, there has been no compulsory return of labourers to Nyasaland after a two year spell away from their homes. This has probably had some bearing on the change in the seasonal characteristics shown by the survival curves, though such a change in the law would not necessarily have immediate effect on people so long habituated to the pattern of seasonal return.

The significance of the non-indigenous migrant factor with its biennial return to the home area, has also been lessened by a reduction in the proportions of Nyasaland and Mozambique men employed by Polygons. Unemployment among Africans of Southern Rhodesian origin has led to increasing appeals by Government to industry to employ local men in preference to outsiders and Polygons have co-operated by implementing such a policy.

---

1 Even in Britain seasonal fluctuations in separation rates are observable. Silcock (1954: 430) observes a rate which fluctuates perceptibly with the season of the year and adds that "The industrial history of individual persons only can determine causes. This has not yet been achieved".

Table 5 shows the consequent changed composition of Polygons African personnel:-

Table 5

Territorial origin of Personnel at Polygons and in Salisbury

Origin	Polygons			Salisbury's total labour force	
	June 1959	Dec. 1960	June 1962	1956[1]	1961[2]
Southern Rhodesia	56%	68%	83%	39%	59%
Nyasaland	21%	18%	9%	31%	24%
Mozambique	22%	13%	8%	28%	15%

The 1961 Census figures show that this appreciable change in composition is observable also in Salisbury's total labour force though the rate of change of the whole may be somewhat slower than in the one individual firm. The proportions of each territorial element now employed by Polygons show the results of a definite policy of engaging local men and of expecting, also, a higher standard of education - a standard unlikely to be shown yet by the rank and file among Nyasaland and Mozambique Africans seeking work in the city. The following table gives some indication of relative educational standards among Polygons men and those in Salisbury's labour force as a whole.

Table 6

	POLYGONS, 1959[3] ORIGIN			SALISBURY, 1958[4]	
Educational standard	S. Rhodesia 302 men	Nyasaland 111 men	Mozambique 65 men	Born in S. Rhodesia 39,800 men	Born outside S. Rhodesia 52,300 men
	%	%	%	%	%
None	6.2	57.7	72.4	26.0	70.0
(Primary (Sub A & B	3.9	5.5	1.5	5.0	6.0
(Standards I-VI	82.0	35.8	26.1	66.0	24.0
(Secondary and (above	7.9	1.0	-	3.0	-
Totals	100.0	100.0	100.0	100.0	100.0

1 1956 Census Report

2 1961 Preliminary Census figures

3 Bell, 1961: 77.

4 Second Report of the Salisbury African Demographical Survey, 1959:1.

It was evident in 1959 that Polygons tended to select men of comparatively good educational standard; and continued emphasis on such standards increases the chances of Southern Rhodesians being employed.

Such changes in policy inevitably affect the pattern of survival and separation amongst Polygons staff.

Restrictions imposed on Mozambique African labour have reduced the numbers permitted to seek urban employment since 1958 (in October of that year the municipal areas of Salisbury and Bulawayo were prohibited to them and further prohibited areas have since been declared);[1] and the proportion of adult males from Mozambique in Salisbury's total male labour force has been reduced by 13% between the two census years, 1956 - 1961, (Table 5). There was a decline in recruitment of Mozambique Africans at Polygons and a drop in the percentage of Mozambique men among the separations. (Table 7)

Table 7

Proportion of labour from the three main territories of origin among separations at Polygons during the six six-monthly periods

	% S.Rhodesia	% Nyasaland	% Mozambique
I June to November 1957	39	34	25
II December 1957 to May 1958	36	39	21
III June 1958 - November 1958	30	44	23
IV December 1958 - May 1959	39	36	18
V June 1959 - November 1959	48	32	20
VI December 1959 - May 1960	54	32	11
% of men from each territory at Polygons - June 1959	56	21	22

[1] 12 June 1959 - prohibited area was extended to cover Town Management Board areas up to ten mile radius of Salisbury and Bulawayo.

3 July 1959 - prohibited area was extended to cover Municipalities of Gatooma, Gwelo, Fort Victoria and Que Que and adjacent Town Management Board areas.

1 January 1960 - prohibited area was extended to include Umtali Municipality and adjacent Town Management Board areas.

25 March 1961 - prohibited area was extended to cover two-thirds of Southern Rhodesia, mainly in the south and west, but excluding mining areas.

August 1962 - a quota system was inaugurated, permitting a limited number of entrants only per month - a possible 1000 - but at the time of writing (September 1962) the system had not come into full operation.

The drop in percentage of the Mozambique men among the separations may be attributable to a combination of two factors:

1) the fact that when the new regulations came into force the jobs became more valuable and men wishing to retain them would have to take leave rather than separate;

2) the decline in recruitment of Mozambique men because of the prohibitive regulations would have lessened the proportion of such men in the total personnel. Separations in the above table may include, certainly in the earlier periods, some men who entered employment long before such restrictions applied. But, as most men leave during the first year of service and the regulations came into force in 1958 the figures for periods IV, V, VI probably show a fairly accurate trend.

Improved wage rates may also have had some bearing on the improved survival rate shown in Graph 4 (2).

Table 8

Wage rates paid by Polygons during the three years 1959, 1960, 1962

Grade	1959 per month[1]	1960 (end of) per week[1]	1962 per week (effective from September 1962) [1.4]
1	£6.10. 0.	£2. 0. 0.	£2.15. 0.
2	7. 5. 0.	2. 3. 6.	2.17. 6.
3	8.15. 0.	2.10. 9.	3. 0. 0.
4	10.10. 0.	2.18. 6.	3. 7. 6.
5	12.15. 0.	3. 9. 0.	4. 0. 0.
6	20. 0. 0.	5. 2. 6.	5.17. 6.
7	25. 0. 0.	6. 5. 6.	35. 0. 0.[2]
8		36. 0. 0.[2]	45. 0. 0.
9		49. 0. 0.	65. 0. 0.
10		60. 0. 0.	80. 0. 0.
11			No fixed minimum. By arrangement[3]
12			No fixed minimum. By arrangement.

1 Does not include rent allowance of 1959, 28/6d per month, 1960/62 - 6/9d per week.

2 Monthly salary. Grades 7, 8, 9, 10 were distinguished in October 1960.

3 Monthly salary. Grades 11 and 12, new grades from September 1962.

4 Figures shown are minimum rates fixed by Industrial Board for the industry.

Table 9

Average Monthly Earnings for Africans in Manufacturing Industry in Salisbury and at Polygons for the five years 1957-1961

	1957	1958	1959	1960	1961
Salisbury	£8.1	£9.0	£9.6	£10.4	£11.3[1]
Polygons	£8.25	£11.5	£11.8	£11.9	£13.1

All men of Grade 2 and above at Polygons during the 1960-61 period were earning more than the average for Salisbury, i.e. 50% of the personnel. (June 1961 50% of personnel were Grade 2 and above; June 1962 62.3% were in Grade 2 or above. Compare June 1959 when 46% were in Grade 2 and above). Grade 2, as also Grade I, contains only men doing work classified as "unskilled".[2]

A decline in the rate of economic development in Salisbury over these three years as compared with the rapid expansion in the years 1953 - 1957 may also have contributed to the improvement and stabilisation in separation rate which Graph 4 (2) shows. The number of men unemployed has been increasing steadily since 1957 and those in employment may have come to appreciate the value of their jobs and to realise that there are less opportunities "round the corner". Also, as has been observed by others studying the phenomenon of labour turnover,[3] during periods of unemployment management has the opportunity of making selection from a wide choice of applicants amongst whom are often men with qualifications in excess of the job's actual needs, particularly when unskilled and semi-skilled vacancies are being considered; so that the quality of appointees is likely to be better and their tendency to separate lessened. It is not the floating number of rolling stones and industrial misfits only who present themselves for selection. The African Affairs Officer noticed that during the latter half of 1959 and early 1960 there was an increasing number of Standard VI men among those seeking work at Polygons gate. (Ball, 1961 : 8)

There remains always the small percentage of men who have to be discharged for unsatisfactory work or conduct and the so-far irreducible percentage who leave for personal reasons, frequently unspecified, though it is generally assumed that some of these will be of domestic origin and closely related to tribal background. The general pattern here, as elsewhere, always seems to present a small floating percentage of leavers, a number of men who drift in and

---

1 Figures supplied by Southern Rhodesian Department of Labour, include cash wages, bonuses, rations, housing, and income in kind.

2 Calculations made from the Northern Rhodesia Chamber of Mines Year Book, 1960, Table 20, show that average monthly wages paid to surface workers in the copper mines during four of these years were: 1957 - £15.75; 1958 - £16.66; 1959 - £18.17; 1960 - £21.50. Polygons numbers (1957 - 584; 1960 - 684; 1961 - 883) are of course not on the same scale as the mines (1957 - 19,767; 1960 - 21,106); but the relative proportions of skilled, semi-skilled and unskilled men are not dissimilar so that a comparison may not be entirely without value.

3 Silcock, 1954, p.439.

out of employment which has to be accepted, as it apparently defies elimination. Greystone, Birks and Murphy (1951: 92), surveying labour in the Sheffield region of Britain, accept the existence of the "rolling stone" and found examples of even middle aged men who "wanted a change". The same reason was recorded among Polygon leavers. So long as labour is human it is reasonable to expect that some men will exhibit this roving tendency and there will always be the inevitable few seeking to try their luck elsewhere.

Nevertheless among the foregoing there is evidence of reduction in separation tendencies and Polygons' policy of making determined efforts to stablise their labour force may be said to ante-date by a short spell a growing interest in management and labour induction methods which began on an organised basis in Salisbury in 1958 and has since been maintained steadily. Members of Polygons' staff were among the first in Rhodesia to be seriously interested in the establishment of an Institute of Management. As a result of their interest, and in co-operation with others similarly concerned, and on an appeal from the Association of Rhodesian and Nyasaland Industries, the Rhodesian Institute of Management was formed in 1959 and began operating fully in mid-1960.

Since then four National Conferences have been held and during 1961 17 Foreman/Supervisor courses were organised which men from Polygons attended.[1] There may, in fact, be some coincidence between reduced separation rates at Polygons and this new awareness of, and attention to, managerial techniques.

Discharge figures for the same type of industry in Britain provide interesting comparative material.

Table 10

For the four weeks ending:[2]	
Aug. 26 1960	discharge per 100 at beginning of 4 week period was 1.7
Nov. 26 1960	" " " " " " " " " 1.6
Feb. 25 1961	" " " " " " " " " 1.8
May 27 1961	" " " " " " " " " 2.0
Aug. 26 1961	" " " " " " " " " 2.2
Nov. 25 1961	" " " " " " " " " 1.4
Feb. 24 1962	" " " " " " " " " 1.7
May 26 1962	" " " " " " " " " 1.5

At Polygons in February 1959 the separation rate was at the low figure of 1.82%; in the same month, 1960, it was 2.84%. Average rates calculated from

---

1 The Rhodesian Institute of Management in a memorandum issued after its Foreman/Supervisor conferences held in Salisbury May 1962, notes that, as a result of such courses, there was, in general,

(i) an improvement in African labour output of between 13% - 33%;

(ii) many instances of a happier shop and a more productive shop, as borne out by (i).

2 United Kingdom Ministry of Labour Gazette, 1960, 1961, 1962.

figures recorded by Polygons for 1960-62 (p.22) show a frequent approach to United Kingdom rates. The view is commonly held that local separation rates are high compared with rates elsewhere. Polygons rates for 1959 - 1962 are not abnormally so, but they represent, of course, only one type of industry in Salisbury. It is, moreover, one in which management is concerned about the reduction of separation and turnover rates and with employer/employee relations and personnel welfare. The improved separation rates at present obtaining, do, in fact, approach average rates recorded elsewhere in areas with labour drawn from both homogeneous and mixed racial labour groups. The higher rate of separation existing in 1957 - 1958 was due to the customary inclusion of a considerable proportion of migrants in the personnel, but even this rate need not be deemed exceptional, since wide variations in rate from industry to industry are not uncommon even in countries such as Britain where industrialism is well established. Rates here have varied from 5% - 143%, even to 287% per annum (Silcock, 1954: 439).

Comparison with industry in other parts of Africa shows also that Polygons rates are not dissimilar or abnormal. The average monthly separation rate at Polygons for the year 1959 was 3.46. Glass (1960: Appendix B 5) found average rates for 1959 in the Republic of South Africa, in what may be considered roughly comparable manufacturing industry, to be 6.2% (textile factory) and 3.3% (glassworks). The average annual rates of separation for various industries in the Dakar region (Hauser, 1960: 167) are also of interest. They show quite a wide variation in rates and some which are similar to Polygons:-

Shoe Factory	16.7
General Engineering	13.2
Textile I	8.8
Textile II	4.2
Oil Refinery I	2.8
Oil Refinery II	2.0
Cement	1.2

Elkan (1960: 100) quotes the monthly average separation rate in a Kampala, Uganda, textile factory with 650 employees, as being 5%; and that of a tobacco factory at Jinja, Uganda, with 500 employees, as being 4%. Both these factories employed a proportion of migrant labour (what he describes as a "perpetually revolving labour force", 1960: 44)[1]. He compares the United States monthly average rate of 3.6%, which includes National Service and lay-offs.

* * * * *

By examining the same basic material it was also possible to make a hypothesis of the percentage rate of separation for the first five years of service of men who had entered Polygons service during the three year period June 1957 to May 1960.

---

[1] c.f. Mitchell, 1959: 12-14. Bell, 1961: 64.

Table 11

Mean Percentage Rate of Separation at 6-monthly intervals during the first five years of service for men entering Polygons' service between June 1957 and May 1960

Separation date	(i) June to Nov. 1957	(ii) Dec. 1957 - May 1958	(iii) June- Nov. 1958	(iv) Dec. 1958- May 1959	(v) June- Nov. 1959	(vi) Dec. 1959- May 1960	(vii) Average over 3 years
In the first 6 months	6.55	5.19	6.64	6.24	7.60	6.35	6.39
Between 6th & 12th months	6.38	5.31	6.67	2.39	3.10	3.67	4.62
Between 12th & 18th months	6.50	4.59	4.73	4.28	3.40	3.22	4.43
Between 18th & 24th months	8.16	4.66	8.02	2.87	5.04	3.41	5.12
Between 24th & 30th months	4.04	5.38	6.92	4.78	5.64	3.47	5.06
Between 30th & 36th months	3.15	3.61	2.68	4.52	4.69	3.51	3.76
Between 36th & 42nd months	0.00	0.00	0.69	0.75	0.64	0.04	0.47
Between 42nd & 48th months	1.82	0.73	2.75	0.00	1.50	2.14	1.46
Between 48th & 54th months	0.69	0.00	1.54	0.00	0.74	0.82	0.66
Between 54th & 60th months	0.87	1.18	0.82	0.00	0.00	2.46	0.96

These rates pinpoint once more the first six months as the crucial ones for separation, but the fact that there was always a small number of temporary employees must again be remembered here.

Peak periods for separation are shown to occur again at the 2 and 2½ year points, while there is confirmation of the findings shown in Graphs 1 and 2, of stabilisation after the third year of service. The average rate of separation among men with up to four years service, over the three year period was 1.46% and with up to five years service 0.96%. The higher rates of separation during the second half of the years under review reflect the diminished survival rate for the same periods in Table 2.

The wage review and new scales brought into operation in 1959 possibly influenced the longer service men to stay on. There was little separation among them during the early 1959 period (column 4). But this improvement was not repeated in the following year. One could speculate that with rising

living costs the improved wage ceased almost at once to be a very significant factor; or that similar improved rates elsewhere, especially for qualified and experienced men, led to increased opportunities and encouraged rather than diminished labour mobility.

Other observers note the minimal effect of wage rates on the majority of workers. Silcock (1954: 430) reports no evidence of movement from lower to higher earning occupations. Hill similarly (1962: 185), though admitting the paucity of empirical studies of the relation between labour mobility and wages, concludes that correlation between wage, turnover and mobility is a weak one. "The contribution made by wages to the explanation of recruitment and wages was small". "In general a firm can hardly rely with much confidence on raising wages as a means of reducing separation". (Hill, 1962: 228 - 231). Among Polygons employees, however, there was oral evidence of considerable interest in wage. An examination of the labour history of the men showed many examples of efforts to improve wage position and to move into higher earning occupations, and frequent expressions of dissatisfaction with wages in the jobs they had held before enrolling with Polygons. Many also commented that pay at Polygons was small. Nevertheless, over the three years at Polygons an average of only 1.4% of employees who separated stated as their reason "dissatisfaction with wages".

June 1957 - May 1958 - 2.14% separated: dissatisfied with wages
June 1958 - May 1959 - 0.66% " " " "
June 1959 - May 1960 - 1.40% " " " " 1

None separated for this reason during the last six months of the latter period.

During the middle period the percentage separation for declared dissatisfaction with wages was very low - in fact, only two men were concerned. This period covers that in which the new wage awards were made (January 1959) and the two men left subsequent to this. When wages are fixed by Industrial Boards, as here, and frequently at national level by Trade Union negotiation, as elsewhere, the individual is reduced to a position of acceptance of the wage situation, which he has little power to change, though he is free to change jobs, at his own discretion. In such a situation the impact of wages on separation is reduced to a minimum. And in a firm such as Polygons, where wage scales compared favourably with those obtaining in other branches of industry in Salisbury and with the average in the city (v.p. 61 under), the incentive of higher wages elsewhere was not a potent one, particularly for the majority of men in the unskilled and semi-skilled categories, though these men are, by the very nature of their position at the bottom of the skill ladder, frequently more mobile than those with skills limited to the specific requirements of the industry they serve.

The pattern of higher separation rates during the earlier part of the study period may have been influenced also by the situation of the factory in Salisbury where employment was still at a high level. As Hill points out (Hill, 1962: 233) "location has a marked effect on wastage" in that wastage tends to be high in areas where alternative employment possibilities are greatest, as would be the case in Salisbury. There was little declared evidence of intention to change jobs among Polygons leavers.

---

[1] Greystoke, Birks and Murphy, 1951: 93, give separation for salary dissatisfaction, 1949-50, 6.1% and quote British Institute of Management, 1949-50 - 4.25%.

It must be remembered, of course, that other reasons may sometimes be given to cover up dissatisfaction with wages and conditions but after having listened to several pre-separation interviews I concluded that in most cases the reasons finally recorded by the Personnel Officer were genuine. Occasionally difficult cases did arise and with a certain amount of disbelief the Personnel Officer recorded "backache" or "sickness of child at home". There was no proof of either reason in such cases and they were very definitely a minority.

It is always possible that the reason given at the moment of leaving provided the "occasion" rather than the actual "cause". One cannot be justified in assuming that the psychological background to separation is a simple one. An employee may have harboured the wish to leave because of some dissatisfaction for a considerable period and "sickness of relative", difficulty at home", may provide a reason for leaving without loss of face. Such motives are not deducible from Company records only.

Throughout all six periods the majority of separations proved to have been involuntary and in most cases attributable to managerial action, as is demonstrated by the following analysis of the percentage of 1 (i)[1] involuntary separations for reasons of circumstances beyond the control of the employee as compared with 1 (ii) and (iii) involuntary separations for reasons connected with discipline:-

Table 12

Reason	June - Nov. 1957	Dec.1957 - May 1958
1 (i)	54%	42%
(ii) and (iii)	46%	48%
	June - Nov. 1958	Dec.1958 - May 1959
1 (i)	45%	25%
(ii) and (iii)	55%	75%
	June - Nov. 1959	Dec.1959 - May 1960
1 (i)	36%	16%
(ii) and (iii)	64%	84%

More men separated for involuntary domestic reasons during the latter half of the year (column I) and a considerable change is apparent over the three years. There was a gradual diminution in the percentage of separations for the involuntary domestic reasons, from 54% to 36% during the second half of the years and 42% to 16% during the early half of the years studied. This 16% shown at the end of the period studied, contrasts markedly with the 54% during the earliest six months of the study period. The months showing maximum rate of separation for involuntary domestic reasons were:-

---

1 See page 9 under.

1957 - 58, September and December;
1958 - 59, September and October;
1959 - 60, June and September.

The accent again is on the latter half of each year which contains the hoeing, ploughing and house-thatching period before the rains.

In many instances voluntary reasons for separation were domestic and an analysis of all home-connected reasons both voluntary and involuntary shows that they made up the following proportion of <u>total</u> separations:-

Table 13

Percentage of all Domestic Reasons for Separation of the total separations

June to Nov. 1957	Dec. 1957 - May 1958
48%	40%
June to Nov. 1958	Dec. 1958 - May 1959
40%	31%
June to Nov. 1959	Dec. 1959 - May 1960
23%	11%

Tables 12 and 13 both show the same pattern of the diminution in importance of the domestic/home-orientated reason for separation. This could be attributable to either:-

a) a change in the composition of the labour force employed by Polygons,

b) to a change in the circumstances and the attitude of the workers, or

c) to the changed attitude of the management with regard to some of the home-orientated reasons.

While the study material was being prepared it was evident that Polygons were embarking on their policy of preferring Southern Rhodesians for employment rather than non-indigenous men, with the result already referred to on page 28. This gradual reduction of the migrant element and consequent elimination of many long distance men, whose custom was to separate in order to go home, left a larger proportion of Southern Rhodesians in Polygons personnel. Most of these men come from rural areas some distance from Salisbury,[1] but usually their homes are near enough for them to maintain contact during their annual leave periods.

The position of workers from Mozambique with regard to urban employment has changed from that of the free entry and movement permitted in 1957 to one which, since the operation of the Foreign Migratory Labour Act of March 1959, prohibited new migrants from seeking employment in the greater Salisbury and Bulawayo areas. Subsequent regulations[2] have further restricted both the

[1] See Bell, 1961: 18, 20. [2] See Note 1, p.29.

number and freedom of movement of this section of the labour force and those with jobs in Salisbury who wished to retain them would have to be careful to ensure that they could return to the same employer. Such conditions would probably render less likely casual separations among these men, so often represented as "just plain going home".

Table 14 shows the percentage of total separations ascribed to <u>voluntary reasons</u>:-

Table 14

I	June 1957 - Nov. 1957	II	December 1957 - May 1958
	36%		28%
III	June 1958 - Nov. 1958	IV	December 1958 - May 1959
	40%		41%
V	June 1959 - Nov. 1959	VI	December 1959 - May 1960
	22%		13%

The periods June 1958 - November 1958 and December 1958 - May 1959 show a higher percentage of voluntary separations than in either the preceding or succeeding twelve months.

In the more recent two half yearly periods which followed, the percentage of voluntary separations was seen to fall by a half and then by two-thirds of the number for the previous twelve months. It is difficult to assign a reason for this but interesting to note that during Period III there was an unusually high proportion of Nyasaland men among the total separations, 44%, (as against 30% South Rhodesian and 23% Mozambique Africans) which was 8% more than the 36% average for all the six monthly periods. There is little evidence of political events having had any direct effect on the pattern of separation during these years, though the arrest of a number of Nyasaland men as agitators in a neighbouring factory in April 1959 did seem to lead to a number of voluntary separations of Nyasaland men at Polygons at about the same time.

Each set of separations and survivals, which was derived for use in the foregoing study, could have been analysed also for further statistical details relating to other available biographical factors as well as that for reasons of separation. This has not been done here, in order to avoid overlapping, as the second method of derivation of survival curves, explained in Chapter VII and in Appendix I, includes a detailed analysis of such factors.

CHAPTER VII

This second section of the study is an attempt to examine the turnover of labour in relation to certain selected biographical variables and to determine what bearing, if any, these had upon the pattern of survival and separation among the personnel, while holding the length of service constant.

The method used was again one worked out by Professor J.C. Mitchell (v. Appendix I, Method ii) and aims at reducing the available material to a series of survival curves. Use was made of the records pertaining to the 1059 men who were in employment, who left, or were engaged by Polygons during the three year period, June 1957 to May 1960. Each of the employees concerned was exposed to different periods of employment depending on his length of service up to and during the period of study. Hypothetically, apart from those specifically engaged on temporary or short term work, all the men faced the possibility of continuing their service throughout the whole period under review and beyond, or, if engaged during this period, of working through to its end or longer. In fact, however, many of the men separated from their employment at various points before the end of a three year period, after varying periods of service. It was, of course, expected that migrant workers would separate after a 2 - 2½ year period of service.

The contribution of various factors to stability was examined by measuring the proportion of men with specific characteristics (such as "skilled or unskilled", "married or single", "in houses or single accommodation") who survived each of twelve three-month periods of service. For example, the proportion of skilled and unskilled workers who survived the first three months of service was computed. Then the proportion of skilled and unskilled workers who survived the fourth to sixth month period of service, followed by the proportion of those who survived the seventh to ninth month period and so on to the twelfth three-month service period.

These proportions, based on the percentage of men surviving from one period of service into the next above were then combined into single survival curves for each category of worker. The procedure adopted was designed to determine in what way the pattern of separation of various categories of workers differed at different stages of their employment history. The characteristics of the survivals could be compared with those of the men who separated and some inference drawn as to the relevance of such characteristics to stability.

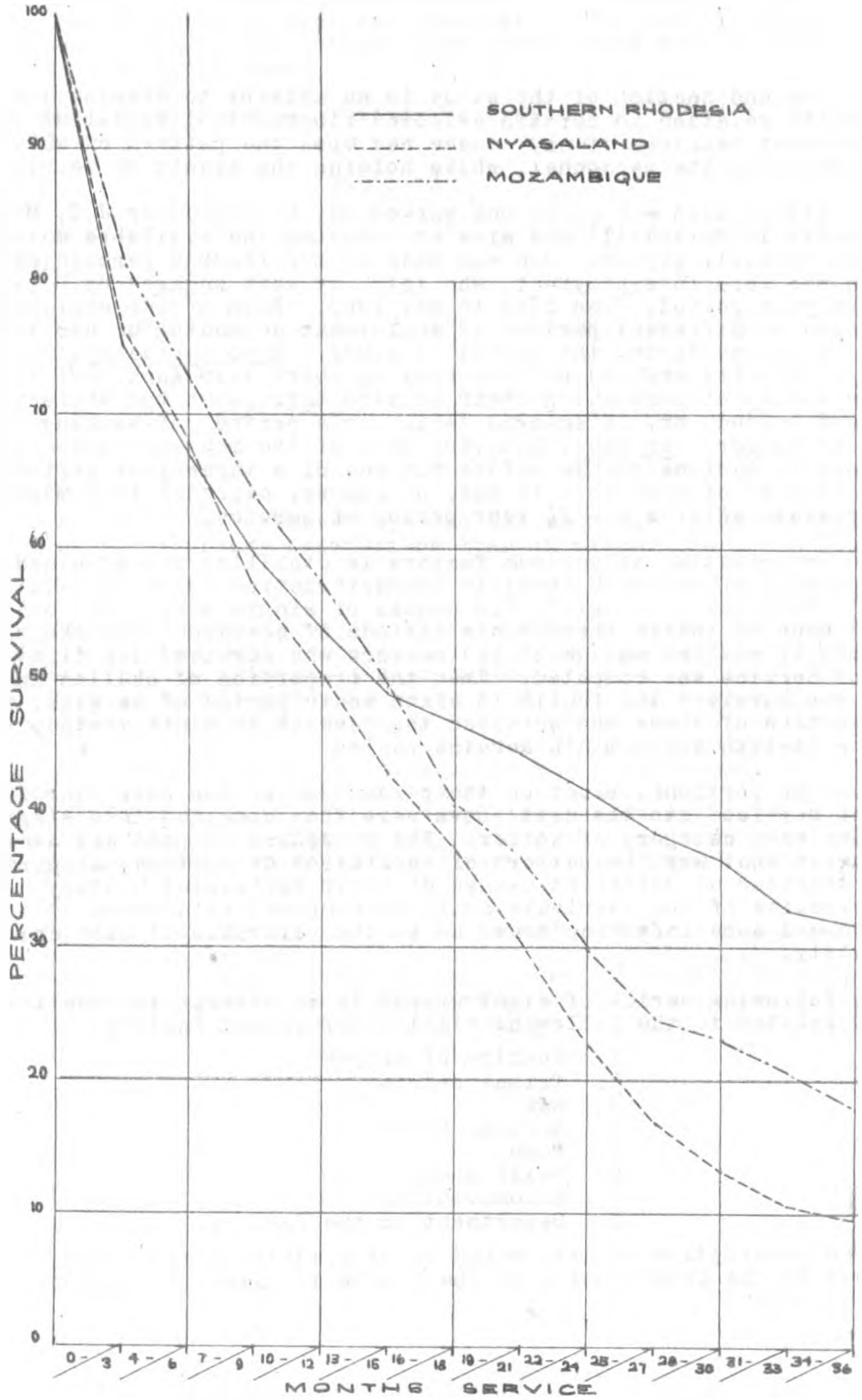
The following series of eight graphs is an attempt to show the rate of survival related to the following eight biographical factors:-

1. Country of origin
2. Tribal origin
3. Age
4. Marital state
5. Wage
6. Skill grade
7. Accommodation
8. Department in the Factory.

A detailed description of the method of determining the percentage survival rates used in the construction of the graphs is given in Appendix I (Method ii p.95).

GRAPH 5

RATE OF SURVIVAL RELATED TO
COUNTRY OF ORIGIN OF AFRICAN PERSONNEL



1. Rate of Survival related to the Country of Origin of the African Personnel, Graph 5.

These curves are based on the number of men from each of the three main territories of origin who theoretically faced the chance of completing and surviving a three year term of employment. Southern Rhodesia contributed 52.5%, Nyasaland 30.3%, Mozambique 13.8% to the total number of 1059 men. Three point four per cent of the men were from territories other than these and, being numerically insignificant, are not included in the graph.

An examination of Graph 5[1] shows that of the total number of employees of Mozambique origin, 100% at the starting point A , i.e. the total number facing a possible three month term of service, 82.2% survived at the end of this first three months of service, point B^1, and went on to face longer terms of service. Of the total number facing three months of service of Nyasaland origin (100% at point A) 76.6% survived the first three months of service, B^2. Of the total number of employees of Southern Rhodesian origin (100% at point A) 75.7% survived the first three months of service, B^3.

Similarly the percentage of survival of men from each territorial group after 6, 9, 12, 15, 18 etc. months of service can be ascertained from the graph, and each group compared with the other at the same length of service point. It is evident that in all three categories the survival rate was least during the first three months of service. The men from Mozambique showed a slightly higher rate of survival at the outset than men from the other two territories, between which there was only a 0.9% difference in survival rate at the end of the first three months of service. The slightly higher rate of survival of the Mozambique men was maintained up to a period of fifteen months service from which point the rate of separation paralleled that of the Nyasaland men but with a slightly higher rate of survival throughout. Up to six months of service there was little difference in the survival rate of Southern Rhodesian and Nyasaland men, but after this there was a gradual improvement amongst the Southern Rhodesians.

After the first twelve months of service the relative rate of survival of Southern Rhodesians as against that of the other two groups can be seen to have changed markedly and at the end of two years a much higher percentage of these men survived than either Mozambique or Nyasaland men, 41.8%: 29.9%: 22.5%. This superiority in rate was maintained to the end of the three years, where it stood at 31.9%; while the curves for the other two groups continued to show a sharp decline in rate, falling at the end of the 30th month of service to a 17.9% survival rate for Mozambique men and 9.6% for Nyasaland men.

After twelve to fifteen months of service the Southern Rhodesian men seemed to show a tendency to settle to the job. There was a drop in the survival rate among these men of only 17.2% between the 15 - 18 and 34 - 36 month service periods, a relatively small fall in rate compared with the 50.1% drop from the shortest, three month, service period to the 13 - 15th month service period.

The curves show little evidence of any similar tendency among men from outside Southern Rhodesia.

The high rate of separation after only a short term of service (which is observable particularly among Southern Rhodesian and Nyasaland men) may be due to a number of causes and an examination of reasons for leaving reveals that

---

[1] See Appendix, Table A 5, for computation table.

most of the separations were involuntary:

1) because the men were engaged on a temporary basis and had completed their contract;

2) because of redundancy;

3) because their work proved unsatisfactory and, after a trial period, they had not been confirmed in their appointments;

4) because of circumstances over which the worker had no control.

The considerable fall-off of Southern Rhodesian employees during the 0-3 months service period shows that a high proportion left involuntarily for managerial (48%) or disciplinary reasons (15%) - 62% in all, 25% left voluntarily for reasons related to work or personal affairs.

Of the Nyasaland men separating during this period 53% left involuntarily for managerial and 9% for disciplinary reasons - 62% in all; 15% left voluntarily for reasons related to work or personal affairs.

Of the Mozambique Africans 50% left during their first three months for managerial reasons, 15% for disciplinary reasons - 65% in all; 12% left voluntarily.

As regards discipline on the job and behaviour in the works, the Nyasaland men seem to have proved the most satisfactory of the three groups.

The greater number of Southern Rhodesian men who left voluntarily during their first three months of service seems to indicate that the local men are more selective and have a more critical attitude to pay and conditions. Twenty-one per cent of the total of Southern Rhodesians who left voluntarily during this period did so because of dissatisfaction with these; five out of the 34 left to "improve their wage position". None of the Mozambique or Nyasaland men admitted to leaving because of dissatisfaction with wages during this or at the end of any other period of service, though 11% of the Nyasaland men and 8% of the Mozambique men left because of dissatisfaction with work and conditions during the first three months. The Southern Rhodesian men may also be more familiar with conditions in Salisbury or better able to assess their chances with other employers and on other types of work. Their dependence on their employer for accommodation may also be somewhat less, at least, for short temporary periods when they may be able to make use of relations and friends resident locally.

A considerable number of men from both Nyasaland and Mozambique left during or at the end of this period for reasons of circumstance beyond their control (23% in each case). Of these, sickness or death of kinsman, or sickness of the worker himself, was the most frequent cause. In some few instances the sickness of a relative given as a reason for leaving would be unverifiable by the management and may in fact have been an excuse for leaving when, after the first few weeks, a worker found himself dissatisfied and disappointed with conditions.

On the whole it seems apparent that the degree of separation in all

groups during the first three months may be assigned to management rather than to the workers and was attributable in large part to the dismissal of men who were taken on for limited short term work only and who were found to be redundant. The maintenance of a pool of workers who could be moved from job to job within the factory as need arose provided, as it were, a department into which a small floating percentage of personnel could be held.

Table 15

Territorial Origins and Reasons for Leaving

	Southern Rhodesia %			Nyasaland %			Mozambique %		
	1	2[1]	3[2]	1	2	3	1	2	3
Length of service	Managerial and/or disciplinary	For reasons of circumstance	Personal only or personal & work-connected	Managerial and/or disciplinary	For reasons of circumstance	Personal only or personal & work-connected	Managerial and/or disciplinary	For reasons of circumstance	Personal only or personal & work-connected
Months									
0- 3	63	12	25	62	23	15	65	23	12
4- 6	41	21	38	32	46	22	28	36	36
7- 9	32	25	43	14	44	42	33	27	40
10-12	52	10	38	18	59	23	31	15	54
13-15	63	12	25	12	61	27	20	13	67
16-18	70	10	20	17	39	44	40	20	40
19-21	70	-	30	14	52	34	-	20	80
22-24	83	-	17	4	58	38	18	46	36
25-27	50	-	50	18	76	6	50	-	50
28-30	83	-	17	28.5	43	28.5	-	-	-
31-33	-	50	50	20	80	-	-	-	-
34-36	-	-	-	-	-	-	25	25	50

Percentages add to 100 horizontally

1. 1 and 2 = Involuntary reasons for leaving
2. 3 = Voluntary reasons for leaving

Table 15 excludes those few men for whom no reason for leaving was given; and the 27 men from territories other than the three main ones. Two of these 27 men survived a period of employment over 31 months long, one then leaving to go home and the other for a reason unstated. Of the remaining 25, ten left during the first three months, seven for involuntary reasons.

An analysis of the reasons for separation shows considerable differences in importance of the major reasons for leaving, between the three main territorial groups. Among the Southern Rhodesians, for eight out of the twelve length of service periods, the largest percentage of discharges was for managerial or disciplinary reasons, and 160 (48%) separations out of the total of 335 Southern Rhodesians leaving employment were for these reasons. Forty-two per cent of these 160 men were discharged for disciplinary reasons, i.e. 20% of the total Southern Rhodesian separations.

Among the Southern Rhodesian employees separations for reasons of circumstance beyond the employee's control showed a low percentage throughout all periods (highest 25%) and during five of the twelve periods no Southern Rhodesian employee was recorded as having left for such reasons.

During eight of the twelve periods, however, more than a quarter of the Southern Rhodesian men who left did so for voluntary reasons. Thirty-seven (43%) of the total separations in this category (86 men) were directly connected with their work; 49 (57%) for voluntary personal reasons.

Among the Nyasaland separations only one of the twelve service periods, the 0 - 3 month period, shows a large percentage majority of men leaving for managerial reasons (c.f. eight periods among the Southern Rhodesian men), whereas for nine out of the twelve periods the majority of separations were for involuntary reasons of circumstance beyond the control of the worker. Seventy-nine men, 25% of a total of 314 leavers, did so for managerial reasons; 34% of these 79 men were discharged for disciplinary reasons, i.e. 9% of the total of Nyasaland separations.

The higher percentage of separations for involuntary reasons of circumstance after the two year service period, (25 - 27 months) 76%, was to be expected having regard to the fact that before October 1958 all Nyasaland migrant workers were obliged to return home after two years away from their native country. Exceptions to this obligation could be made on application to the Nyasaland Government Representative in Salisbury, provided that the applicant had satisfactory employment and, if married, had his wife and family accommodated in town with him. This would account for some of the number of Nyasaland men who continued into longer periods of employment.

It is noteworthy also that on the whole a high percentage of Nyasaland men exercised their own personal choice in the matter of leaving or staying, during five of the service periods more than 30% (though the reasons given might, in part, be concealing involuntary compulsive ones). Between eighteen months and two years these voluntary personal reasons become more significant than the involuntary managerial ones.

Amongst the Mozambique Africans, as amongst the Nyasaland employees, only during one of the periods was the highest percentage of separations made for managerial and disciplinary reasons, i.e. during the first three months of service. This period, which always contains temporary or short contract workers, must inevitably show a higher percentage discharge rate than the others, as it is also the trial period during which both men and management assess the

potentialities of the job and the worker respectively and weeding out is inevitable. Sixty-five per cent of Mozambique separations during the first three months of service were for such managerial reasons. There is, however, a sharp drop in the percentage of separations for managerial reasons throughout nine of the remaining eleven periods - in fact, these cease to be the most important reasons among men who completed more than three months service. Forty-eight (29%) of a total of 165 Mozambique African separations were dismissals made by the management - more than half of them (54%) for disciplinary reasons. Eighteen per cent of all Mozambique African separations were for disciplinary reasons.

Separations for reasons of circumstance beyond the employee's control showed a marked increase among Mozambique men during the 22 - 24 month service period but on the whole seem to be less significant than voluntary personal reasons for leaving. But an examination of individual personal reasons for leaving shows that 24% were home-connected. Sixteen per cent stated that they were "going home"; the remainder had been "summoned home", "wished to marry" or merely "to visit". In comparison, 31% of the Nyasalanders showed their reason to be home-connected (20% compulsory migrants return; the remaining 11% stating that they had been "summoned home", "wished to marry", "to rest" or "visit") and 7% only of the Southern Rhodesians stated definite home-connected reasons for leaving, a further 2% leaving because of death or sickness of kinsmen. This small percentage of domestic reasons for leaving shown by the Southern Rhodesians may be explained in part by the fact that the customary ten days annual leave, with the weekend time that goes with it, gives a total of fifteen days, which is sufficient to permit the Southern Rhodesian worker to visit his family even in the remotest areas and to maintain contact with kinsmen at regular intervals. Records show that employees of long standing do this; but the attachment of men to more distant homes frequently necessitates resignation. In a few instances Nyasaland men, after working a two year term, take four weeks leave and return to work but the tendency to resign rather than to take leave was most marked among these men.[1]

Among the Nyasaland men the involuntary reasons for separation preponderated during ten of the employment periods; among the Rhodesians nine; among the Mozambique Africans such involuntary reasons preponderated during five of the periods only, while during five other periods voluntary reasons were in the majority, reflecting the greater freedom emjoyed by the Mozambique African workers as compared with Nyasaland workers, the former not being legally compelled to return after a prescribed period.

Armsen (1956: 83) found that in three, out of four factories studied, in the Republic of South Africa "quitting rates were higher than dismissals". His "dismissals" would be equivalent to "managerial and disciplinary reasons for leaving" and the figures in Table 15 show that the same was true at Polygons for Nyasaland and Mozambique labour only. During ten out of the twelve service periods the majority of Nyasaland leavers "quit"; and during eight of the twelve periods the majority of Mozambique leavers "quit"; but the Southern Rhodesians showed entirely the opposite tendency. Only during three of the twelve periods was there a majority of what Armsen would have designated "quits". During eight periods <u>dismissals</u> were in the majority. The indication seems to be that the non-<u>indigenous</u> labour, particularly that of Nyasaland origin, was the more satisfactory from the management's point of view and had a better record for discipline than the Southern Rhodesians.

---

[1] Elkan, 1960: 70 "When they want to go home they leave their job".

Throughout the three year period as a whole there was a preponderance of separations for involuntary reasons amongst all sections of the personnel regardless of origin. (v. Table 16 (a)).

Table 16 (a) and (b)

Territorial origin and actual number of Separations during the three year period June 1957 - May 1960

(a)

	S.Rhodesia		Nyasaland		Mozambique		Other		Total	
	No.	%	No.	%	No.	%	No.	%	No.	%
Involuntary	198	59	203	65	77	49	14	54	492	59
Voluntary	86	26	70	22	56	35	6	23	218	26
Unspecified	51	15	41	13	25	16	6	23	123	15
	335	100	314	100	158	100	26	100	833	100

(b)[1]

	Sheffield Region		British Inst. of Management	
	July-Dec. 1949	Jan.-June 1950	July-Dec. 1949	Jan.-June 1950
Discharges	15.6%	12.7%	23.9%	19.0%
Resignations	84.4%	87.3%	76.1%	81.0%

Of the total of 492 involuntary separations, 298 (50.3%) were discharges by the Management. Of the 198 Southern Rhodesian separations 81% were discharges; of the 77 Mozambique African separations, 62% were discharges; of the 203 Nyasaland separations a considerably lower percentage, 39% were discharges. These figures are another indication that in the past Polygons have found Nyasaland labour to be satisfactory, though nowadays because of political and nationalistic pressures and local policies the number of Nyasaland employees is being steadily reduced.[2]

Of the 81% of Southern Rhodesians who were discharged 27% were redundant or had completed temporary contracts. It is likely that amongst men presenting themselves daily in the hope of obtaining work there would be a majority of men of local origin and from this the greater number of casual and short term men would be chosen, which possibly contributed to the high figure of 81% discharges among local men.

---

1 Greystoke, Birks & Murphy, 1951: 96.

2 See Table 5, p.28.

In general the analysis of reasons for separation seems to lead to the conclusion that it was not inherent instability within the labour force itself which underlay the turnover but, in the main, circumstance beyond the control of the employees. Conditions within urban employment are as yet insufficiently attractive or secure to engender any real desire to resist the force of circumstances which eventually draw a man away from employment - the strong attachment to tribal homes where ties of kinship, of custom, inheritance, security in sickness and for old age continue to hold firm, for common sense, as well as sentimental, reasons. Permanent withdrawal from rural to urban areas under present conditions would in most instances be to the disadvantage of the individual and his family. As in most parts of Africa, farms and land rights are held by a tribe and there is no question of sale. The land rights, and what accrues from these remain a part of a man's income so long as he retains his contact with his tribal area. Local conditions being similar to those observed by Elkan (1951: Sept.), "a man who leaves his land foregoes a part of his income, for his rural income is one which cannot be compounded or capitalised. There is no compensation for permanent withdrawal from the countryside". This fact is far too significant a one to be ignored by the men from Nyasaland and Mozambique who constitute a large proportion of Rhodesia's migrant labour force.

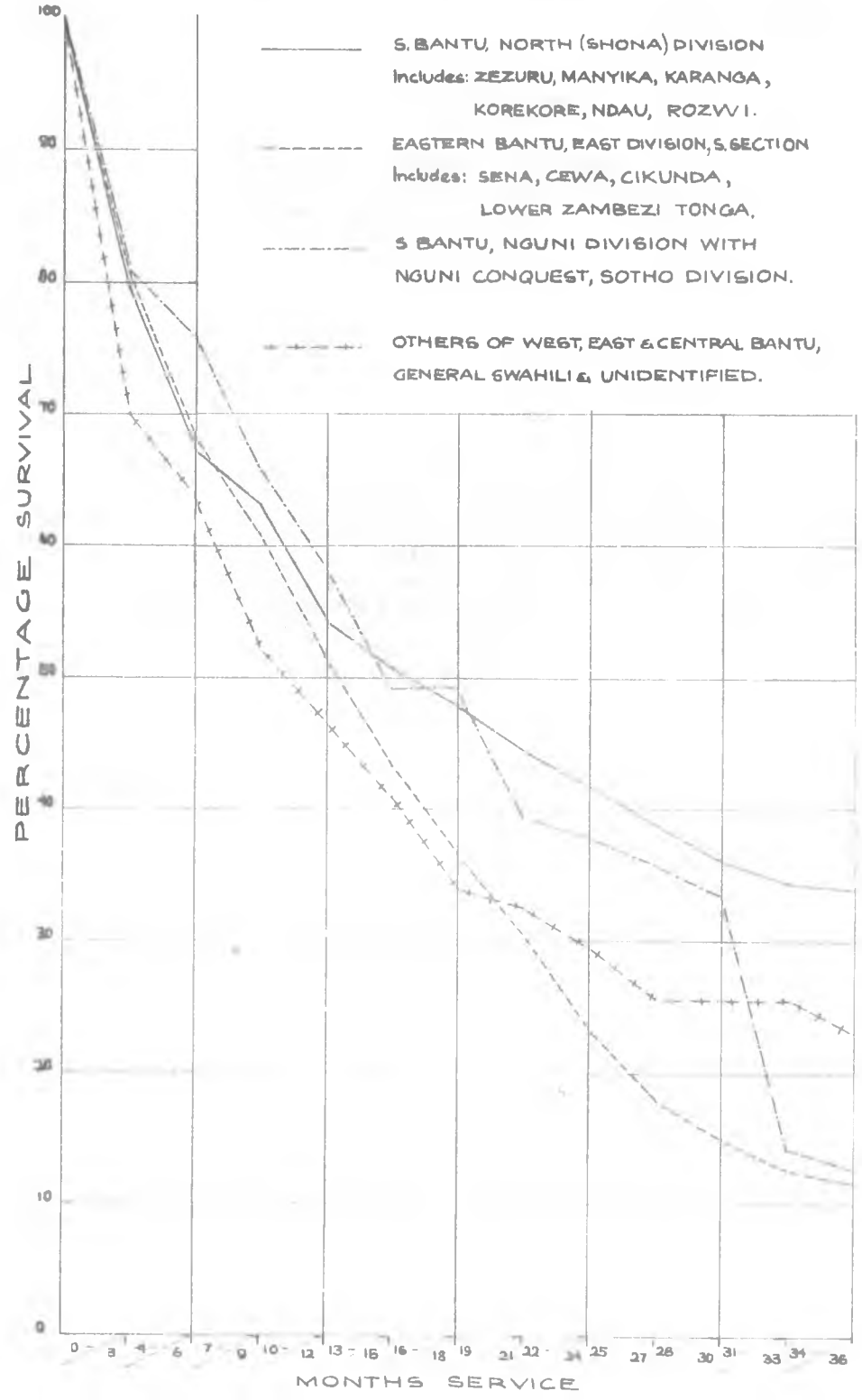
Comparison of Table 16 (a) with 16 (b) brings out the salient difference between a wholly urbanised labour force of long standing, as exemplified by that in the Sheffield region, and the migrant and very incompletely urbanised labour force obtaining in a comparatively new but developing industrial milieu in Africa. The overall picture in the United Kingdom (Table 16 (b), columns 3 - 4) maintains the same sharp contrast, i.e., of a far greater proportion of separations which were voluntary (resignations) as against those which were involuntary (discharges). Polygons figures show a completely opposite state of affairs.[1]

---

[1] Note that the United Kingdom figures are from industry in a state of "full employment": Salisbury figures in a period of mounting unemployment.

GRAPH 6

RATE OF SURVIVAL AND TRIBAL ORIGIN OF PERSONNEL



2. Rate of Survival and Tribal Origin of the African Personnel, Graph 6.

The two major tribal groups to which the majority of the 1059 men in this study belonged were:-

a) 46.9% Southern Bantu, North - Shona - Division, and drawn principally from the Zezuru, Manyika, Karanga, Korekore, Ndau and Rozwi tribes.

b) 38.5% Eastern Bantu, Eastern Division, Southern Section, and drawn mainly from the Sena, Cewa, Cikundu and Lower Zambezi Tonga tribes.

In addition:-

c) 5.1% were drawn from the Southern Bantu, Nguni Division and Nguni Conquest tribes (Sotho division) which included a small number of Ndebele, Ngoni, Sotho and Xhosa tribesmen.

d) 9.5% were drawn in ones or twos from other tribes of the Eastern, Southern, Central and Western Bantu and from the general Swahili group; and from tribes which were unidentifiable.

An examination of the curves relating to tribal origin shows that the survival rate during the first three months of service was lowest among this last group of men (d), 30% of their total leaving during or at the end of this short term. The percentage survival amongst the other three groups at the end of three months was almost the same (77.1%, 77.7%, 77.8%).

The two groups having numerical superiority in the personnel, i.e. the Southern Bantu, North (Shona) Division, and the Eastern Bantu, East Division, Southern Section, showed an almost equal rate of survival up to the end of the first twelve months of service but after that the decline amongst the Eastern Bantu (Sena, Cewa, Tonga men), who have their origin principally outside Southern Rhodesia, increased steadily and, after the 19 - 21 month period, rapidly, showing a survival rate of only 11.6% at the end of the three year term.

Amongst the Shona, conversely, after the one year service mark had been passed, there was a considerable decrease in the number of separations and the percentage rate of survival was 33.6% in the 34 - 36 month period, which was 22% better than that shown by the Sena-Cewa group.

Tribe and territorial origin are naturally closely related and there is understandable similarity between these curves and those in Graph 5, for the Shona occupy tribal areas in Southern Rhodesia, the Sena tribesmen come mainly from Mozambique and the Cewa from both Mozambique and Nyasaland. Since the curve for "others", many of whom were "general Swahili", and "unidentified", follows fairly closely that of the men of Mozambique origin it may give some clue to the country of origin of these unidentified tribesmen. (Information in company records was frequently less complete for Mozambique men than for the other two groups.) This close inter-relation of two factors could lead to difficulty in determining which might be the operative one in relation to turnover, but since, of the two principal tribal groups concerned, the Sena - Cewa showed, after the first twelve months of service, the most rapid decrease in rate of survival it seems fair to assume that territory of origin is the

more important factor here because the restrictive regulations then in force applied to migrant, non-Southern Rhodesian workers and would influence their rate of survival. (c.f. Graph 5, "Nyasaland", with Graph 6, "Eastern Bantu, Eastern Division, S. Section").

The curves were plotted in order to attempt to discover whether significant differences in survival rate would be shown between major tribal groups. During the first year of service there was little variation in rate between the groups; but the Southern Bantu (Nguni Division, Nguni Conquest and Sotho) groups - a small one, of 54 men, at the outset - did, however, show a higher rate throughout than the Sena - Cewa groups, though both groups are mainly of Nyasaland origin. This suggested that these men might exhibit some difference in outlook and character or ability. Over all periods of service among survivors in this group 50% or more were in Grade 4 or above[1] (Grades 5, 6, 7 are "skilled") and of those who separated over all periods an average of 40% were recommended for re-employment. They were found on average, as a group, to have acquired superior educational qualifications than the larger, Sena - Cewa, group, though both groups originated in the same territory.

Elkan (1956: 7) found differences in survival behaviour between the Ganda - the tribe within whose area the factories he studied in Kampala and Jinja were situated - and the other tribal constituents of more distant origin. Here, the greatest percentage of leavers after short terms of service amongst an observed set of new engagements were Ganda - i.e. local men, and Elkan remarks on "their keenness to get the best job possible even though it involved frequent changes of job".[2] It was possible that the Shona, as the more sophisticated of the groups at Polygons, and that nearest to the centre of employment, might have shown similar tendencies; but these are not immediately evident and the separation behaviour of the Shona during the first twelve months seems little different from that of other tribal groups. The marked superiority of their survival rate after the first twelve months of service is partly attributable to differences in their legal position and economic background as compared with the non-indigenous groups.

During the initial 0 - 3 months service period managerial reasons for separation were in the majority, among all the tribal groups. During all the later periods reasons of circumstance and personal reasons (especially those related to home and family) predominated throughout. It would appear, therefore, that the Shona, i.e. the local, tribesmen exhibited equally with the other groups of more distant origin the same compulsive response to tribal obligation and rural background. A considerable percentage of disciplinary reasons persisted in all groups. This was highest among the Shona, 12% leaving for such reasons in the whole three year period as against 10.5% of the Sena - Cewa separations.

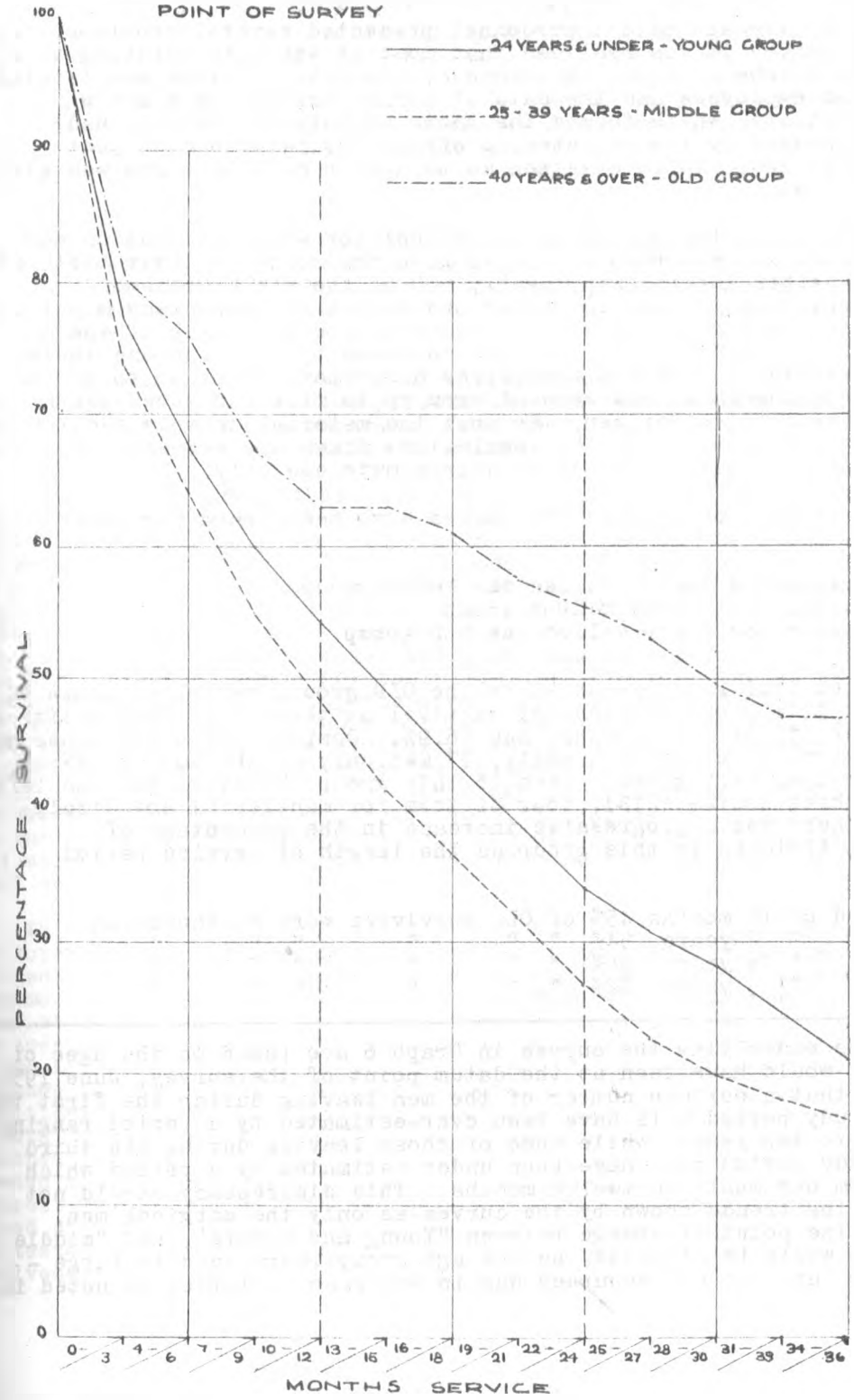
---

1 Examples of jobs done by these men are: driver, clerk, supervisor, commentator.

2 Elkan, 1956: 7.

GRAPH 7

RATE OF SURVIVAL RELATED TO THE AGE OF THE PERSONNEL - 1006 for whom ages were given - AT DATUM POINT OF SURVEY



3. Survival Rate related to the age of the Personnel, Graph 7.[1]

The analysis of the age of the personnel presented several problems. At the outset of the survey it was realised that most of the data relating to age must be treated with some reserve. Evidence of the date of birth was lacking for the majority of employees and the date of birth recorded on a man's Registration Certificate, which formed the basis of Polygons record, had frequently been assessed by the registering officer by reference to past events and circumstances. No information as to age or date of birth was given for 5% of the 1059 men.

The graphs relate to the 95% of the personnel for whom information was available. Of these, 72% had been unable to give the month of their birth as well as the year. After interviewing nearly 500 of the men it became increasingly evident that in some instances the degree of inaccuracy might be considerable. From comparisons made after conversation with many of the employees it was found that between the ages recorded by Polygons and those given to the interviewer by the men themselves discrepancies of up to two and three years were not uncommon, and some of even up to five and seven years were encountered among the older men. So that the material in this section is presented with some reluctance and the conclusions drawn are necessarily tentative. At best the picture is one of approximate age only.

With these reservations in mind the curves have been drawn for three major age groups:-

1) 24 years and under, called the YOUNG group
2) 25 - 39, called the MIDDLE group
3) 40 years and over, called the OLD group.

The highest survival rate was shown by the OLD group, men of 40 years of age and over. For this group the rate of survival at the end of the twelfth and longest service period, 34 - 36 months, was 46.9%. Compared with the other two age groups the numbers involved were small, 47 men only at the outset, 4% of the total for whom ages were given. Even in this group, however, ten men left during the first three months (21%), four of them for managerial and disciplinary reasons. There was a progressive increase in the percentage of Southern Rhodesian Africans in this group as the length of service period increased.

At	the	end	of	18 months	45%	of	OLD	survivors	were	S.	Rhodesian
"	"	"	"	2 years	54%	"	"	"	"	"	"
"	"	"	"	2½ years	58%	"	"	"	"	"	"
"	"	"	"	3 years	62%	"	"	"	"	"	"

[1] The calculations underlying the curves in Graph 6 are based on the ages of the men as they would have been at the datum point of the survey, June 1959. This has meant that a certain number of the men leaving during the first two years of the study period will have been over-estimated by a period ranging from one month to two years, while some of those leaving during the third year of the study period will have been under-estimated by a period which could range from one month to twelve months. This discrepancy should not vitally affect the trends shown by the curves as only the marginal men, i.e., those at the point of change between "Young and middle", and "middle and old" groups would be affected, as the age group range used is large - up to 15 years; and the age accuracy was in any case variable, as noted in the text above.

Men in the MIDDLE age group, 25 years to 39 years, showed the lowest rate of survival falling to 16.7% during the last - longest - service period, 34 - 36 months. This middle age group was the largest numerically, containing 55% of the total personnel for whom ages were given, and the one in which the men might be expected to leave, on account of family responsibilities and kinship obligations. During nine of the twelve service periods more men in this age group left for circumstances beyond their control than for other reasons, many being returning migrants, others having to deal with death or sickness of kinsmen or difficulties at home.

Many of the men in this group who resigned voluntarily stated that they were "going home" or had been asked to return home, so that their reasons for separation were perhaps almost as compulsive as the "involuntary" reasons. 82% (120 men out of 146) of separations during the first three months of service were for involuntary reasons; 75% of these (90 men) were managerial and disciplinary discharges.

If separations for reasons of circumstance beyond the workers' control are excluded, for the six service periods between seven months and two years, men in this MIDDLE group who separated from their employment showed a greater tendency to give notice than to be sacked.

This was the group that most frequently expressed dissatisfaction with wages; five of the twenty four men who left voluntarily did so within the first three months and for this reason. This may be the group on which family obligations, particularly financial ones, weigh most heavily and though it was not possible at this stage to assess the scale of family responsibility it is reasonable to suppose that men in this age group would be married, have many needs to meet and would lay greater stress on wage. Also, they may already have had several years in wage employment and have reached the stage when they look for increased reward for their labour. Eight of the 24 voluntary separations were made during the same period because of dissatisfaction with work and conditions. Of those who survived into longer periods of service (over two years) most were discharged for reasons of misconduct or indiscipline - during the 25 - 27 month period 73% of the discharges; 28 - 30 month period 83% of the discharges; 31 - 33 month and 34 - 36 month periods - 100% of discharges, though circumstances beyond the employees' control still accounted for the majority of all separations, and other reasons given by the men who left voluntarily after longer periods of service were most commonly "to return home" or because "tired of work".

This latter reason is one which the European employer, personnel manager and supervisor frequently find it difficult to accept or understand, as did Polygons own personnel manager; and it seems reasonable to recognise that customary attitudes to wage-earning employment among Africans at their present stage of development as against European workers are not the same. The latter has accepted the system of wage earning employment as a way of life but a glance at the African's reasons for venturing into urban employment in the first instance reveals no such general acceptance of a lifetime of work under urban conditions. Interviews with employees (the results of which will be analysed in detail in Part III) revealed many instances of short-term ambitions such as "clothes for self", "shoes for children", "bicycle", "school fees", or just "needed money", so that once these are achieved a man might be inclined to lose interest in his job for its own sake and make for home, saying that he was "tired of work". Such attitudes may also be characteristic of the migrant, habituated to short terms of service. But it must be remembered also that non-involvement in wage labour does not necessarily mean a state of unemployment.

A man giving up his wage earning employment because "tired of work" may mean only that he is tired of the regimen imposed by the factory system; and his return to the rural area may still involve him in work - though of a different nature and with a less rigorous timetable. He may, as many who were interviewed stated, return "to plough at home", "to attend to land and cattle", i.e. to engage in the kind of activity which reaffirmed his place in the family and tribe. From the point of view of personal welfare and that of the tribe this re-establishment of contact with the rural home is important, particularly to men in the MIDDLE age group, on whom customary responsibilities would rest more heavily with advancing age. Many of such men would also wish to secure their places in rural society for retirement or possible ill-health. Barber (1961: Chap. VI), who analyses the contribution of the adult male to the indigenous economy, stresses the dual rôle of the agricultural worker and wage earner in just those areas of Central Africa from which Polygons personnel are drawn, and where men have become accustomed to seeking wage employment. Most of Polygons men seem to be involved in the dual economy which he describes, and anxious to maintain their place in the rural sector.

In addition to the dual economic involvement distinguished by Barber cognizance must still also be taken of the earlier view, expressed by Hudson (1955: 28), "that African workers tend to value leisure higher than wage earning and this attitude is one which they can indulge in Central Africa". This somewhat oversimplifies what is, in fact, a complicated social, psychological and economic phenomenon and it perhaps needs some modification in the present day when increasing populations, and pressures on land and resources, lead to the formulation of new policies with regard to land tenure. But the persistence of this attitude amongst many of the workers was indubitable and endorsed by the many who still expressed a preference for rural life in such terms as "rural life is easier", "cheaper", "more secure"; and the many who said "shall go back to settle when tired of working", which implied an attachment to a rural way of life which did not involve "work", - at least in the urban sense - but to what was, to them, a more leisurely way of living.

The curve for the YOUNG age group, 24 years and over, shows a slightly higher average rate of survival than the middle group during the first twelve months of service, and after the first 15 months the rate of survival is, on average, about 7 - 8% higher. During the longest, 34 - 36 month, service period this group achieved a 20.7% survival rate as compared with 16.7% for the MIDDLE age group. This tendency towards a higher survival rate in the younger group of men is in contradiction of the findings summarised by Glass (September 1961: 19), which indicate that among industrial workers generally, both black and white, in Africa and elsewhere, a higher proportion of separations, i.e. a lower rate of survival, is shown by men in the younger group.[1] The argument is that men in the MIDDLE group would be expected to be married and to have young dependent families and consequent domestic responsibilities necessitating settled jobs and regular income.[2] The same

---

[1] cf. also, Elkan, 1960: 109 - "young men the world over shift from job to job until they find one that suits them".

[2] cf. Greystoke, Birks & Murphy, 1951: 98, who found the percentage of separations related to age groups in the Sheffield area of Britain to be:- 18 - 20 - 13.4%; 21-30 - 30.8%; 31-40 - 23.4%; 41-50 - 17.5%; 50+ - 13.6%, and quoted that in the Birmingham region the most serious turnover among males was in the 20 - 24 age group.

social characteristics would be expected of Polygons men in the MIDDLE age group but the great difference lies in the fact that for the majority of these men their family and kinship responsibilities lie in rural areas rather than in town and whereas in a more urbanised labour force such responsibilities would tend to stabilise the middle age group (as against the younger) in its employment, among Polygons men the evidence seems to show the reverse of this tendency. Family responsibilities take men away from employment periodically to rural homes where land, kinship and tribal rights can only be ensured by frequent personal contact.[1] Also, Richards' observations (1954:213) may be relevant here, 'that in peasant communities a man requires his greatest capital in youth - the need for large sums of money gradually diminishes.' The young groups frequently need cash for lobola or for the purchase of the necessary cattle therefor. This fact was noted by Elkan also, (1960: 43), as contributory to the youthfulness of African urban labour forces.

Many of the men in both groups were migrants and aspects of their survival behaviour would not always have been governed by personal choice but by statute. Glass (1960: 16) also distinguishes the migrant and concedes that his behaviour would follow a different pattern from that of other work seekers of rural origin and those who are more urbanised.

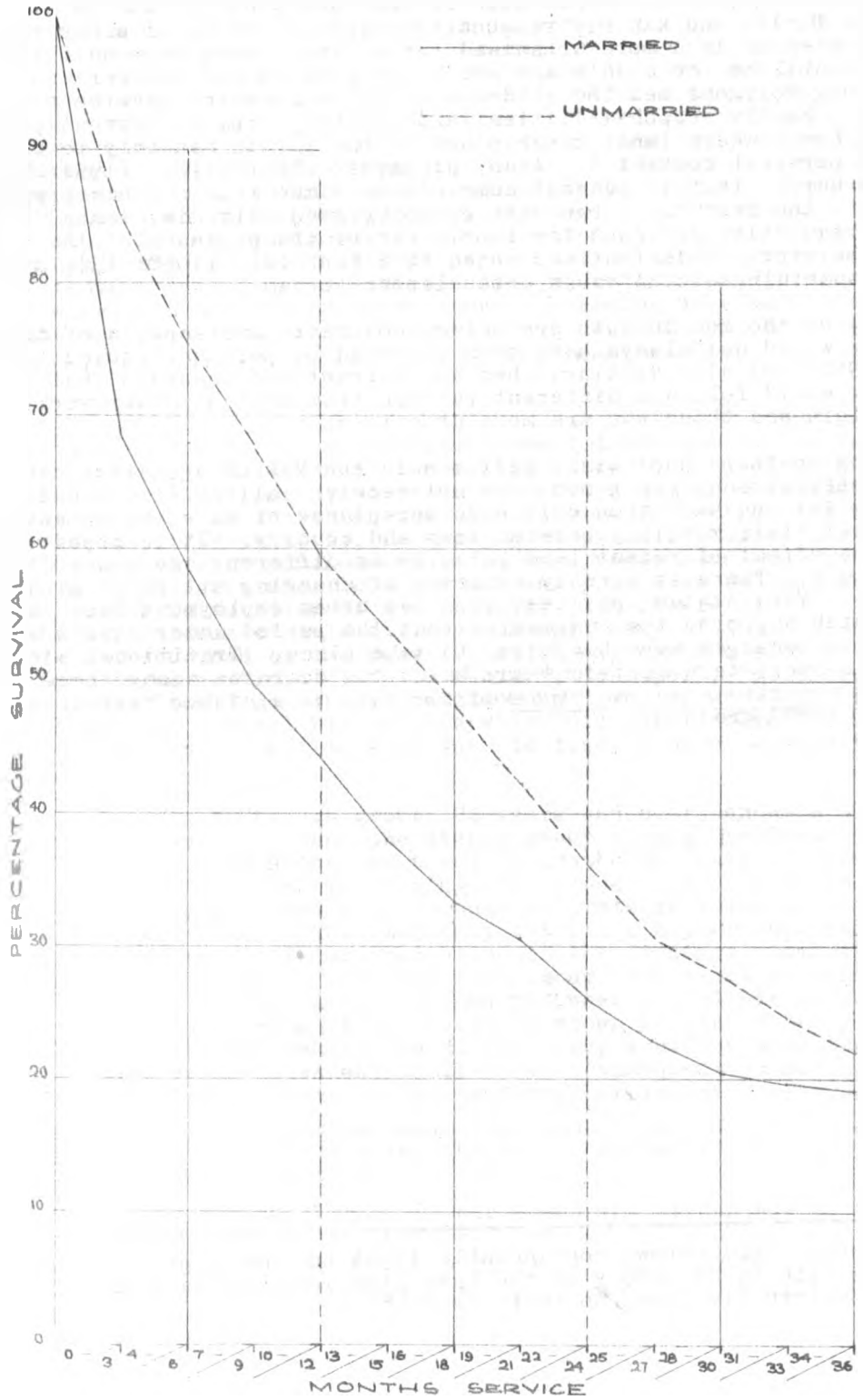
Among Southern Rhodesians most men in the MIDDLE age group have land rights, whereas many young men have not received allocations under the Land Husbandry Act and have been driven to acceptance of wage employment and this has reduced their mobility between town and country. It is hoped to be able to assess the effect of recent land policies on different age groups in Part III of this study. There is already evidence of changing attitudes among younger employees. Many stated that they regarded urban employment "as a new way of life", which supports the suggestion that the period under review was one during which changes were beginning to take place. Traditional attitudes related to short-term ambitions may be on the decrease among these younger men, which may contribute to the observed tendency to a higher rate of survival among the YOUNG group.

---

[1] Van Velsen, 1960, throws considerable light on this aspect of the migrant worker's life in his study of the Lake Side Tonga tribe (one of the Eastern Bantu, Eastern Division, Southern Section).

GRAPH 8

PERCENTAGE RATE OF SURVIVAL RELATED TO MARITAL STATE OF EMPLOYEES



4. Rate of Survival relative to the Marital State of the African Personnel. Graph 8.

Of the total personnel examined 40.4% were recorded as being married and 59.6% as being unmarried, widowed or divorced. The use of the term single has been avoided because of the frequent ambiguity of its interpretation. There were occasional instances of married workers declaring themselves to be single when they regarded themselves as "single" in the township sense of having no wife actually in town. Such instances, together with those where no record was made of the change in conjugal status during the current work spell will have introduced a small element of error into the findings but this has not been regarded as sufficient to affect the general trends observed. The curves showing the rate of survival relative to marital state exhibit phenomena similar to those observed with regard to the age groups of the personnel. Contrary to the general view of behaviour of men in these two categories, the survival rate amongst married men over all periods of service was found to be considerably lower than that for the unmarried men. After the first, 0 - 3 month, service period the survival rate differed between the two groups by as much as 9.2% (4 - 6 months), 8.0% (7 - 9 months), 8.0% (10 - 12 months), 6.3% (13 - 15 months), 5.2% (16 - 18 months), 6.0% (19 - 21 months), 6.1% (22 - 24 months). The rate of survival therefore among unmarried men was, on an average, about 7% higher than that of the married men. Between the two and three year service points the difference in survival rate gradually diminished from 10% to 3.3%, but the rate remained higher throughout for unmarried men.

In both the married and unmarried groups domestic reasons for separation, both voluntary and involuntary, figured largely in nearly all the length of service periods. Among married separations in nine of the twleve service periods one-third of the total leaving did so for domestic reasons; and among unmarried separations in seven of the twelve periods one-third of the total left for domestic reasons.

Table 17

Percentage of each Conjugal Group leaving for Domestic Reasons

	Length of Service period											
	0-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	31-33	34-36
Married	35	51	56	33	61	38	36	50	23	10	50	0
Unmarried	17	31	46	36	76	41	38	58	52	29	47	80

On average the percentage of such separations over eleven[1] of the service periods was 40.3% for the married men and 38.2% for the unmarried men - a difference of only 2%. The more complicated network of domestic obligations in which a married man is involved - a network which includes not only parents, uncles and siblings but also wife (or wives) and children - increases the risk of separation for domestic reasons at any point in a married man's service as compared with the unmarried man with fewer family responsibilities. (Father, mother, uncle, were the most frequently mentioned by the unmarried). The highest percentage of separations

[1] Period 12, 34 - 36 months was excluded, numbers being so few. Only seven men left during this period. Only two of them were married.

for domestic reasons among the unmarried men was in the 22 - 27 month periods, and related in most instances to their compulsory return as migrants, whereas such separations among the married men showed a more random character, many leaving even after very short terms of service.

Several unmarried men, of course, left to marry - usually after 9 - 18 months service. The question of lobola, i.e. a short term monetary target, may have been involved here. And there is definite evidence among the unmarried (younger) men of homesickness - just "plain want to go home", often after short terms of service at Polygons. This was one of the commonest reasons among unmarried men throughout.[1,2]

In the first 0 - 3 month service period most of the unmarried separations, (50%), were for managerial reasons; 15% were disciplinary discharges. Many of these would have been temporary short term engagements.

This particular sociological factor, i.e. the conjugal status of the employee, is obviously of considerable importance in turnover. Two factors seem to be at work:-

a) amongst married men, the increased responsibility which marriage involves necessitating frequent, and often unexpected, withdrawal to home and family;

b) amongst unmarried men, the continued attachment to the rural home as reflected in their reasons for leaving and the evident desire of their families at home that they should not lose contact. ("Going home", "called home", "father said I must leave").

It is interesting to note and contrast Glass's observations on the black industrial worker in the Republic of South Africa (Glass, 1960: 20). Her findings indicate that there is a "significantly higher proportion of separation among young, unmarried, short-service and low earning men. The findings on the behaviour of this black labour force indicate that its general movement patterns are in the same direction as those of men of similar age, marital and job status in other communities". Although, as Glass writes (1960: 19), "it is reasonable to suppose that a young man is less likely to be married and will have a shorter period of service", these observations do not appear to be generally true of Polygons men in this sample study. The findings of Greystoke, Birks & Murphy (1951: 98) in the Sheffield region also contradict the assumption that the young and unmarried exhibit stronger separation tendencies. They found that out of 1010 males who separated 49.2% were married, 24.9% were unmarried, 24.2% of unknown marital state, the remaining 1.1% widowed.[3] Though the sociological background to the

---

1 Part III should help to shed light on the sentimental attachment - how many men, after their earliest work spells in town, wished to return home.

2 Homesickness, similarly observed among the Maori urban workers, is described in "Some Modern Maoris", Ernest & Pearl Beaglehole, New Zealand Council for Educational Research, 1946, and quoted by Moore (1951:116), but I was unable to obtain and read this work in Salisbury.

3 Interpretation of these figures and their use for comparison is, however, somewhat difficult because they are unrelated to the conjugal status of the labour force as a whole and there is therefore no relative percentage of survivors as against separations in each conjugal group.

two labour forces is entirely dissimilar these findings are interesting; and since, in the Sheffield region, the majority of all separations were voluntary and usually for personal betterment or because of job dissatisfaction[1] one can detect how their responses to the same problem of increased responsibilities[2] differs from that among married men in the African labour force. The one necessitates a withdrawal, though it may be only temporary, from the labour scene, the other an even deeper involvement in it, with probably more job responsibility.

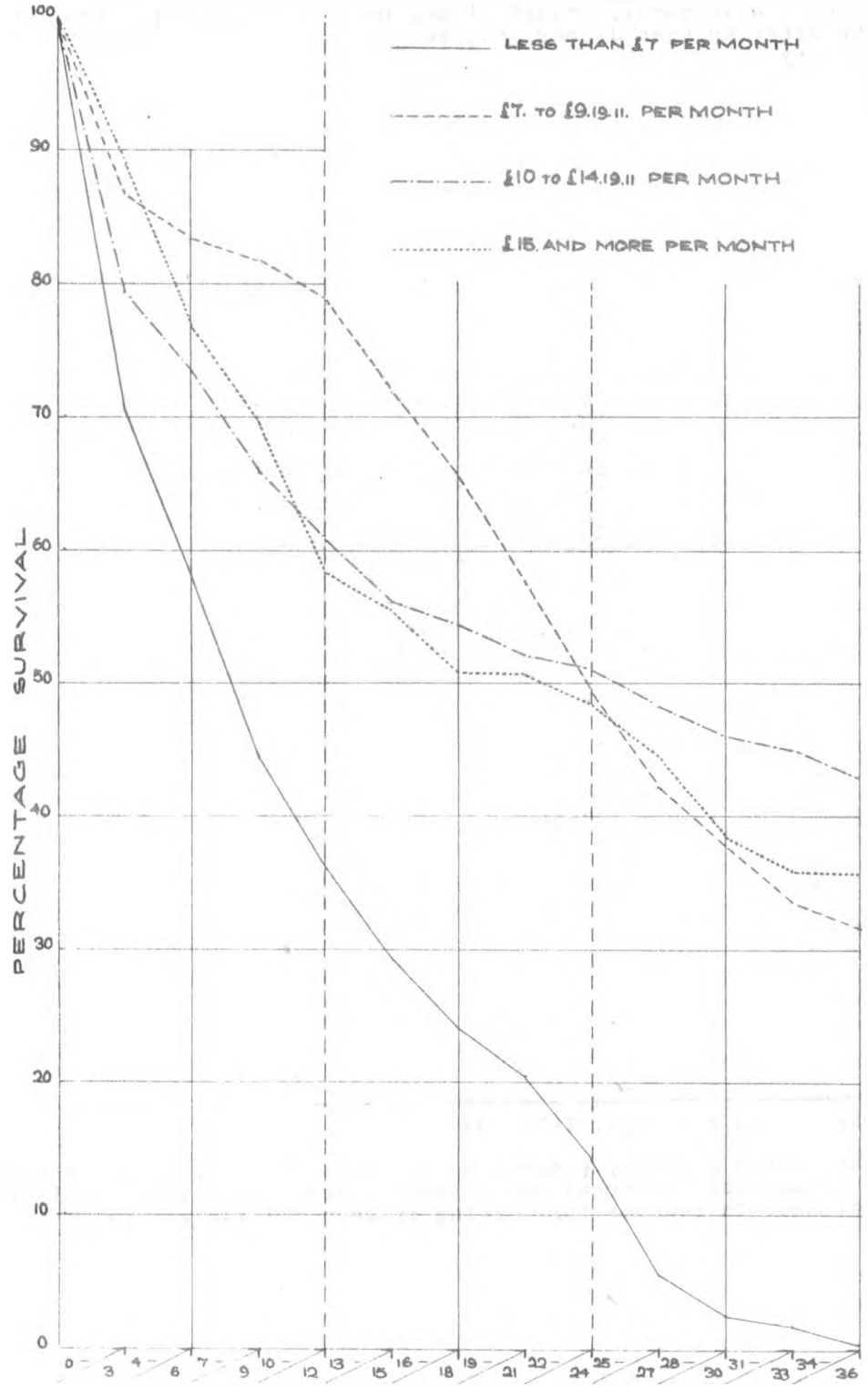
---

[1] Greystoke, Birks & Murphy, 1951: 93.

[2] Greystoke, Birks & Murphy present no analysis of reasons for leaving of married as against unmarried men so that there is no statistical evidence of differences in reasons for leaving between the two groups.

GRAPH 9

PERCENTAGE RATE OF SURVIVAL RELATED TO WAGES of AFRICAN PERSONNEL at the date of separation



5. Rate of Survival related to the Wage[1] of the African Personnel at the date of Separation. Graph 9.

Wages during the period under review, mid-1957 to mid-1960, were considerably lower than at the time of writing (1962, v. page 30). Eleven per cent of the 606 men in the Polygons Survey (May - June 1959) had a cash emolument of less than £7 per month, and 61% had less than £8 per month. The average wage for the year 1957 was £6.16. 0. Many of the 1059 men in this survival study were in employment during the years 1958 and 1957 and earlier, and their period of service antedates in part the promulgation of the Native Urban Area Employment Regulation of 1958 in which the £6.10. 0. minimum wage was laid down.

Six hundred and fifty-one men of the 1059 in the study were earning less than £7 per month when they left Polygons, i.e. 61% of the total number who had faced a possible three years or more in employment.

The curve for the lowest income group, less than £7 per month, shows a very rapid fall in the survival rate throughout the whole three year period. By the end of nine months more than half the men in this group had separated. Four men remained on into the 34 - 36 month service period and only one survived it.

The majority of the survivals in this group in all length of service periods were Southern Rhodesian men. On an average over all periods only 25% of the survivals in this group were Nyasaland men. With the lengthening of the period of service there was a progressively higher percentage of Nyasaland and Mozambique men among the separations, so that the migrant factor had had considerable influence upon the trend here. Wage, at this level did not seem to operate as a retaining incentive. The average wage in manufacturing industry in Salisbury during 1957 was £8. 2. 0., in 1958, £9. 0. 0., and £8. 5. 0. and £11.10. 0. at Polygons during the same years. Polygons wages, therefore, compared favourably with those outside and it was unlikely that change of employment would improve wage position, except perhaps for a skilled minority. Reasons other than, or in addition to, those connected with wage must have been operative.

An examination of reasons for separation in this lowest income group shows that 60% left in the first three months for managerial and disciplinary reasons, that is, involuntarily. Sixty-nine per cent of these managerial discharges were because a short-term contract had been completed or men were

---

[1] Calculations underlying these curves are based on the wage at the time of separation or, among survivals, at the point of survey. The wage factor is one in which a fraction of error may be introduced because wage may vary with point of entry into Polygons service; and also with length of service. No information as to a worker's progression up the wage scale with length of service is presented. Men engaged and leaving before the end of 1958 could have fallen into a lower wage category than subsequent engagements, but of the whole personnel examined they formed a small proportion only. As the majority left after short terms of service, often before any chance of earning an increment, wage on separation was often the same as wage on engagement. It is not expected that minor discrepancies introduced by the above would materially affect the trends shown by the curves.

found to be redundant. Of all the separations in this group due to managerial and disciplinary reasons together and in the shortest period of service, 47% may be laid on the inadequacy or fault of the employees themselves. A further 17% left involuntarily for circumstances beyond their control, mostly death or sickness of kinsmen, which made a total of 77% of involuntary separations.

Twenty-three per cent left voluntarily (13% for reasons connected with work and 10% for voluntary personal reasons). As observed with reference to other survival curves, it seems, therefore, that the onus for separation during the first three months of service rested on the management rather than on the men, though reasons for discharge would in many instances have been directly tied to the behaviour and performance of the men, many of whom would be doing such work for the first time.

Amongst all these men, i.e. the low income group, and they comprised 61% of the total examined, three only expressed dissatisfaction with wages and a further three stated that they had found better paid work elsewhere and evidently had a concern for the wage factor. But wage in this group seemed to be the least ponderous factor in separation.

The survival curve for those men in a higher income group, earning between £7 and £9.19.11, shows a very different trend. For the first four periods (up to twelve months service) the rate of survival was high, falling only 21.5% during the whole of this period (compare a decline in rate of 63.6% for the lower income group). Eighty-six point eight per cent of the total of this group survived the first three months, compared with 70.5% of the lowest income group surviving the same period.

Of those in this income group who left during their first three months of service only 6% did so of their own choice; 50% became redundant; 19% failed because of work or conduct; 25% left on the grounds of ill-health, though here again the real reason may have been concealed. Occasionally a complaint of sickness was used to cover the actual reason, as when seven men from the same department, out of 31 who left during one month, June 1958, gave "pain in chest", "pain in neck and chest" as their reason. All had been less than two weeks in their jobs at Polygons, and no further explanation was elicited.

After the first year of service the survival rate for men in this income group fell steadily during the next five service periods (an average drop of about 7% for each period) and improved somewhat during the three longest service periods (an average drop of 3%). The survival rate of the men reaching the longest (34 - 36 months) service period was relatively high, 31.5% as compared with 0.4% for the lowest income group. Fifty per cent of the men in this wage group survived the first two years of employment. The majority of men surviving for two years in this wage group were from outside Southern Rhodesia and subject to the usual compulsions on such workers to maintain contact with their families in the rural areas, a contact for which the annual ten days leave was insufficient to cover journey time as well as time at home. The usual migrant circumstances necessitated the majority of separations. Fifty-seven per cent of the separations between 22 and 24 months service were for reasons connected with home and family; likewise 60% of the separations between 25 and 30 months; 63% between 19 and 21 months; 57% between 15 and 18 months. In the majority of cases, wages at this level were not sufficient attraction to a man to retain his job, taking leave only and undertaking to return.

Only two men stated that they were dissatisfied with their wages.

The curve for the men earning £10. 0. 0. - £14.19.11. per month shows the highest survival rate of all four income groups. At the end of the longest service period (34 - 36 months) these men achieved a survival rate of 42.8%. Just over 20% failed to survive the first three months of service, 76% of these being discharged and only 18% leaving voluntarily.

During the intervening periods the rate of survival was high, showing a 50% survival rate even up to the 21 - 24 month service period.

Most of the separations were for managerial reasons because of some misdemeanour or failure to maintain the standard of work. This seems to suggest that though the men themselves were content and not wishing to leave they had become complacent, perhaps careless or bored with the job and disinclined to maintain the necessary effort. Sleeping on duty, theft, disobedience of instructions, unsatisfactory work, were the most frequent reasons given for separation in this group. It may be a group in which some incentive becomes necessary, to encourage maintenance of standards. The men would see little chance of progress into higher income groups as the wage structure then stood.

For those men earning £15 per month, or more. the rate of survival was greater during the first twelve months of service than that of the slightly lower wage group (£10 - £14.19.11.) but nevertheless there was still a sharp decline during these months. Eight out of eleven men in this group who left during the first twelve months of service did so voluntarily (73%), giving no specific reason. Possibly they saw better chances elsewhere or had found difficulties within the factory which they were not prepared to reveal or discuss. After the first twelve months of service the survival rate for this group was good, but not as high as that of the £10 - £14.19.11. income group, 35.7% as against 42.8%. The whole group however was numerically small and composed of men in responsible positions doing work which required considerable training and experience (drivers, senior clerks, supervisors, commentators) and whose qualifications would give them good chances of obtaining high grade work elsewhere. The noticeably low rate of survival during the first year of men in this income group would perhaps suggest that those who separated voluntarily, the majority, did not hesitate to take advantage of better or other opportunities as they presented themselves, or to decide that the job did not come up to expectations. Clerks, and others with specialised skills and at a higher-than-average wage level, may aspire also to higher standards of living, be more ambitious and ready to leave and take advantage of opportunities of advancement which may come their way. Also, a higher standard would be expected of men in this group and their survival would depend on their attaining and maintaining this. Their ability would be assessed during the early months of service.

Men in the £10 - £14.19.11. group have usually achieved their wage advancement through character, reliability, experience and training on the job rather than on academic or specialist qualifications, which might explain their greater survival into longer periods of service than the higher paid men who did not achieve the same survival rate and whose qualifications would make them more mobile. A clerk, for example, could do a clerk's job anywhere; the supervisor of a particular department familiar with one set of machinery might not find similar conditions anywhere else. This question of mobility is probably of importance in interpreting the trend of the curve for the highest wage earners.

Though an examination of the reasons for leaving in all wage categories yields little reference to dissatisfaction with wages, it is evident from the percentages of those surviving that the higher the wage the greater the tendency to survival for a longer period of service. The rate of survival of men earning above the average wage is seen to be over 40%, even amongst those who had been in the job for three years, and the higher paid men have obviously achieved a degree of stability, as a group, considerably in advance of that of the majority in the lower income groups. The fact that after two years of service the men in the highest income group show a tendency to increased separation may suggest that this is a point at which the question of job satisfaction should be investigated or checked.

In any comparison of the group curves Silcock's observation (1954: 431) is relevant - "the attraction of higher earnings (overtime perhaps) is probably greater for the lower paid than for the higher paid worker", though he admitted, as observed earlier, to having found no evidence of mobility from low to higher earning occupations.[1] This aspect of the question of separation is also intimately connected with skill grades and neither can, in fact, be dealt with in isolation.

The curves are of particular interest because they do seem to constitute a method of recording a definite correlation between survival rates and wage levels; and to provide some of the empirical material whose lack is so regretted by Hill (1962: 185) though admittedly in a somewhat different context. It may be that in a developing industrial field, where the transition to a money economy is still in progress, different attitudes exist from those current among traditionally industrialised labour forces, as studied by Hill, in areas where wage levels, cost of living, fringe benefits, are more carefully watched and correlated. A similar wage and survival study, maintaining the length of service contact, in such an area would provide a valuable comparison.

Table 18

Average Wage of men from the three territories of origin related to length of service period

Service period	S.R. £	Ny. £	Moz. £
0 - 3 months	8.5	8.0	7.5
4 - 6 "	8.9	7.5	7.6
7 - 9 "	9.1	7.8	7.7
10 - 12 "	9.3	8.0	7.8
13 - 15 "	9.7	8.3	8.0
16 - 18 "	10.0	8.2	8.1
19 - 21 "	10.4	8.5	8.1
22 - 24 "	11.1	8.5	8.3
25 - 27 "	11.5	9.1	8.5
28 - 30 "	11.6	9.3	9.2
31 - 33 "	11.4	9.7	9.3
34 - 36 "	11.6	9.9	9.3

[1] Part 3 of Polygons Study, in course of preparation, should yield a sample of such evidence in its presentation of the labour history of Polygons employees.

As Table 18 shows, the Southern Rhodesian survivals had a better average wage over all periods of service than men from Nyasaland or Mozambique. This superiority of wage position was enhanced with increase in their length of service. Sixty-one per cent of the Southern Rhodesians surviving the shortest term of service were earning less than £7 per month but the average was raised by the 20% who were earning more than £10 per month and the percentage of Southern Rhodesian survivals in the higher wage categories was greater over all periods than that achieved by the other two territorial groups, a fact no doubt attributable to the advantage of better educational and training facilities which the Southern Rhodesians enjoy.

With increasing length of service the Nyasaland men reached improved positions on the wage scale though up to twelve months of service only 2% of them earned £10 or more. By the time the 34 - 36 month period was reached 27% of the Nyasaland men concerned were earning £10 or more. The majority of Nyasaland men over all service periods earned between £7 and £9.19.11. Of those serving the shortest terms, 0 - 3 and 4 - 6 months, 58.5% were in the minimum wage category, earning less than £7, on separation.

Mozambique Africans showed a similar pattern to the Nyasalanders in the minimum wage category over the first six periods and in the £7 - £9.19.11. category up to two years service. Subsequently almost all the men in this territorial group remained in this wage category. Only 10% of the total with up to three years service earned £10 or over compared with 27% for Nyasaland men and 45% for Southern Rhodesians. The percentage of Mozambique men earning £15+ per month increased from 0% in the first six months service period to 5% of those surviving the two longest service periods.

It would seem that the majority of Nyasaland and Mozambique men remained at low wage rates throughout - doing mainly unskilled and semi-skilled work; that jobs carrying better remuneration and requiring more training and education were usually filled by the higher percentage of Southern Rhodesian men in all service periods. The difference between the actual number of Southern Rhodesians in higher wage groups with long service and similar Nyasaland men decreased with length of service.

Table 19

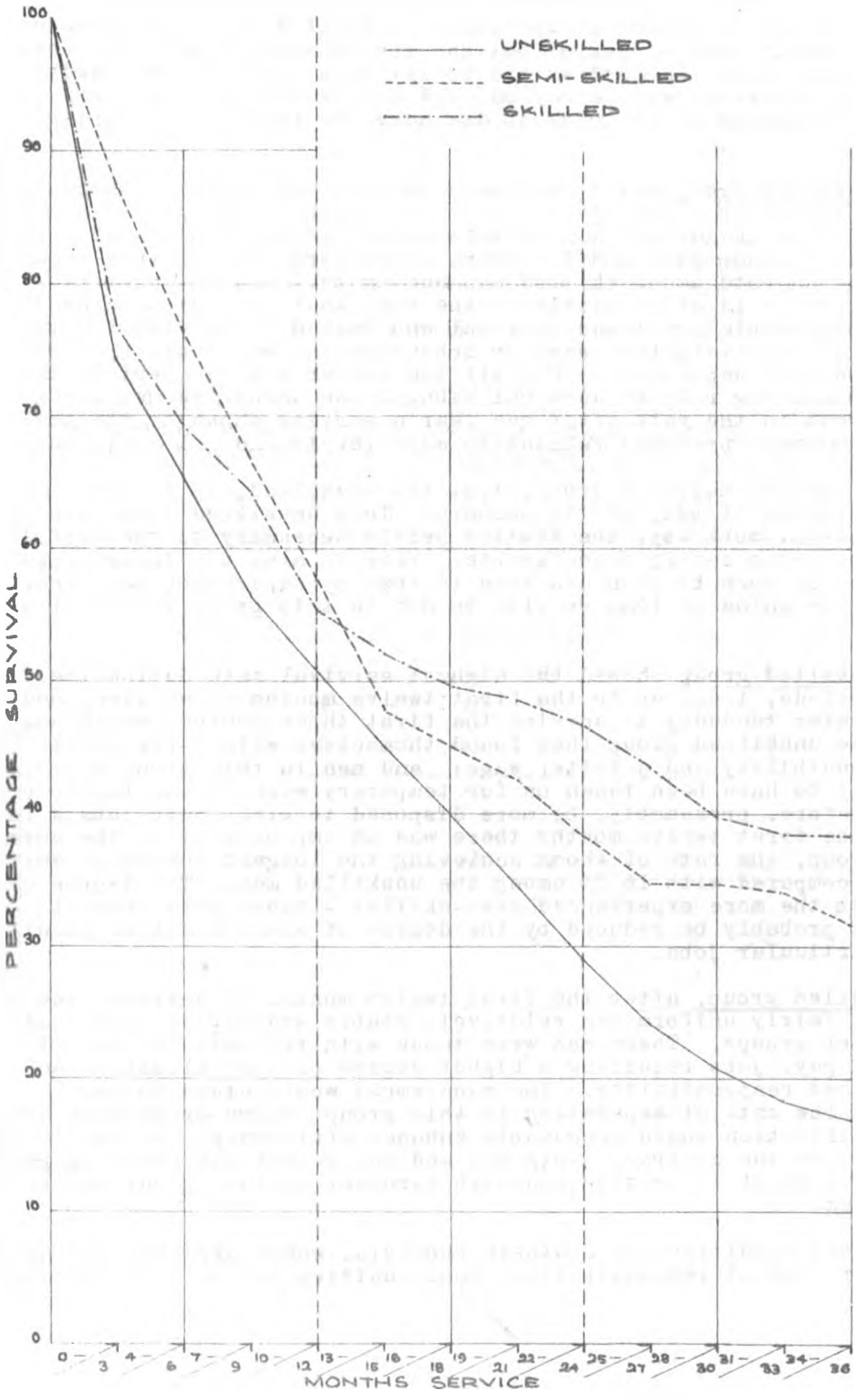
Median Wage of young, middle and old workers by Lengths of Service, in shillings

Service period	Young	Middle	Old
0 - 3 months	95	142	155
4 - 6 "	106	151	161
7 - 9 "	119	160	176
10 - 12 "	135	163	178
13 - 15 "	145	168	184
16 - 18 "	150	170	190
19 - 21 "	165	172	190
22 - 24 "	165	176	197
25 - 27 "	170	180	221
28 - 30 "	179	182	225
31 - 33 "	180	181	223
34 - 36 "	176	184	222

An examination of the median wage of men in the three age groups over the twelve service periods (Table 19) shows that men in the OLD group earned consistently more than those in the MIDDLE and YOUNG groups; that there was an advance in wage for all three groups up to two years of service but beyond that little evidence of advance in wage level, a point noticeable especially among the YOUNG and MIDDLE groups. Does this mean that after two years of service there is small chance of wage improvement? A longer time study would help to clarify this trend. Perhaps the fact that for the majority a long stay in the job yields little extra reward is relevant to the turnover problem.

GRAPH 10

PERCENTAGE RATE OF SURVIVAL RELATED TO SKILL GRADE OF AFRICAN PERSONNEL



6. Survival Rate related to Skill Grade of Personnel. Graph 10.

Both skilled and unskilled groups showed a similar survival rate during the first 0 - 3 month service period but the groups were numerically very different, 878 unskilled men (83% of the total) as against 78 (7%) skilled men, facing this shortest service period, 76% more unskilled than skilled men, therefore, being exposed to the risk of discharge or resignation during this period.

In the unskilled group would have been several temporary or short-term employees, not expecting a longer term and conforming to the practice of the company at that time of taking on a certain number of men temporarily, when required, for the labour pool and for extra short-term jobs as they occurred. The high separation rate among skilled men during this and the next (4 - 6 month) service period is attributable to the fact that this group contained men put into responsible positions on trial who failed to survive the trial period because of unsatisfactory work or behaviour, as was shown by their record of reasons for separation. For all the longer service periods there was an ever diminishing rate of survival amongst the unskilled men and a marked improvement in the rate after one year's service shown by the skilled group - an improvement probably related to wage levels and job satisfaction.

The trend for the majority group, i.e. the unskilled, is related to the migrant character of many of its members. This unskilled group also has the greatest natural mobility, the limited skills necessary to the fulfilment of the jobs done being easily transferable. This is also the lowest wage group with possibly more to gain and less to lose by separation and change of employer; and the gains of long service to men in this group are usually insignificant.

The semi-skilled group showed the highest survival rate during the first four service periods, i.e., up to the first twelve months of service, and certainly a greater tendency to survive the first three months, which suggests that, unlike the unskilled group they found themselves with a reasonable amount of responsibility and a better wage; and men in this group would have been less likely to have been taken on for temporary work in the labour pool; they would therefore, presumably, be more disposed to give their jobs a fair trial. After the first twelve months there was an improvement in the survival rate of this group, the rate of those achieving the longest period of service being 31.5% as compared with 16.8% among the unskilled men. The degree of mobility amongst the more experienced semi-skilled - those with longest service - would probably be reduced by the degree of specialisation peculiar to their own particular jobs.

In the skilled group, after the first twelve months of service, the rate of survival was fairly uniform and relatively stable and higher than that of both of the other groups. These men were those with the satisfaction of higher rates of pay, jobs requiring a higher degree of specialisation and carrying increased responsibility. The management would stand to gain directly from a low rate of separation in this group where experience added to initial qualification would presumably enhance efficiency. In the unskilled group, on the contrary, both men and management may stand to gain less from a low rate of separation, and high turnover in this group may be less of a problem.

Under present conditions in Southern Rhodesia, where Africans are now being sought for jobs of responsibility, opportunities for skilled men are

increasing, and their reactions to this widening of the employment field should be of interest and importance to the employer.

This examination of the separation tendencies according to skill grade reveals another point of difference between the black labour force and the Sheffield one - which has already provided several other interesting comparisons At Polygons the highest percentage of separation was among unskilled and semi-skilled men. Greystoke et al. (1951: 98) found over a twelve month period that 54.7% of the separations were among skilled men and 39.8% among unskilled but their findings were unrelated to the employees' length of service.

An examination of the survivors in the major tribal groups i.e.,

1) the Southern Bantu, North - Shona - Division,
2) the Eastern Bantu, Eastern Division, Southern Section (mainly Sena - Cewa - Cikunda),

shows the following percentage survival of each in the three skill grades:-

Table 20

Percentage of Major Tribal Groups surviving in Skilled, Semi-skilled and Unskilled Grades over 12 periods of Service

Period in months	0-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	31-33	34-36
Unskilled												
Total men per grade	657	583	515	485	420	364	315	240	178	143	118	101
Shona	43	39	37	36	36	37	37	38	38	40	43	47
*Sena-Cewa	42	46	48	49	48	47	47	46	43	43	41	41
Others	15	15	15	15	16	16	16	14	20	17	16	12
Semi-skilled												
Total men per grade	88	86	83	77	68	74	69	67	60	59	59	49
Shona	68	79	83	81	76	80	78	75	75	71	69	67
*Sena-Cewa	5	5	2	6	10	11	13	15	15	20	20	22
Others	27	16	15	13	14	9	9	10	10	9	11	11
Skilled												
Total men per grade	27	24	22	20	20	18	21	19	14	13	9	9
Shona	59	63	68	75	75	78	76	79	79	77	78	78
*Sena-Cewa	11	8	9	5	5	6	6	5	7	8	11	11
Others	30	29	23	20	20	16	18	16	14	15	11	11

* Includes also Cikunda, Lower Zambezi Tonga, Lakeside Tonga, Yao, Nyanja, in small numbers.

Percentages add to 100 vertically

In the majority of the service periods up to 2½ years service an average of 37% of Shona tribesmen were in the unskilled group. There was a preponderance of men from the Sena - Cewa - Cikunda tribal group in this grade up to 2½ years service. The local - Shona - tribesmen, predominated in all skill grades amongst men achieving the two longest periods of service.

In all but the first two service periods there was little difference in the actual number of survivors from each of the two main tribal groups but the proportion in the semi-skilled group remained high for the Shona and low for the Sena - Cewa.

The "others", which included Nguni, Ndebele, Xosa, Sotho and Shangaan tribesmen, were few in number but formed a significant percentage of the skilled group throughout. By the time the 2½ years service period was reached, however, their numbers had dwindled to ones and twos.

The proportion of Sena - Cewa tribesmen in the skilled and semi-skilled groups increased with the length of service period and, as most of these were men of very low educational standard this again shows that they must have achieved their position by experience and length of service rather than by initial qualifications. Records of the educational standards for these men were not complete enough for a satisfactory analysis to be made, but a preliminary analysis of 79% of the men at Polygons in 1959 established that 57.7% of Nyasaland Africans and 72.4% of Mozambique Africans had had no education, whereas only 6.2% of Southern Rhodesians had had no education, and it is reasonable to assume that somewhat similar proportions would be found among the men in the present study. Educational standards therefore gave the Shona tribesmen an advantage and this, rather than any innate superiority, probably underlies the facts presented in this table. In all eight service periods from four months up to 27 months 75% and more of the semi-skilled men were Shona.

Of men surviving the first nine periods of service, just over two years, an average of 72% in the skilled groups were Shona, compared with an average of only 7% for the Sena - Cewa group.

With increased length of service and consequent experience the Sena - Cewa group improved its position considerably in the semi-skilled grades but there was little variation throughout in the proportion of such men in the skilled grade.

At that time, because there were fewer educational opportunities in their home territory for the Sena - Cewa groups, most of them started work with a lower level of school attainment than the Shona tribesmen, or with no schooling at all; and they suffered, also, the disability of being migrants. Migrant laws, customary attachment to the tribal area, distance from home and the consequent length of travel time required to maintain contact with it, must all have militated against their advancement. And by the very nature of the work open to them in the factory environment, the majority would have been committed to lack of advancement, as most of the work was unskilled. Opinions vary, with labour in different African environments, as to the relevance of ethnic group to the problem of turnover.[1,2] There does seem to be here, however, some correlation beteen skill grade and ethnic group, though the degree of its relevance may be a function of differing economic circumstances and local reactions thereto rather than to any innate differences in ethnic characteristics.

---

1 Elkan, 1956: 7

2 Hauser, 1960: 162

Table 20 seems to show a superior record of achievement for the Shona tribesmen. Being indigenous to the area in which Polygons is situated, they had the advantage of freedom from legal restriction on their movement and length of stay in town, and, at that time, of being better able to equip themselves educationally for employment opportunities. Nevertheless, records of the percentage of Sena - Cewa men who received Company recommendation on discharge imply that, as a group, these men were well esteemed by Polygons. But it would seem fair to say that under inhibiting conditions then existing these non-indigenous tribesmen had had less opportunity of exhibiting their possible degree of stability and attainment.

Table 21

Percentage of Separations recommended for re-employment from the main tribal groups in the Personnel over the twelve periods of employment

MONTHS	0-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	31-33	34-36
S.Bantu, North (Shona) Division	17	32	34	26	32	26	7	30	60	25	20	0
(Average recommendation over all 12 periods - 25.8%)												
E.Bantu, Eastern Division, S. Section	28	38	52	51	59	43	41	59	44	33	40	33
(Average recommendation over all 12 periods - 43.3%)												

Table 21 shows that the tribesmen who were not indigenous to Southern Rhodesia, the Sena, Cewa, Cikunda and others of the E. Bantu, Eastern Division, Southern Section, seem to have proved the more satisfactory element among the separations and had they not been migrant workers, they might have been of a quality and character to achieve longer periods of service. Their percentage recommendation shows similarity with that in the following Table relating to the territorial origin of men separating, from which some assessment of the relative merit of each of the three elements in the labour complement can possibly be made.

Table 22

Percentage of Separations from three major Territorial Groups recommended for Re-Employment

Territory of origin	Period of Service in Months											
	0-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	31-33	34-36
	%	%	%	%	%	%	%	%	%	%	%	%
S. Rhodesia	17	28	31	28	26	25	7	30	60	13	25	0
Nyasaland	32	52	68	55	57	52	50	66	52	42	43	0
Mozambique	38	33	31	43	63	35	20	53	36	25	50	60

The greatest number of separations occurred during the 0 - 3 month service period, 247 in all. Of these, 135 (55%) were Southern Rhodesians. The number of Southern Rhodesians presenting themselves casually each day on the chance of getting work would probably have been greater than that of the Nyasaland and Mozambique men so that the likelihood of their being taken on temporarily would have been increased which could possibly underlie their high percentage of separation after such a short term of service.

Among the Southern Rhodesians, the majority of whom were Shona tribesmen, in only one of the twelve periods (25 - 27 months) was a majority of those leaving recommended for re-employment - 60%. For the remaining periods the percentage of recommended men was low, on the whole, ranging from no recommendations to 31%, over eleven of the employment periods and averaging 21% over these eleven periods and 24% over all twelve periods. Taking the 0 - 3 month period as an example the principal districts of origin of the men who separated and their record of recommendation as against non-recommendation were as follows:-

Makoni	19	not recommended	1	recommended
Charter	17	" "	2	"
Mrewa	11	" "	1	"
Goromonzi	10	" "	2	"
Hartley	10	" "	1	"
Urungwe	8	" "	2	"

Of the Nyasaland men, mostly Cewa and related tribesmen, who separated, in eight of the twelve periods more than 50% were recommended for re-employment. Their work and behaviour would therefore have been deemed satisfactory. Not one of the three men who survived into the 34 - 36 month period was recommended and no reasons were given for their separation. (Two were earning between £8 - £9 per month; one between £7 - £8 per month.) Over all twelve periods an average of 47.4% were recommended for re-employment.

Of the Mozambique Africans who separated, during four of the twelve service periods, 50% or more were recommended. Over all twelve periods an

average of 41% were recommended.

These facts suggest that from the management point of view the Nyasaland tribesmen were the most satisfactory workers and frequently to be preferred, especially for unskilled work. Several Nyasaland men in Polygons survey had done more than one spell of employment with the firm.[1]

Hauser (1960: 162) found, in the Dakar region, "place of origin" and "ethnic group" to be variables without relationship to absenteeism but does not make it clear whether these are similarly irrelevant to labour turnover. He found the industrial variables of "quality and nature of working conditions" and "attitude of workers towards management and their work" to be closely linked with turnover but presents no findings of any relationship of biographical variables to turnover in the area and industrial undertakings studied. Elkan (1956: 7) on the contrary felt, in his Uganda study, that he should "relate turnover to men's geographical origin, or more simply, to their tribe". Here the Ganda seemed to occupy a position similar to that of the Shona in possessing a degree of sophistication somewhat in advance of that of other tribes entering the respective labour forces. He noted, also, differences in physique which sometimes determine the kind of work done. (v. p. 8, under, and Elkan, 1960: 90).

As things stood at the time of the study there seemed to be considerable link between ethnic group and territory of origin, and the rate of survival and turnover, albeit a link closely related to migrancy and cultural and educational levels. This is an aspect of Polygons turnover in which changes might be expected as the composition of the labour force changes.

The evident satisfaction given by the Nyasaland employees (and to a marked degree by the Mozambique men also) leads to a consideration of the probable attitude of the migrant worker to his job. Conscious of the fact that the length of his work spell in town was limited by law, he may have felt that having found a reasonably good job it was worth while making sufficient effort to retain it. Even if he regarded the job as an indifferent one he again might have felt disposed to stick to it - it gave him a cash wage[2], and assured his accommodation and welfare. Even if he had, as a migrant, a whole two-year work spell ahead of him at least that spell was finite and if he had set himself a personal cash target a steady job might yield this more quickly than frequent changes. So that the migrant may be psychologically disposed to stay and can less afford to be inefficient than his local counterpart, who may know urban ways, be within easier reach of home, feel less divorced from the security of his rural background and less worried about retaining his job.

The present policy of recruiting local men in preference to non-indigenous labour would not appear to be wholly to the Company's advantage, considering the satisfactory record of many of these employees. Any disadvantage of the present policy is perhaps being countered now by the Company's expecting of its applicants a higher standard of education, a minimum of Standard VI; and by its establishment of a school within the factory to which men are drafted as pupils, in rotation.

---

[1] Bell, 1960: 42.

[2] During interviews, when questioned on job satisfaction, very many men answered simply "Gets money".

Table 23

Percentage of Survivors from each main territory of Origin in each skill grade over the twelve length-of-service periods

Months	0-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	31-33	34-36
Unskilled												
S. Rhodesia	47	43	41	39	39	40	40	40	42	43	47	50
Nyasaland	33	36	36	36	35	36	34	31	29	25	20	19
Mozambique	18	19	22	23	25	23	25	28	28	29	31	31
Other	2	2	1	2	11	1	1	1	1	2	2	-
Semi-skilled												
S. Rhodesia	91	91	94	90	84	84	82	77	78	72	72	70
Nyasaland	5	5	2	6	12	10	12	15	15	17	17	19
Mozambique	2	2	2	4	4	6	6	8	7	12	12	11
Other	2	2	2	-	-	-	-	-	-	-	-	-
Skilled												
S. Rhodesia	78	79	84	89	91	93	93	95	88	90	88	86
Nyasaland	7	6	6	6	4	5	5	2.5	6	3	4	4
Mozambique	3	4	2	2	2	2	2	2.5	6	7	8	10
Other	12	11	8	2	2	-	-	-	-	-	-	-

Several points of interest emerge from this analysis of the proportion of men from each territory in the three skill grades.

The Mozambique men in all skill grades show a tendency to increase their proportion among survivors with increasing length of service. These survivors may be men who realise that their continual residence in Salisbury depends on job retention and their circumstances induce an improved degree of stability.

The proportion of Nyasaland men, in both unskilled and skilled grades is more variable and, on the whole, declines with length of service. (Only two out of 26 Nyasalanders who reached the longest period of service were skilled). But in the semi-skilled grade their proportion increases with length of service which suggests that, notwithstanding the limited qualifications most of them offer on entry, they both give and achieve satisfaction with length of service and become a relatively stable element in the personnel.

The Southern Rhodesians in the semi-skilled group, on the contrary, decline in proportion among the survivals with increasing length of service. It seems that with time, non-indigenous men prove more satisfactory in this grade; and it is possible, too, that Southern Rhodesian men may tend to seek

advancement elsewhere. Their record also seems to show some falling off in efficiency and less interest in the job as they approach the longer terms of service.

Throughout the period of the survey the unskilled grades contained approximately equal numbers of both indigenous and non-indigenous men.

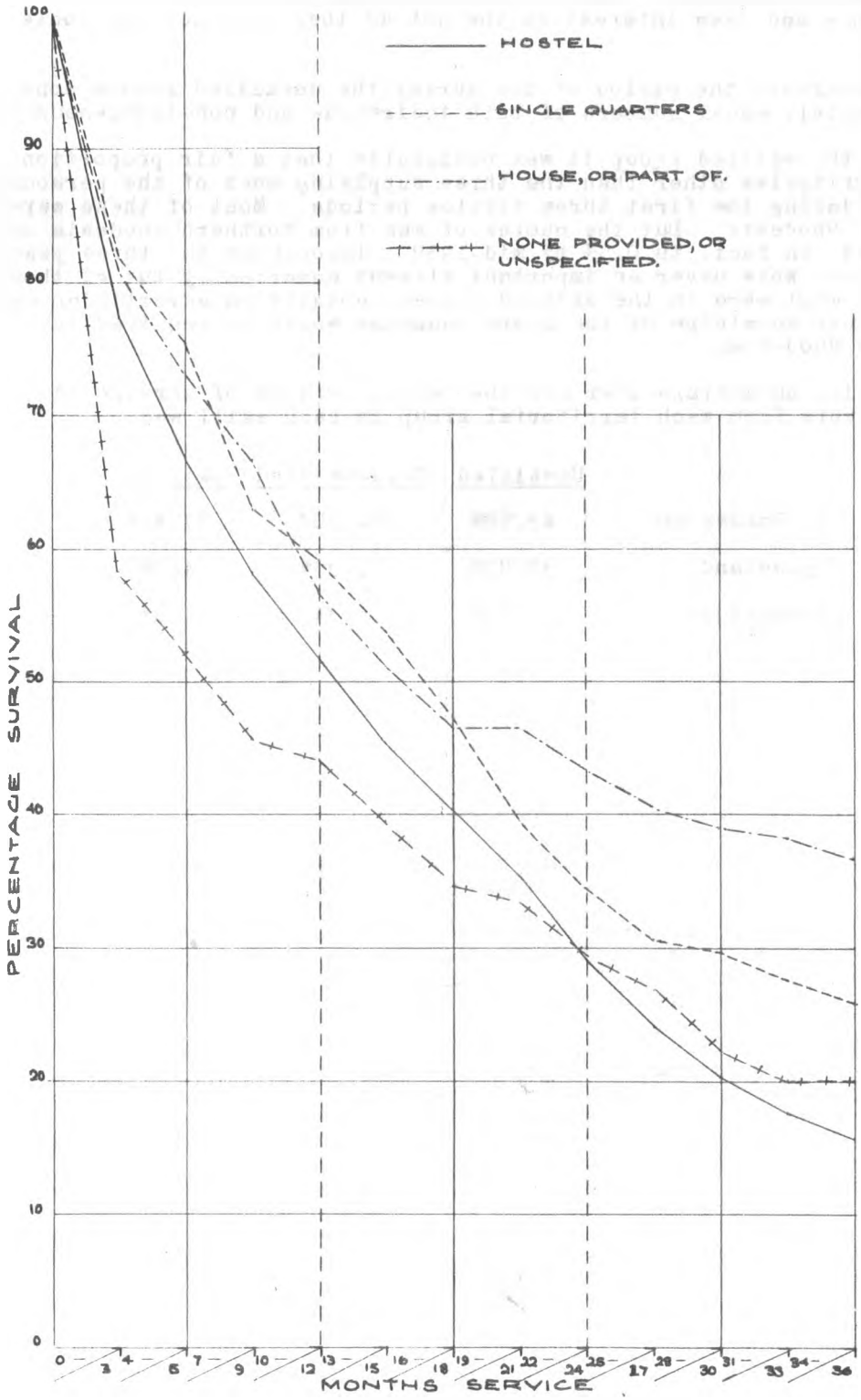
In the skilled group it was noticeable that a fair proportion of men from territories other than the three supplying most of the personnel was present during the first three service periods. Most of these were from Northern Rhodesia. But the number of men from Northern Rhodesia on the staff decreased, in fact, to 0.5% by mid-1959. Throughout the three years under review they were never an important element numerically but of those who were employed most were in the skilled grades, notably in advertising and marketing where their knowledge of the Bemba language would be required for such work in Northern Rhodesia.

Taking an average over all the twelve periods of service the percentage of survivors from each territorial group in each skill was:-

	Unskilled	Semi-skilled	Skilled
S. Rhodesian	42.58%	84.00%	87.41%
Nyasaland	30.83%	11.33%	4.8%
Mozambique	25.16%	6.3%	4.2%

GRAPH 11

PERCENTAGE RATE OF SURVIVAL RELATED TO ACCOMMODATION OF AFRICAN PERSONNEL



7. Survival Rate related to Accommodation of the Personnel, Graph 11.

Of the 1059 men who made up the total in the study - both separations and survivals - 80% were allocated to hostel accommodation, 6% had been given single quarters; 7% were in houses, either as tenants, purchasers or lodgers; 7% had no accommodation allocated to them. The great majority therefore were hostel dwellers who showed a poor rate of survival throughout.

Up to 18 months of service there was no great difference in the survival rate shown by men in houses and single quarters. Both these types of accommodation enable wives and families to be present. Single quarters are intended to house men only, but do in fact give more freedom than the hostels and many of the men so accommodated have their wives or "town wives" living with them which factor may account for the slightly higher survival rate they showed, as compared with that of hostel dwellers, 47.5% as against 40.2%. After 18 months service the rate of survival of men in single quarters deteriorates and follows much the same pattern as that for the hostel men, though achieving a slightly higher rate at the end of three years, 20.0% compared with 15.9%

The ultimate survival rate was highest among men accommodated in houses, 36.4% as against 15.9% of the hostel dwellers. These men would either have been allocated houses, been buying under a home ownership scheme or accommodated as lodgers in houses, particularly at New Highfield. Only two such men (4.6%) out of 43 who faced the longest period of service, left during this period. Only one, a lodger, was a Grade I General Factory worker and earning the minimum wage; the other was Grade IV and earned £10.10. 0. But 71% of these men in houses were earning over £10.10. 0. per month and 37% of them were in Grades V, VI or VII, earning between £12.15. 0. and £40 per month. Under conditions prevailing at the time they had the dual advantage over the majority, of good wages and satisfactory accommodation, and these factors together evidently encouraged stability.

The number of men involved in the "single quarter" or "house" categories was considerably lower than that in the "hostel" category. Taking the 15 - 18 month period as an example, of 433 survivors only 12% were in single accommodation and 14% in houses as tenants or lodgers. For 5% no accommodation was provided or it was unspecified. Sixty-nine per cent were therefore in hostels.

The rate of survival was low for those men who had no accommodation provided, especially during the first three of the three-monthly periods, which suggests that those who had no allocation at the outset were disinclined to stay. Doubt on the part of the employer as to their capacity to give satisfaction could also have delayed a definite room allocation and men in this doubtful position might separate more easily. The improvement in the survival rate of men in this category after 18 months of service is probably related to the fact that many of them were employed in the marketing department and spent most of their time away from Salisbury. They therefore did not need permanent accommodation. Many were allocated rooms as lodgers at New Highfield and a retaining fee paid for them. With very few exceptions the men for whom no accommodation was provided were all in Grade III and upwards and few in number; but six only out of an original 72 faced the 33 - 36 month service period and survived it.

It is difficult to assess the degree of relationship of the accommodation variable to turnover and the rate of survival. Of all the men who separated during the whole three years under study only two stated an accommodation problem as a specific reason for leaving. These were both men earning less than

£7 per month, one from Nyasaland, one from Southern Rhodesia. It may be that shortcomings in accommodation are accepted as an inevitable part of the system of urban employment. The migrant may feel that his accommodation in any case is only temporary. Complaints of individuals to the management about hostel conditions were sometimes made, usually because of loss of property by theft or because of noise or quarrelling. On the other hand, several of the better educated, notably clerks, actively preferred hostel accommodation because it gave them the opportunity to set up as teachers of their less advanced fellows during their spare time and thus augment their earnings. Four clerks out of 14 who survived into the 31 - 33 month period were hostel residents and one such continued into the three year service period.

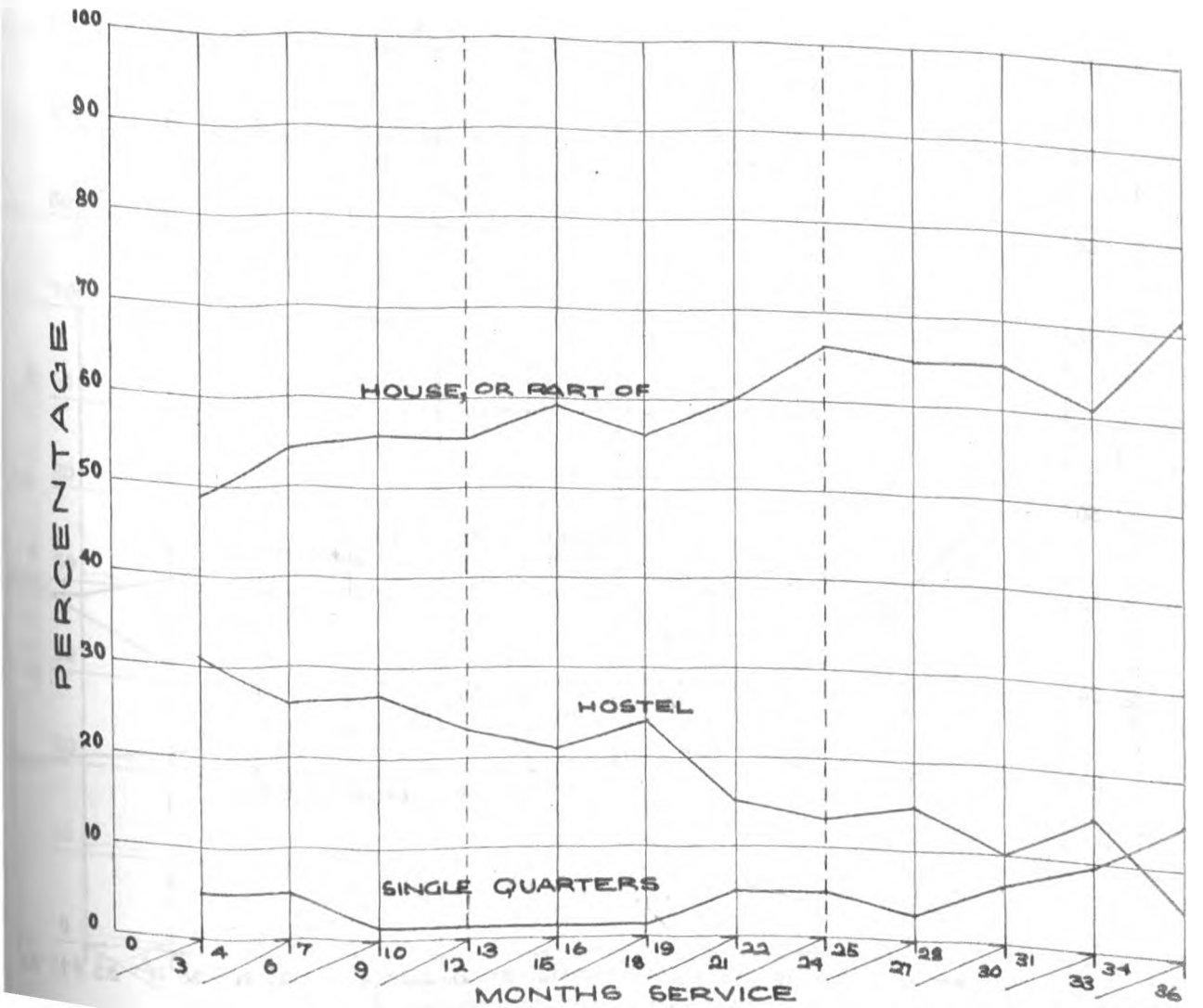
Hostel accommodation, as allocated by Polygons, though by no means satisfactory in all respects, was in many ways better than that obtaining in some other municipal hostels within Harare Township and this was probably due to Polygons' provision of a full-time warden to supervise the accommodation; to their employment of hostel cleaners and to the issue of keys for lockers in which possessions may be kept with reasonable safety. Work for another employer would be unlikely to provide any improvement in housing; and it would seem that under the conditions existing at the time accommodation as a single factor was not a very significant variable affecting turnover and the rate of survival. The degree of its significance emerges more clearly when other factors are related to it. Graphs 12 (a, b and c) show a distinct correlation between skill grade and type of accommodation, and certainly a higher tendency to survival among men who were accommodated in houses (whole or part).

GRAPH 12. (a, b, & c)

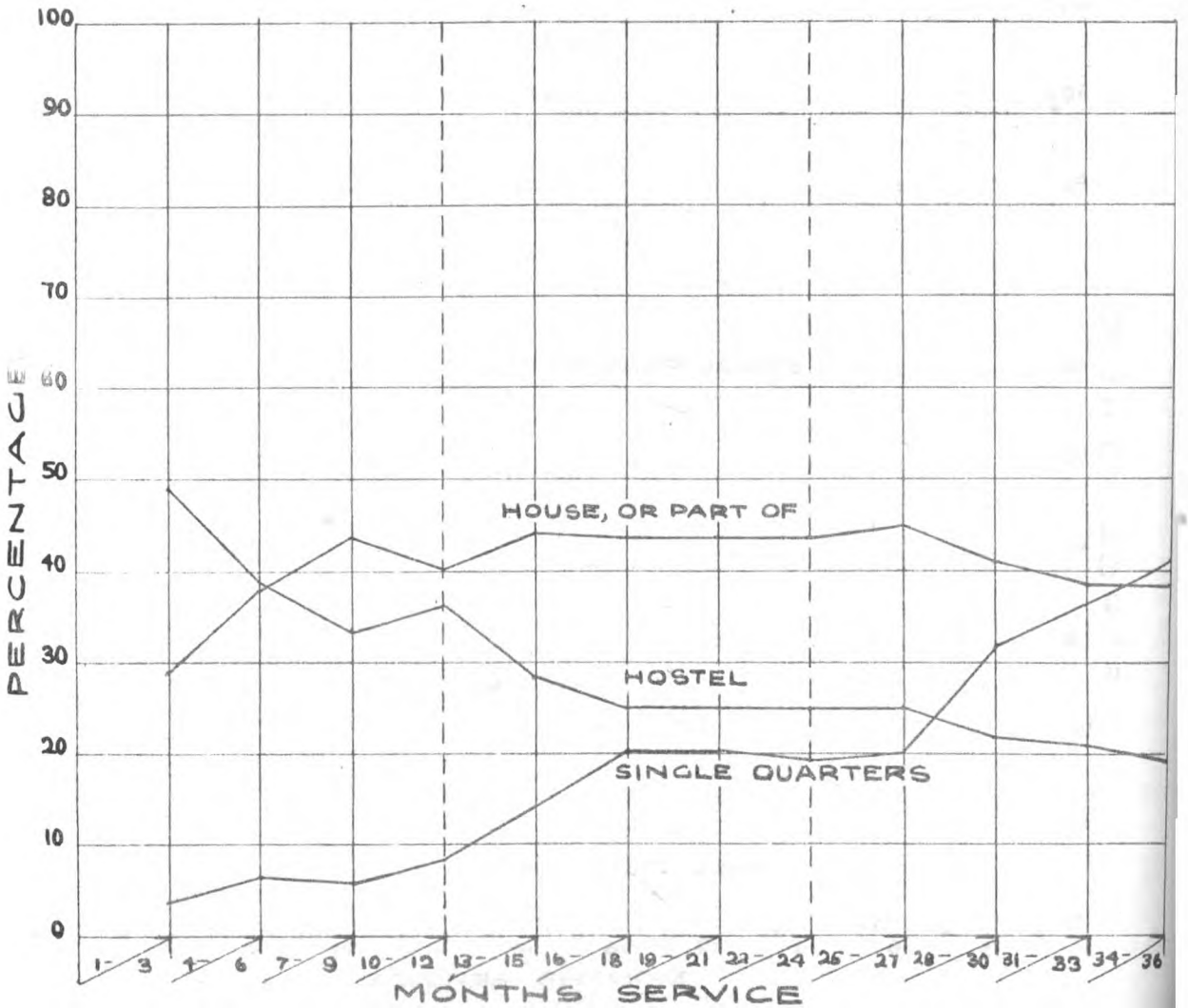
THREE GRAPHS SHOWING THE PERCENTAGE OF SURVIVAL IN EACH PERIOD OF SERVICE RELATED TO TYPE OF ACCOMMODATION AND SKILL GRADE OF EMPLOYEE

THESE GRAPHS SHOW THE ACTUAL PERCENTAGE SURVIVAL, NOT SURVIVAL RATE

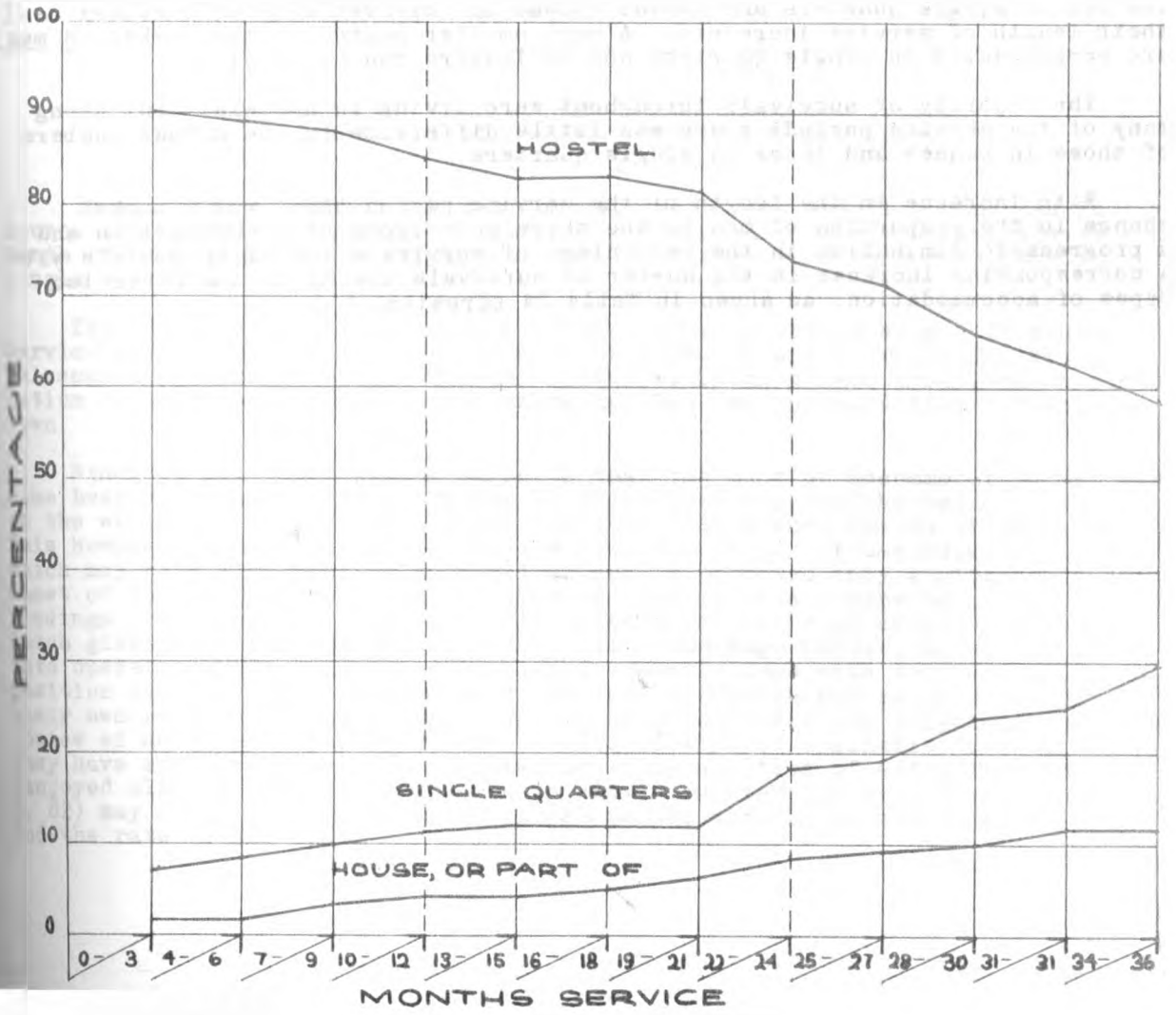
a, SKILLED



(b) SEMI-SKILLED



(C) UNSKILLED


100
90
80
70
60
50
40
30
20
10
0
PERCENTAGE
HOSTEL
SINGLE QUARTERS
HOUSE, OR PART OF
0- 3
4- 6
7- 9
10- 12
13- 15
16- 18
19- 21
22- 24
25- 27
28- 30
31- 33
34- 36
MONTHS SERVICE

Among the semi-skilled men in houses the percentage survival remained at a fairly constant ± 40%, while among the skilled men it was considerably higher - among those with two years service and more, up to 65%.

Skilled men in single quarters showed a very small percentage survival but they were also few numerically. Semi-skilled men in single quarters showed an improving percentage survival with increased length of service, possibly because such quarters, though undesirable in many ways and frequently overcrowded, do allow the accommodation of wives, "town wives", and children, and men so housed feel that they have more freedom and some family life. After 2½ years of service there is very little difference in the percentage between men who survived in houses and single quarters, and the actual numbers involved were also similar. This suggests that both these types of accommodation give men an equal chance to achieve a reasonably settled domestic background and more personal freedom.

Graph 3 presents the survival picture for the majority of the employees. Eighty-five per cent of the total survivals were unskilled. The percentage survival of men in hostel accommodation dropped steadily from 90% at the end of the three month period of service to 57% at the end of three years, whereas the men in single quarters and houses showed an improved rate of survival as their length of service increased. A much smaller number of the unskilled men are accommodated in single quarters and as lodgers than in hostels.

The majority of survivals throughout were living in hostels; but among many of the service periods there was little difference in the actual numbers of those in houses and those in single quarters.

With increase in the length of the service period there was a marked change in the proportion of men in the three main types of accommodation and a progressive diminution in the percentage of survivals living in hostels with a corresponding increase in the number of survivals living in the other two types of accommodation, as shown in Table 24 opposite.

Table 24

Percentage of Employees surviving each length of service period related to type of accommodation

Service period	Hostel	%	Single Qtrs.	%	House or part of	%	Other or none	%
0 - 3 mths.	660 men	81	50 men	6	60 men	7	42 men	5
4 - 6 "		79		7		9		5
7 - 9 "		76		9		11		4
10 - 12 "		74		10		11		5
13 - 18 "		69		12		14		5
19 - 24 "		59		17		20		4
25 - 30 "		48		23		24		5
31 - 36 "	65 men	42	47 men	30	41 men	26	2 men	2

Percentages add to 100 horizontally

Numbers of men in each accommodation category, facing the shortest and longest periods of service, are quoted

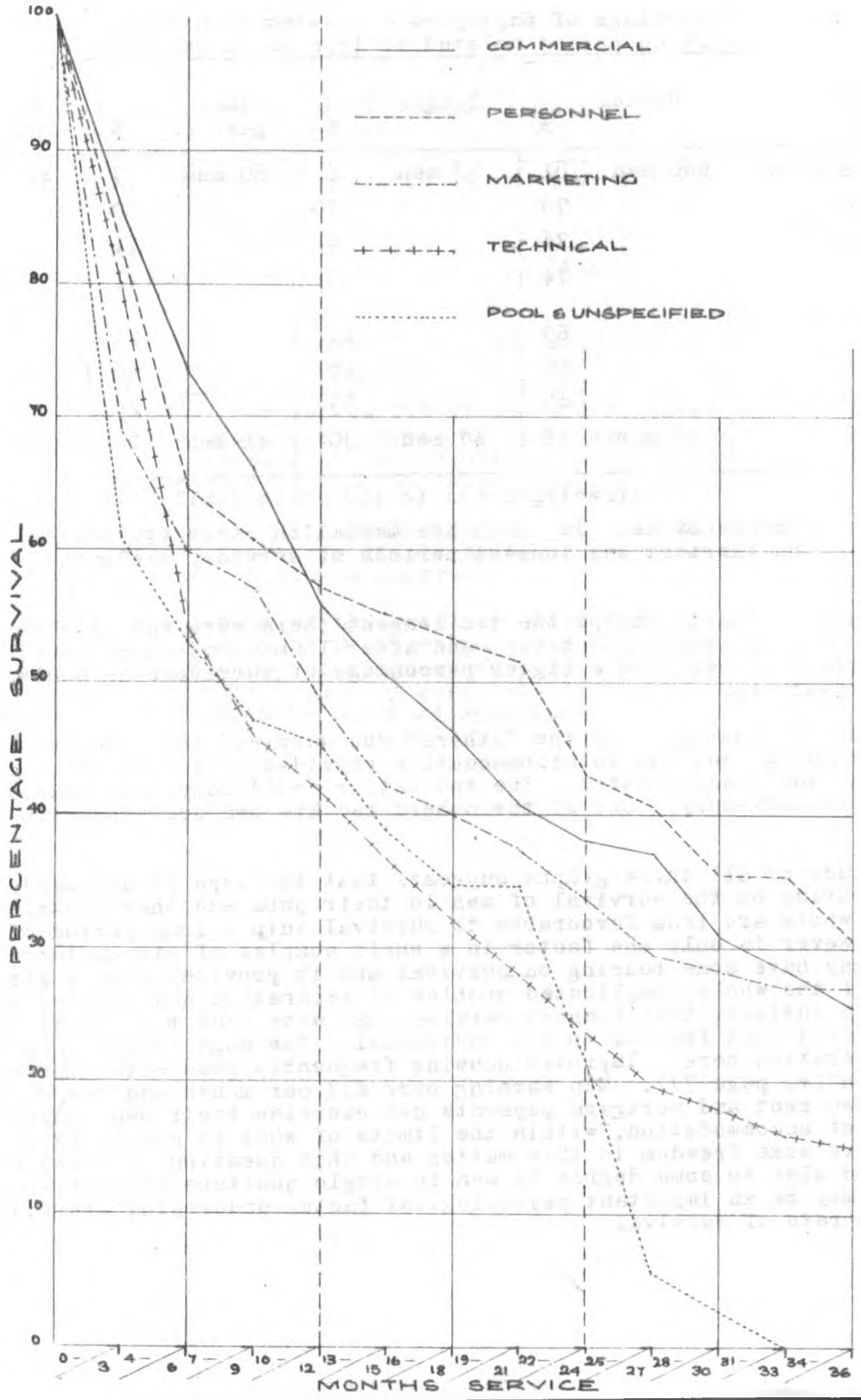
In all periods except the two longest there were actually more men in houses than in single quarters; and after 18 months, except during the 31 - 36 month period, there was a bigger percentage of survivors in houses than in single quarters.

The 2% (four men) of the "others" who survived into the 34 - 36 month service period and had no accommodation provided were a clerk, a driver, a salesman and a commentator. The two latter would only need occasional accommodation in Salisbury. One of the others had his own accommodation outside the town.

Study of all three graphs suggests that the type of accommodation may have some bearing on the survival of men in their jobs and that hostel conditions on the whole are less favourable to survival into a long period of service. This however is only one factor in a whole complex of circumstances each of which may have some bearing on survival and it provides only a glimpse of one facet of the whole complicated problem of separation and survival; but the findings indicate that longest service goes with that type of accommodation which gives most freedom to the individual. The wage factor, also, may come into operation here. Improved housing frequently goes with improved economic position (v. page 77). Men earning over £17 per month and responsible for their own rent and mortgage payments can exercise their own judgement in choice of accommodation, within the limits of what is available to them, i.e. they have some freedom in this matter and this question of added freedom (enjoyed also to some degree by men in single quarters as mentioned under, p. 82) may be an important psychological factor underlying attitudes to work and the rate of survival.

GRAPH 13

RATE OF SURVIVAL OF PERSONNEL RELATIVE TO DEPARTMENT IN THE FACTORY



8. Survival Rate of Personnel relative to Department in the Factory. Graph 13.

The 1059 men studied were employed in the four major departments at Polygons factory in the following proportions:-

1. Commercial - 96 men, 9%
2. Personnel - 45 men, 4%
3. Marketing - 91 men, 9%
4. Technical - 686 men, 65%

One hundred and forty-one men, 13%, had worked in the labour pool or been temporary employees. Many of the largest number, in the department designated Technical, which was sub-divided into nine branches, were concerned directly with the manufacturing processes, the handling of raw material, the storing, packing and distribution of the finished product. This department offered most opportunities to the lesser skilled categories of men on low wage scales, doing such work as factory cleaning, sack-moving, gardening, drum-pushing, coal heaving. At the end of the 4 - 6 month service period this group showed a low percentage of survival rate of only 54%, so that almost half of the men leaving from this department had done so after a very short term of service.

The fall in the survival rate of these men was acute up to the end of the first nine months; thereafter, it was continuous but somewhat less rapid up to the end of the three year period, 15% being the ultimate rate of survival. Of the men who left because they were dissatisfied with wages, seven (out of a total of eleven) were from this technical group. Three expressed their feelings during the first three months and left. Between one and two-and-a-quarter years service the percentage rate dropped by about 4% for each successive three month period; for the remaining three periods there was no more than a 2% change in the rate so that men surviving this long period of service seem to have become relatively stable, and were, with some exceptions, those who had reached supervisory level or some position of authority in their branches of this department.

The lowest survival rate was shown by the group of men who were in the Pool (141) and whose department was unspecified. These men were representative of the floating, temporary element in the personnel, and were a relatively small group numerically. Nevertheless, four of their number survived up to the 22 - 24 month service period and one up to 2½ years of service!

In the three other departments numbers were small compared with those of the technical department. Each of these departments contained a relatively larger number of men at higher wage levels than in the technical department, and many jobs performed by men in these groups would require high degrees of responsibility.

The curve for the Commercial department concerned an initial 96 men. These would have been engaged variously in office services, both clerical and manual (cleaning and messenger); in transport and warehouse work (clerking, weighing, driving). The curve for the Marketing department concerned 91 men, engaged in advertising, market development and sales, with work ranging from fetching and carrying to driving, translating, commentating and demonstrating.

Though the survival rate for the Commercial group over the whole period was slightly higher than that for the Marketing, at the end of a three year period there was little difference between the rate of survival of men in these two departments, both having fallen to about one-quarter of the original number facing a chance of survival (25.8% for the Commercial, 26.8% for the Marketing group). The lower rate for the marketing group throughout was occasioned by frequent engagement and discharge of men temporarily or on trial during the period under study. As many of these men had to face the public and had the responsibility of taking equipment away from headquarters, they needed to show qualities of reliability, initiative and integrity; as well as a degree of showmanship which would make their work effective. It was important also that they should never act in any way which would be prejudicial to the Company's reputation. The management's search for such men for work in this department seems to have led to considerable change and turnover.

The Personnel department, the smallest numerically (4%), contained the only men at administrative level, and senior grade clerks; and at the same time men in low grade employment as cleaners, waiters, messengers, who would fall into the category of general factory workers by virtue of wage level, skill grade and conditions of service. This discrepancy in grade probably accounts for the rapid decline in survival rate during the short terms of service in this department and the considerably improved rate shown during the longer periods. The ultimate survival rate is somewhat higher than that for the marketing and commercial department men.

Of the four major departments the Technical had the lowest rate of survival and the Personnel the highest - a not unexpected pattern as the former comprised 69% of the total personnel and the latter only 4%. The risk of separation in the Technical department was therefore increased by the greater numbers involved, the majority being unskilled and semi-skilled, low wage earners.

It is noticeable that there was quite a marked tendency to separation among clerks after only short terms of service. Thirty was the average strength of clerks on the establishment during the study period. Eight clerks (27% of total clerks) were recorded as having separated during their first three months of service.[1] Two were dissatisfied with salary, one wished to change occupation, two did not satisfy their employer. The initial trial period is probably of more significance to these workers, from whom a higher standard of performance would be expected than from the less skilled category of worker. With their higher standard of education clerks would also have greater expectations. Elkan (1956: 31) notes the fact that men who had received more years of schooling than their fellows expected preferential treatment on engagement and were prominent among leavers after short terms of service, probably because of disappointment with the job or its failure to come up to their expectations. The same could be true of clerks at Polygons.

---

[1] See Elkan (1960: 103), who observed that those with most schooling make most frequent changes at the beginning, no doubt trying to get what they think they are worth in wages.

CHAPTER VIII

SUMMARY AND CONCLUSION

The analysis of data made on a time/survival basis (Method I) indicated:-

1) that there was a seasonal pattern of separation related to traditional ploughing months;

2) that there was a change in this pattern in and after 1960, as compared with earlier periods, in the direction of a less marked seasonal character of separation;

3) that there was a correlation between the territorial composition of the labour force and the seasonal character of separation, the seasonal pattern becoming less marked with the reduction in numbers of Nyasaland and Mozambique men during the later part of the period studied; that with the progressive employment of more men of Southern Rhodesian origin at Polygons there may be a trend toward the acceptance of urban wage earning conditions and disciplines;

4) that there was an improvement in the survival rate during the latter part of the period studied;

5) that the survival rate of the Nyasaland and Mozambique men was a function of their character as a migrant labour force;

6) that the majority of separations throughout could be ascribed to reasons beyond the control of the employee, the incidence of such reasons being greatest among the Nyasaland men, least among the Mozambique men and still significant amongst the Southern Rhodesians.

Analysis of biographical and sociological factors (Method II) showed:-

1) that the proportion of Southern Rhodesians surviving into the longest periods of service was slightly higher than that of the Mozambique and Nyasaland men together. The latter were least among long term survivors;

2) that the Shona tribesmen were more stable than the Eastern Bantu (Sena - Cewa - Cikunda) tribal group;

3) that Southern Rhodesians had the highest proportion of separations for managerial and disciplinary reasons; and Nyasaland men the highest proportion of separations for reasons of circumstance - this increasing with length of service;

4) that 1) and 1) were related to the migrant character of the non-indigenous elements in the labour force;

5) that Nyasaland men had the highest proportion of recommendations for re-engagement;

6) that although the non-indigenous groups showed somewhat lower rates of survival the facts presented in 2) and 3), above, suggest that they, particularly the Nyasaland men, were nevertheless a very satisfactory element in the personnel;

7) that the OLD (over 40) age group is the most stable (but the smallest numerically);

8) that the MIDDLE (25 - 39) age group is the least stable;

9) that the unmarried group was somewhat more stable than the married groups;

10) that the lowest wage group on the whole, showed the lowest survival rate. It was the largest numerically;

11) that unskilled men showed the lowest survival rate and skilled men the highest, with the semi-skilled between; in the first twelve months the skilled men were more mobile; clerks showed instability; and there was an increase in the proportion of Southern Rhodesian men in the skilled group with increase in length of service;

12) that men accommodated in houses were the most stable group; those in hostels the least;

13) that the Technical Department had the highest turnover of men; the Personnel Department the least;

14) that managerial action is largely responsible for high separation rate after short periods of service;

15) that the older men earn more than the younger with the same length of service. For the majority the maximum wage seems to be reached after 24 months of service;

16) that the Southern Rhodesian men earned a higher average wage than the Mozambique and Nyasaland men.

The general conclusion is:-

1) that the best rate of survival was achieved by men of Southern Rhodesian origin, over 40 years of age, skilled and in superior accommodation and higher wage categories;

2) that the least stable element were married men in the middle age group and employed in unskilled or semi-skilled work, in communal accommodation and in the low wage categories, usually non-indigenous;

3) that sociological/biographical factors are least relevant to turnover in the 0 - 3 month service period. Their impact begins to be felt from this period onward. The emphasis throughout on

a low rate of survival, i.e. high separation rate, during the early months of employment seems to support the contention by management experts that to achieve a higher degree of stabilisation the first three, possibly six or even nine months, must be recognised as the most important; and underline the importance of careful selection, helpful induction, and post-induction interviews to check the degree of a new man's "acclimatisation", and remove doubts and grievances before they precipitate separation; that a similar check on attitudes and job-satisfaction might conduce to reduced separation among men with over two years service, especially in the unskilled grade;

4) that the separation behaviour of the personnel was not in line at all points with that of labour, either black or white, elsewhere. Whereas the correlation between separation, wage and skill grade tallies with findings elsewhere the tendency for married men in the middle age group to be the least stable is at variance with findings relevant to other labour forces both in and outside Africa. Polygons personnel do not exhibit all the characteristics so far observed amongst urbanised and semi-urbanised labour generally. It still responds to the stimuli of traditional social obligations. The professional obligation at the time of the study weighed less heavily than the domestic and personal one on the majority of personnel;

5) that Government and managerial policies have had some impact on the rate of survival and separation.

Though each of the factors deemed to be relevant to turnover has been presented as a separate element it is the whole complex interrelation of all or some of these factors which underlies the problem of turnover and its motivations. Enforced migrancy, for many of the men and over much of the study period, was obviously one of the weightiest factors underlying turnover, and this made it difficult sometimes to assess the degree of relevance of other factors. Changes in Statute and Company policies will no doubt be reflected in present and future patterns of survival and separation at Polygons.

The third and final part of Polygons study will produce factual evidence of the degree of stabilisation of the men in urban employment, an assessment of the degree of continued attachment, both actual and psychological, to the rural area; together with case studies of personal labour history and an examination of the mobility, attitudes, asperations and motivations of the men. It should be possible to extract those variables which are unrelated to migrancy and to assess more accurately their relevance to the question of labour stabilisation and urbanisation, and more particularly to the complicated problem of transition from rural subsistence, through the present dual-economic state, which, Janus-like, faces both ways, to a wholly urbanised way of living.

APPENDIX I

Method I

The procedure adopted in order to extract the material necessary for the application of the first method of progressive labour turnover study was as follows:-

Records for all the employees in employment or who separated or were engaged over the three year period were punched on to cards, put together, then sorted and arranged according to their date of engagement.

1 a A first set was taken out consisting of those who were engaged up to and including November 1957. All the others were put aside as a stock pile. This first set was sorted according to the date of separation and any leaving during Period I, June 1957 - November 1957, were removed and set aside as separations. The remainder of Set I formed a set of survivals.

b The separations were then sorted according to their month and year of engagement, and also according to their month of discharge, which would be one of the months June - November 1957.

TABLE A1

COMPUTATION SHEET FOR SURVIVAL CURVES

ITEM - Set 1 PERIOD - June 1957 - November 1957

	Month of Separation													
i	ii	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	xiv	xv
Month of Engagement	June	July	Aug.	Sept	Oct.	Nov.	m	s	Z	S	d	K	p	pp
Jan. 1956							1	1	62	49	7	42	85.71	16.65
February		1	2	1	1		18	13	53	48	4	44	91.67	19.43
March							5	5	56	46	2	44	95.65	21.20
April	2	2	1	2	2	1	20	10	60	51	2	49	96.08	22.16
May		1	1		1	1	13	9	64	53	5	48	90.57	23.07
June		1	1	1			14	11	71	61	4	57	93.44	25.48
July	2	1		1	1	1	16	10	91	72	2	70	97.22	27.27
August		2	2	1		3	27	19	91	81	8	73	90.12	28.05
September	1	2	1		2	3	19	10	123	94	8	86	91.48	31.13
October	1	2	1	4	3	2	42	29	118	109	6	103	94.50	34.03
November		1	1	1	1		13	9	121	111	6	105	94.59	36.02
Dec. 1956							10	10	129	117	10	107	91.45	38.08
Jan. 1957	1		2	4	1	2	22	12	127	119	6	113	88.97	41.64
February	2	1	1	2	1		15	8	141	105	5	100	95.23	51.21
March	3	2	3	4	2	2	52	36	134	131	9	122	93.12	53.78
April		1			1	2	7	3	125	100	8	92	92.00	57.75
May	1	4		1	1		32	25	136	118	6	112	94.91	62.77
June	1		1	8			28	18	143	132	6	126	95.45	66.14
* July		3		4	3	*2	23	11	162	128	7	121	94.53	69.29
August			1	4	5	4	48	34	193	166	19	147	88.55	73.30
September				2	1	1	31	27	194	156	15	141	90.38	82.78
October					2	1	41	38	223	194	7	187	96.39	91.59
Nov. 1957						1	30	29	201	201	10	191	95.02	95.02
Column i	ii	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	xiv	xv

The results of this sorting were entered on a computation sheet, Table A1, which was designed to record all the necessary numerical data extracted at various stages of the method. Dates of engagement are listed in Col. i, beginning with the most recent at the bottom of the table. Columns ii to vii show the month of separation during the six month period. That illustrated is for the first period, June to November 1957. It will be seen that of the separations sorted at stage (b) one employee of the thirty men, Col. viii engaged in November 1957 separated in the same month, Col. vii; that, of 41 employees engaged in October 1957, two separated in the same month, Col. vi, and one separated in November, Col. vii; that, of 42 employees engaged in October 1956, one was discharged in June (Col. ii), two in July (Col. iii), one in August (Col. iv), four in September (Col. v), three in October (Col. vi) and two in November (Col. vii). Such a table, showing an employee's month and year of engagement and the month and year of discharge preserves a record of his length of service, e.g., the two employees at *, engaged in July 1957 and discharged in November 1957 had separated in their fifth month of service.

c The survivals set, from Step 1 a, were sorted according to their date of engagement and the number engaged during each month recorded in the computation sheet in Col. ix. It must be noted that Table A1 is only an illustrative excerpt from the whole computation sheet which continues backward through the years of engagement as far as 1936 when the longest service man figuring in the discharge sector was engaged.

d Next was recorded, in Col. viii, the number of survivals from each month of engagement (Col. ix) added to those who were engaged during the same month but separated during the months under review in Period 1 (Cols. ii - vii). For example, of all those engaged during July 1957, eleven survived (Col. ix) and 3, 4, 3, 2 separated in July (Col. iii), September (Col. v), October (Col. vi), November (Col. vii) respectively, amounting to twelve separations. Therefore the total engaged in July 1957 must have been eleven survivals plus twelve who separated, making a total of 23 (Col. viii).

e The total exposed to separation in their first month of service, over the six-month period June to November 1957, recorded in Col. viii, was:-

$$30 + 41 + 31 + 48 + 23 + 28 = 201, \text{ called } Z$$

This is recorded in Col. x.

f Ten of these left during the six-month period (1 in November, + 2 in October, + 2 in September, + 1 in August + 3 in July, + 1 in June, by diagonal addition of the separations) leaving 191 surviving, recorded in Col. xiii. These 10 separations are recorded in Col. xii.

g $\frac{191 \text{ survivors}}{201 \text{ total intake}} \times 100 = 95.02\%$ survival for initial six months (Col. xiv, p)

h Proceeding backwards in time, the intake for May 1957 was 32 and those exposed to their second month of service from July to November 1957 was:

191 + 32 = 223, recorded in Col. x and called Z_2. This, less those who had not entered their second month of service in November 1957, numbering 29, = 191 + 32 - 29 = 194.

This 194 is the total number of men entering their second month of service at the end of the next six months, May 1957 to October 1957, recorded in Col. xi and called S_2.

But during that period seven men separated (1 in May, 4 in September, 1 in October, 1 in November - by diagonal addition). Therefore at the end of the period:-

$$\frac{187}{194} \times 100 = 96.39\% \text{ (Col. xiv, } p_2)$$

The proportion surviving from the beginning of the first month to the end of the second month would then be:-

$$\frac{96.39 \times 95.02}{100} = 91.59 \text{ (Col. xv, } pp_2)$$

Similarly, the survival during the third month would be:-

187 + 7 (April viii) - 38 (October ix) - 7 - 15 = 141

and the percentage surviving their third month of service would be:-

$$\frac{141}{156} \times 100 = 90.38\%$$

The proportion surviving from the beginning of the first month to the end of the third month would then be:-

$$\frac{90.38 \times 91.59}{100} = 82.78\%$$ which is the progressive percentage survival.

The percentage recorded in Col. xv, from which the percentage survival was taken at six monthly intervals, provided the basis for the construction of the survival curves.

TABLE A 2

	Period I
Surviving to the end of 6 months	- 66.14
" " " " 12 "	- 38.08
" " " " 18 "	- 25.48
" " " " 24 "	- 15.39
" " " " 30 "	- 12.22
" " " " 36 "	- 10.45
" " " " 42 "	- 10.45
" " " " 48 "	- 9.04
" " " " 54 "	- 9.01
" " " " 60 "	- 8.58

These percentages are the points on a graph over a hypothetical five year period, which, when plotted, yielded the survival curve for Period I, June - November, 1957. The following percentages were extracted for the other five periods (p. 14) up to the end of May 1960.

TABLE A 3

	Period 2	3	4	5	6
Surviving to the end of 6 mths.	71.94	67.04	67.12	62.62	68.60
" " " " 12 "	53.14	44.47	57.55	51.38	55.44
" " " " 18 "	40.36	33.01	44.35	44.75	44.99
" " " " 24 "	30.43	19.92	36.76	32.95	36.97
" " " " 30 "	21.68	12.94	27.45	23.56	29.94
" " " " 36 "	17.28	11.04	22.69	17.61	24.48
" " " " 42 "	17.28	10.58	21.85	17.76	23.41
" " " " 48 "	16.46	8.96	21.85	15.49	20.43
" " " " 54 "	16.46	8.18	21.85	14.75	19.58
" " " " 60 "	15.54	7.89	21.85	14.75	16.99

Method II

This method involved the following operations:-

STAGE 1 a - to classify all the employees according to their date of engagement;

b to take all the records of employees engaged in the three-year period June 1957 - May 1960 plus any engaged during the two months April - May 1957;

c to extract from the above all those who were discharged during or at the end of the first three months of service. The records so extracted were the 'separations'; the remainder were the 'survivals'. It will be clear that those who were engaged in April 1960 were exposed to only two months of service, those in May 1960 to one month. These introduce a slight inaccuracy which is too small to affect the general result;

d to ascertain the percentage of employees surviving this initial three-month period of service thus:-

$$\text{Period I, 0-3 mnths: } \frac{\text{survivals}}{\text{total facing the 0-3 mnth. period of service}} \times 100 = \% \text{ survival}$$

The percentage of separations was of course the complement of the above. If 80% of the employees survived, 20% had separated;

e Both sets of employees, survivals and separations, were then sorted into categories relevant in turn to each of the biographical factors it was desired to examine, viz. territorial origin, tribal origin, age, wage, skill grades, department, marital state, accommodation. To illustrate, the separations were first sorted according to the area of origin of the employees, and fell into three major groups, Southern Rhodesian, Nyasaland and Mozambique African. The percentage of survivals and separations were calculated for each, the survivals being noted as of special significance because they contributed to the next stage of the calculation of data for the survival curve.

STAGE 2 a - To set aside the separations from Stage 1 above;

b to set aside from those who had survived the 0 - 3 month service period any who had been engaged during March, April, May, 1960. These did not face the chance of a 4 - 6 month service period, or longer, during the term under study;

c to add to those not set aside at Stage 2 b those engaged during January, February and March 1957. These, engaged before the June 30th 1957 datum line, faced the possibility of a 4 - 6 month service period or longer during June 1957 and after;

d to extract from the above total all those who separated during the 4th - 6th month of service. These were the second set of separations. The remainder were survivals;

e to ascertain the percentage of men surviving the 4 - 6 month service period.

$$\text{Period 2 . 4-6 mnths: } \frac{\text{survivals, Set 2}}{\text{total facing 4-6 months service}} \times 100 = \% \text{ survival}$$

f both sets of employees, survivals and separations, were sorted into categories to examine the same biographical factors as in Stage 1 e, and the percentage of survivals and separations noted for each category.

STAGE 3 a - To set aside the separations from Stage 2, above;

b to set aside from those who had survived the 4 - 6 month service period any who had been engaged during December 1959, January and February 1960. These did not face a 7 - 9 month service period, during the term under study;

c to add to those not set aside at Stage 3 b those engaged during October, November, December 1956. These faced the possibility of a 7 - 9 month service period or longer;

d to extract from the above total all those who separated during the 7 - 9 month of service. These were the third set of separations; the remainder were survivals;

e to ascertain the number of men surviving this 7 - 9 month service period:

$$\text{Period 3. 7- 9 mnths: } \frac{\text{survivals}}{\text{total facing 7-9 mnth. service period}} \times 100 = \% \text{ survival}$$

f both sets of employees, survivals and separations, were sorted into categories for the examination of biographical factors as at Stage 1 e and 2 f and the percentage survival calculated in each case; also what percentage this was of the previous percentage survival, i.e. that shown at Stage 2.

This procedure was repeated for a further nine periods, each time at step (b) removing any men who did not face the particular service period concerned, and adding, at step (c), any engagements over a previous three months, i.e. a new contingent of men who faced each longer period of service. The procedure was arbitrarily stopped at the end of 36 months service since the number of cases involved at this stage was beginning to get small.

The survival percentages were next compounded into a single series to yield a hypothetical survival curve for employees in the different categories during the first 36 months of their service, thus:-

(i) % surviving the 0 - 3 month period of service out of the original total.

(ii) $\frac{\%\ \text{survival (ii)} \times \text{progressive } \%\ \text{survival (i)}}{100}$ = % of original total number of men surviving into the 4 - 6 month service period

(iii) $\frac{\%\ \text{survival (iii)} \times \text{progressive } \%\ \text{survival (ii)}}{100}$ = % survival of (i) into the 7 - 9 month service period

et seq. to

(xii) $\frac{\%\ \text{survival (xii)} \times \text{progressive } \%\ \text{survival (xi)}}{100}$ = % survival into 34 - 36 month period

For example, the percentages of survivors from the three territories f origin at different periods of service were as follows:-

TABLE A 4

Percentage Survival of Personnel over periods of Service ranging from 0 - 3 months to 34 - 36 months according to territory of origin

	S. Rhodesia		Nyasaland		Mozambique	
Service period	% surviving each period	Progressive % survival	% surviving each period	Progressive % survival	% surviving each period	Progressive % survival
months						
i 0- 3	75.7	75.7	76.6	76.6	82.2	82.2
ii 4- 6	88.1	66.7	88.2	76.6	88.5	72.7
iii 7- 9	89.8	59.9	84.0	56.8	87.9	63.9
iv 10-12	90.5	53.8	89.0	50.6	89.4	57.1
v 13-15	91.3	49.1	84.8	42.9	86.9	49.6
vi 16-18	95.5	46.9	86.9	37.3	81.5	40.4
vii 19-21	94.4	44.3	81.4	30.4	89.4	36.1
viii 22-24	94.4	41.8	74.1	22.5	82.8	29.9
ix 25-27	93.2	38.9	73.8	16.6	83.1	24.9
x 28-30	93.7	36.4	78.6	13.0	92.5	23.0
xi 31-33	95.6	32.9	82.1	10.7	87.8	20.2
xii 34-36	96.9	31.9	89.7	9.6	88.4	17.9

Total at outset:- Southern Rhodesian - 556
Nyasaland - 321
Mozambique - 146

The advantage of the method, is that it allows a comparison of the separation rate of different categories of employees while holding the length of service constant.

The same procedure was followed in the compilation of the tables appended here, A 5, A 6, A 7, A 8, A 9, A 10, A 11.

TABLE A 5

Percentage Survival related to Tribal Origin

x = % surviving each period

y = Progressive % survival

Service period	S. Bantu North(Shona)Div.		E. Bantu E. Div. S. Section		S.Bantu, Nguni Div. Nguni Conquest, Sotho Div.		Others and Unidentified	
Months	x	y	x	y	x	y	x	y
0- 3	77.1	77.1	77.7	77.7	77.8	77.8	70.0	70.0
4- 6	87.4	67.4	87.6	68.1	93.8	73.0	91.0	63.7
7- 9	89.8	60.5	85.8	58.4	86.4	63.1	81.7	52.0
10-12	90.4	54.7	88.5	51.7	92.3	58.2	88.9	46.2
13-15	92.0	50.3	85.0	43.9	84.2	49.0	87.8	40.6
16-18	95.0	47.8	83.2	36.5	100.0	49.0	82.9	33.7
19-21	92.5	44.2	85.3	31.1	80.0	39.2	96.4	32.5
22-24	94.0	41.5	75.7	23.5	95.8	37.6	91.0	29.6
25-27	92.6	38.4	76.1	17.9	95.2	35.8	85.7	25.4
28-30	93.2	35.8	83.3	15.0	92.9	33.3	100.0	25.4
31-33	96.1	34.4	85.9	12.9	42.9	14.3	100.0	25.4
34-36	97.8	33.6	90.0	11.6	85.7	12.3	80.0	20.3

Total at outset:

S. Bantu, North (Shona) Division (includes Zezuru, Manyika, Karanga, Korekore, Ndau, Rozwi) - 497

E. Bantu, E. Division, S. Section (includes Sena, Cewa, Cikunda, Lower Zambezi Tonga, Yao, Nyanja, N'ganja) - 408

S. Bantu, Nguni Division, Nguni Conquest, Sotho Division; General Swahili; (includes Ndebele, Sotho, Shangaan, Fingo, Xosa) - 54

Others - East, Central, South and West Bantu; General Swahili - 100

TABLE A 6

Percentage of Survival related to Age of Personnel

	Under 24 years		25 - 39 years		40 years and over	
Service period	% surviving each period	Progressive % survival	% surviving each period	Progressive % survival	% surviving each period	Progressive % survival
Months						
0- 3	77.6	77.6	73.7	73.7	80.9	80.9
4- 6	87.5	67.9	87.1	64.2	91.1	73.7
7- 9	88.2	59.8	85.6	55.0	88.1	65.0
10-12	90.5	54.2	87.8	48.3	97.1	63.0
13-15	90.4	49.0	85.3	41.2	100.0	63.0
16-18	89.0	43.6	88.0	36.3	97.1	61.2
19-21	89.6	39.1	87.7	31.8	93.8	57.4
22-24	87.2	34.1	84.0	26.7	96.4	55.3
25-27	89.3	30.5	83.3	22.2	96.0	53.1
28-30	91.9	28.0	89.0	19.8	92.3	49.0
31-33	86.2	24.1	90.7	18.0	95.7	46.9
34-36	85.7	20.7	92.9	16.7	100.0	46.9

Total in each age group at outset:- Under 24 years - 401
25 - 39 years - 558
Over 40 years - 47

TABLE A 7

Percentage Survival related to Marital Status

Service period	Married		Unmarried	
	% surviving each period	Progressive % survival	% surviving each period	Progressive % survival
Months				
0- 3	68.2	68.2	85.0	85.0
4- 6	85.8	58.5	89.2	75.8
7- 9	84.6	49.5	89.4	67.8
10-12	89.3	44.2	89.2	59.8
13-15	85.8	37.9	89.5	53.5
16-18	87.7	33.2	90.2	48.3
19-21	92.6	30.7	87.6	42.3
22-24	85.8	26.3	85.5	36.2
25-27	87.1	22.9	84.7	30.7
28-30	90.7	20.8	90.5	27.8
31-33	94.4	19.6	88.5	24.6
34-36	96.7	19.0	90.7	22.3

Total in each group at outset: Married - 393
Unmarried - 579

TABLE A 8

Percentage Survival related to Wage

x = % surviving each period
y = Progressive % survival

Service period	Less than £7 per month		£7 -£9.19.11 per month		£10 -£14.19.11 per month		£15 and more per month	
	x	y	x	y	x	y	x	y
Months								
0- 3	70.5	70.5	86.8	86.8	79.6	79.6	88.9	88.9
4- 6	82.1	57.9	96.0	83.3	92.0	73.2	85.7	76.2
7- 9	76.5	44.3	98.2	81.8	90.2	66.0	91.7	69.9
10-12	82.2	36.4	96.0	78.5	92.3	60.9	83.3	58.2
13-15	80.4	29.3	91.3	71.7	91.8	55.9	95.7	55.7
16-18	81.9	24.0	91.1	65.3	96.7	51.1	91.0	50.7
19-21	84.9	20.4	87.8	57.3	96.3	52.1	100.0	50.7
22-24	71.2	14.5	85.2	48.8	98.2	51.2	95.7	48.5
25-27	35.7	5.2	86.7	42.3	93.8	48.0	91.0	44.1
28-30	50.0	2.6	89.1	37.7	95.8	46.0	86.4	38.1
31-33	60.0	1.6	89.1	33.6	97.8	45.0	93.8	35.7
34-36	25.0	0.4	93.8	31.5	95.0	42.8	100.0	35.7

Total in each group at outset: Less than £7 - 651
£7 - £9.19.11. - 243
£10 - £14.19.11. - 93
£15 and over - 27

TABLE A 9

Percentage Survival related to Skill Grade

Service period	Unskilled		Semi-skilled		Skilled	
	% surviving each period	Progressive % survival	% surviving each period	Progressive % survival	% surviving each period	Progressive % survival
Months						
0- 3	74.8	74.8	87.3	87.3	76.9	76.9
4- 6	87.5	65.5	87.5	76.4	90.0	69.2
7- 9	86.4	56.6	87.1	66.5	92.7	64.1
10-12	90.1	51.0	86.7	57.7	86.5	55.4
13-15	88.2	45.0	81.1	47.8	93.8	52.0
16-18	87.9	39.6	94.2	45.0	95.6	49.7
19-21	87.0	34.5	94.2	42.4	97.6	48.5
22-24	83.6	28.8	90.4	38.3	95.1	46.1
25-27	83.2	24.0	90.9	34.8	94.4	43.5
28-30	87.2	20.9	100.0	34.8	91.2	39.7
31-33	87.4	18.3	97.7	34.0	96.3	38.2
34-36	91.8	16.8	92.5	31.5	100.0	38.2

Total in each group at outset: Unskilled 878
Semi-skilled - 63
Skilled 78

TABLE A 10

Percentage Survival related to Type of Accommodation

x = % survival each period

y = Progressive % survival

Service period	Hostel		Single Quarters		House or part of		None provided Unspecified	
	x	y	x	y	x	y	x	y
Months								
0- 3	77.5	77.5	82.0	82.0	81.1	81.1	58.3	58.3
4- 6	87.5	67.8	91.7	75.2	90.4	73.3	89.5	52.2
7- 9	85.9	58.2	83.6	62.9	91.0	66.7	87.5	45.7
10-12	89.0	51.8	93.8	59.0	86.5	57.7	96.6	44.1
13-15	87.4	45.2	90.6	53.5	88.7	51.2	89.3	39.4
16-18	89.0	40.2	88.7	47.5	91.4	46.8	88.5	34.9
19-21	87.4	35.1	83.3	39.6	98.5	46.1	95.0	33.2
22-24	82.8	29.1	87.3	34.6	94.1	43.4	88.2	29.3
25-27	82.0	23.9	88.0	30.4	93.3	40.5	91.7	26.9
28-30	85.0	20.3	98.0	29.8	96.2	39.0	83.3	22.4
31-33	86.7	17.6	92.2	27.5	97.9	38.2	88.9	20.0
34-36	90.3	15.9	94.0	25.9	95.3	36.4	100.0	20.0

Total in each group at outset:

Hostel	852
Single Quarters	61
House or part of	74
None/unspecified	72

TABLE A 11

Survival rate of Personnel relative to Department in the Factory

x = % surviving each period
y = Progressive % survival

Service period	Commercial		Personnel		Marketing		Technical		Pool and Unspecified	
	x	y	x	y	x	y	x	y	x	y
Months										
0- 3	85.4	85.4	77.8	77.8	69.2	69.2	79.6	79.6	61.0	61.0
4- 6	85.9	73.4	83.3	64.8	86.7	60.0	67.8	54.0	88.4	53.9
7- 9	89.7	65.8	94.0	60.9	94.6	56.8	85.7	46.3	87.9	47.4
10-12	84.7	55.7	93.8	57.1	85.2	48.4	90.2	41.8	95.2	45.1
13-15	90.5	50.4	96.7	55.2	86.7	42.0	87.3	36.5	85.7	38.7
16-18	91.4	46.1	96.7	53.4	95.2	40.0	87.7	32.0	83.3	32.2
19-21	88.0	40.6	96.4	51.5	93.2	37.3	87.5	28.0	100.0	32.2
22-24	93.3	37.9	83.3	42.9	90.2	33.6	84.5	23.7	66.6	21.4
25-27	97.2	36.8	94.7	40.6	87.5	29.4	83.8	19.9	25.0	5.4
28-30	83.3	30.7	86.7	35.2	96.0	28.2	90.5	18.0	100.0	5.4
31-33	91.7	28.2	100.0	35.2	95.2	26.8	89.1	16.0	-	-
34-36	90.5	25.8	86.7	30.5	100.0	26.8	93.3	15.0	-	-

Total in each group at outset: Commercial - 96
Personnel - 45
Marketing - 91
Technical - 686
Pool - 141

APPENDIX II

Additional Tables

TABLE A 12

Percentage of men from each of the three territories surviving the four longest periods of service

Service period	S.Rhodesia	Nyasaland	Mozambique
Months			
25-27	54	23	21
28-30	55	20	23
31-33	59	17	23
34-36	59	16	24

Percentages add horizontally.

Remainder in each case originate elsewhere.

TABLE A 13

Percentage of Survivals and Separations in each wage category related to each of the twelve length-of-service periods

Survivals / Wage	Length-of-service period											
	0-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24	25-27	28-30	31-33	34-36
Less than £7	57	49	40	36	29	25	22	11	2	1	2	1
£7-£9.19.11	26	33	43	50	56	58	59	65	72	68	66	66
£10-£14.19.11	9	9	10	10	11	13	13	17	18	21	24	24
£15 +	*3	*4	*4	4	4	4	6	7	8	9	8	10
Separations												
Less than £7	78	79	85	68	52	45	31	28	21	13	11	25
£7-£9.19.11	13	10	5	18	39	47	65	69	67	75	79	58
£10-£14.19.11	8	6	8	7	7	4	4	2	7	8	5	17
£15 +	1	4	2	7	1	4	-	2	4	4	5	-

Percentages add vertically and are rounded

* For a small percentage in these three periods the wage was unspecified

APPENDIX III

Computation of Service Survival Rates from Separation Figures

by J. Clyde Mitchell

The object is to estimate the proportion of those men now being taken on who will still be on strength after any given period of service on the assumption that current rates of separation remain constant; this last assumption, of course, is a dangerous one to make so that as a real predictive measure it is probably limited in value. But it is very useful as a measure by means of which labour stability in different industries or in different parts of the same industry may be compared because it holds the length of service - a vital factor in turnover - constant.

In the procedure devised here an example is taken of records kept over the last six months. The result therefore is derived from the average separation rates over the last six months. There is no reason why the period should not be extended to twelve months or longer to obtain more general averages, nor for that reason for shorter periods if this is desired. The computation is not very laborious. Neither is the tabulation unduly difficult: if staff records are kept on punched cards it is very simple.

In the table:-

i. T represents particular months in which staff are engaged T_1, T_2, T_3 .... T_6 the months in which they leave the service of the firm.

ii. M represents the number of staff at the beginning of a six months period, e.g. M_{10} is the number of staff employed at the beginning of the month 'T_6'.

iii. a, b, c, d, ... n are the numbers who were engaged in particular months and who left employment in the particular months '$T_1, T_2, \ldots T_6$

thus d_6 are those of the number M_9 employed in month T_9 who left service in month T_6: e_5 are those of the same group who left in month T_5 etc.

iv. N are the numbers of staff who survived the period T_6 to T_1 out of the original number m which entered that period, so that $M - (a + b + c + d + e + f) = N$. In other words N is the number still employed tabulated by date of engagement.

We wish to estimate the proportion of staff who survive the first month of employment, the second month of employment, the third, fourth and so on. From these survival proportions we can estimate a general continuing survival for all months of employment.

[text continued on page 109]

TABLE A 14

Form of Tabulation of Basic Data

Month of Engagement		Month of Separation							
		T_6	T_5	T_4	T_3	T_2	T_1		
T_n	M_n	$?_6$	$?_5$	$?_4$	$?_3$	$?_2$	$?_1$	N_n	$\sum_{c=1}^{6} ?$
.	.	.	.	.	.	.	.	.	
.	.	.	.	.	.	.	.	.	
T_{14}	M_{14}	i_6	j_5	k_4	l_3	m_2	n_1	N_{14}	$\sum_{c=1}^{6} n$
T_{13}	M_{13}	h_6	i_5	j_4	k_3	l_2	m_1	N_{13}	$\sum_{c=1}^{6} m$
T_{12}	M_{12}	g_6	h_5	i_4	j_3	k_2	l_1	N_{12}	$\sum_{c=1}^{6} l$
T_{11}	M_{11}	f_6	g_5	h_4	i_3	j_2	k_1	N_{11}	$\sum_{c=1}^{6} k$
T_{10}	M_{10}	e_6	f_5	g_4	h_3	i_2	j_1	N_{10}	$\sum_{c=1}^{6} j$
T_9	M_9	d_6	e_5	f_4	g_3	h_2	i_1	N_9	$\sum_{c=1}^{6} i$
T_8	M_8	c_6	d_5	e_4	f_3	g_2	h_1	N_8	$\sum_{c=1}^{6} h$
T_7	M_7	b_6	c_5	d_4	e_3	f_2	g_1	N_7	$\sum_{c=1}^{6} g$
T_6	M_6	a_6	b_5	c_4	d_3	e_2	f_1	N_6	$\sum_{c=1}^{6} f$
T_5	M_5		a_5	b_4	c_3	d_2	e_1	N_5	$\sum_{c=1}^{6} e$
T_4	M_4			a_4	b_3	c_2	d_1	N_4	$\sum_{c=1}^{6} d$
T_3	M_3				a_3	b_2	c_1	N_3	$\sum_{c=1}^{6} c$
T_2	M_2					a_2	b_1	N_2	$\sum_{c=1}^{6} b$
T_1	M_1						a_1	N_1	$\sum_{c=1}^{6} a$

Note: Only the totals N (i.e. the number still in employment at the end of month T_1) and the separations in each month, by month of engagement need be tabulated.

The totals M are derived from these by adding the separation in each month to the total still in employment at the end of T_1. Thus:

$$M_{12} = N_{12} + l_1 + k_2 + j_3 + i_4 + h_5 + g_6.$$

The totals $\sum_{c=1}^{6} a$, $\sum_{c=1}^{6} b$, $\sum_{c=1}^{6} c$, etc. are obtained merely by adding all the 'a's, all the 'b's, all the 'c's etc. diagonally regardless of subscripts. These are the only figures to be entered in the work table and all that is needed to carry out the computation.

For the sake of simplicity we assume that the engagements all took place in the middle of the month instead of on different days throughout the month. Thus the survival at the end of the first phase is that of after half a month's service, and the survival at the second phase after 1½ months service and so on. The number surviving to any month end can be obtained by simple interpolation. To avoid clumsy phraseology the first phase of service refers to the first half month, second phase to the first half month to the end of the first month and a half, the third from the first month and a half to the second month and a half and so on.

The cohort M_1 is exposed to the first phase of employment during month T_1 and during this time there are a_1 separations. The cohort M_2 is exposed to the first phase of employment during month T_2 and during this time there are a_2 separations. In the same way M_3 is exposed in T_3 and suffers a_3 separations, M_4 in T_4 and suffers a_4, M_5 in T_5 and suffers a_5 and M_6 in T_6 and suffers a_6.

The survival of staff in the first phase of service on the average over the last six months will be:

$$\text{End of } \tfrac{1}{2} \text{ month } \frac{\sum_{1}^{6} M - \sum_{1}^{6} a = Z_1}{\sum_{1}^{6} M = K_1}$$

We call the denominator of the fraction K_1 and the numerator Z_1 to simplify explanation. The difference between the fraction and unity represent the separation rate for this phase of employment.

During the second phase of service the M_7 cohort experiences b_6 separations and the M_6 cohort, now reduced by a_6 separations during the first phase experiences b_5 separations; the M_5 cohort reduced by a_5 separations

experiences b_4 separations, etc. The survival during the second phase of service becomes:

$$\text{End of } 1\tfrac{1}{2} \text{ months} \qquad \frac{K_2 - \sum_{i=1}^{6} b = Z_2}{M_7 + (M_6 - a_6) + (M_5 - a_5) + (M_4 + a_4) + (M_3 - a_3) + (M_2 - a_2)}$$

The denominator K_2 of this fraction may be simplified by adding and subtracting to it M_1 and a_1 so that:

$$K_2 = M_7 + M_6 + M_5 + M_4 + M_3 + M_2 + M_1 - (a_1 + a_2 + a_3 + a_4 + a_5 + a_6) - M_1 + a_1$$

$$K_2 = M_7 + \sum_{i=1}^{6} M - \sum_{i=1}^{6} a - M_1 + a_1$$

$$K_2 = M_7 + \left(\sum_{i=1}^{6} M - \sum_{i=1}^{6} a\right) - (M_1 - a_1)$$

But $\left(\sum_{i=1}^{6} M - \sum_{i=1}^{6} a\right) = Z_1$ and $(M_1 - a_1) = N_1$

$\therefore$ $K_2 = M_7 + Z_1 - N_1$

During the third phase of service, there are c_6 separations out of the original cohort of M_8. The M_7 cohort is reduced by the separations b_6 in the second phase, and suffers c_5 separations during the third phase. The M_6 cohort was reduced by a_6 separations in the first phase and b_5 in the second phase. Of the remainder there were c_4 separations in the third phase. The cohort M_5 was reduced by a_5 and b_4 in the first and second phase and by c_3 in the third, etc.

Therefore the survival during the third phase of service is:

$$\text{End of } 2\tfrac{1}{2} \text{ months} \qquad \frac{K_3 - \sum_{i=1}^{6} c = Z_3}{M_8 + M_7 - b_6 + M_6 - a_6 - b_5 + M_5 - a_5 - b_4 + M_4 - a_4 - b_3 + M_3 - a_3 + b_2}$$

By adding and subtracting M_2, b_1 and a_2 to the donominator it can be simplified thus:

$$M_8 + M_7 + M_6 + M_5 + M_4 + M_3 + M_2 - (b_6 + b_5 + b_4 + b_3 + b_2 + b_1) - (a_6 + a_5 + a_4 + a_3 + a_2) - M_2 + a_2 + b_1$$

Now $(M_2 - a_2 - b_1) = N_2$, $\sum_{t=2}^{7} M - \sum_{t=2}^{6} a = K_2$ and $K_2 - \sum_{t=1}^{6} b = Z_2$

The denominator thus becomes:

$$M_8 + Z_2 - N_2 = K_3$$

By continuing with this procedure we arrive at the general formula for the survival for any particular phase 'n'

$$\frac{K_n - s = Z_n}{M_{(n+5)} - N_{(n-1)} + Z_{(n-1)} = K_n} \quad \text{(assuming a six months average)}$$

where 's' is the number of separations appropriate to that phase.

The computation of this measure is not difficult provided that the requisite data are set out in the correct form. The following work-table sets out the data in the form needed for computation:

Survival to(month)	Cohort	Extant	K	Separations	Z	% Survival	Cumulative Survival
		(Subtract)		(Subtract)		Z/K	
0							100
½	$\sum_{t=1}^{6} M$	$- 0 =$	K_1	$- \sum_{t=1}^{t} a =$	Z_1	p_1	p_1
1½	$Z_1 + M_7$	$- N_1 =$	K_2	$- \sum_{t=1}^{t} b =$	Z_2	p_2	p_1p_2
2½	$Z_2 + M_8$	$- N_2 =$	K_3	$- \sum_{t=1}^{t} c =$	Z_3	p_3	$p_1p_2p_3$
3½	$Z_3 + M_9$	$- N_3 =$	K_4	$- \sum_{t=1}^{t} d =$	Z_4	p_4	$p_1p_2p_3p_4$
4½	$Z_4 + M_{10}$ etc.						

For purposes of explication we have used a monthly breakdown of engagements and separations. The method is general, however. The tabulations could have been made in terms of years of engagement and separation, so that an average over the last six years could be computed, or, (with the necessary changes in the formula), over any other period of years. The formula may be used with the data for one year only in which case the separations in T_1 column only are used. In this case the K totals are identical with the M totals (i.e. $K_1 = M_1$; $K_2 = M_2$; $K_3 = M_3$ etc.) and

the Z totals are identical with the N totals (i.e. $Z_1 = N_1$; $Z_2 = N_2$; $Z_3 = N_3$; etc.). The percentage survivals (i.e. p_1 , p_2 , p_3 etc.) are computed from the ratio of N to M directly. The cumulative survival is computed from these by continuative multiplication.

Isolating Factors in Turnover

The same basic reasoning may be used to isolate factors involved in labour turnover at various phases of the employment histories of staff. The procedure is to compare the characteristics of those who survive a particular phase of employment with those who do not, and to note the difference in these characteristics. This could be done for each month of service but this would involve a great deal of work and the size of the groups whose characteristics are being compared would be very small. Instead it is suggested that averages for three months or longer should be used.

Consider in the first instance the cases $\sum_{i=1}^{8} M_i$. The separations during the first 2½ months of service are $\sum_{i=1}^{6} a + \sum_{i=1}^{6} b + \sum_{i=1}^{6} c$. The characteristics of the separations (i.e. say level of education, wage, district of origin, and anything else which may be considered relevant) can be compared with those who survived the period (i.e. $\sum_{i=1}^{8} M - \sum_{i=1}^{6} a - \sum_{i=1}^{6} b - \sum_{i=1}^{6} c$).

For the analysis of the next phase we must exclude those who have not been exposed to more than 2½ months of employment and include those who have been exposed from 2½ and 5½ months. Thus we exclude $\sum_{i=1}^{3} N_i$. We add $\sum_{i=8}^{9} M_i$. We now extract those who failed to survive this phase of employment, i.e. $\sum_{i=1}^{8} d + \sum_{i=1}^{6} e + \sum_{i=1}^{6} f$ and compare their social characteristics with the residue.

For the analysis of the next phase, i.e. the period from 5½ to 8½ months of service, we exclude those who have not been exposed to 5½ months of service i.e. $\sum_{i=1}^{3} N$ and add those who have been exposed to 5½ to 8½ months service i.e. $\sum_{i=9}^{11} M_i$. We now extract those who failed to survive the phase of employment, i.e. $\sum_{i=1}^{6} g + \sum_{i=1}^{6} h + \sum_{i=1}^{6} i$ and compare their social characteristics with the residue.

This procedure is carried on until the numbers in the analysis are too small for useful comparisons at which stage larger work phases e.g. six months or a year may be used.

It should be noted that a slight error is introduced in this procedure because a small proportion of the employees will not have yet been exposed to a full three months of service. The M_1 employees in Table A 14 for example will have been exposed to only one month of service and the M_2 employees to only two months of service. Similarly the M_8 employees will be exposed to only their third month of service and not to their first and second, while the M_7 employees will be exposed to their second and third but not to their first. The same sort of difficulty arises in respect of employees facing the second three month period of service. Some included will have been exposed to only part of the period of service being considered. Since the exposure to each three month period of all employees over a three year period was considered the proportion of employees exposed to partial periods at the beginning and end of the three year period must be very small in relation to the total number of employees. The employees exposed to partial periods could have been removed during tabulation but this would have so complicated the procedure for so little gain in accuracy that it was not considered worthwhile.

Survival Curves by Characteristics

The expression

$$\frac{R_1 - \left(\sum_{i=1}^{\bar{6}} a + \sum_{i=1}^{\bar{6}} B + \sum_{i=1}^{\bar{6}} c\right) = Q_1}{\sum_{i=1}^{\bar{8}} M = R_1}$$

represents the proportion surviving the first 2⅔ months of service and may be computed for any of the categories of analysis, for example those of different educational levels, wage levels, places of origin etc.

Similarly the expression (derived from the second operation of the analysis of characteristics)

$$\frac{R_2 - \left(\sum_{i=1}^{6} d + \sum_{i=1}^{6} e + \sum_{i=1}^{6} f\right) = Q_2}{Q_1 - \sum_{i=1}^{8} N + \sum_{i=9}^{11} M = R_2}$$

represents the proportion surviving the phase from 2½ to 5½ months of service, and, in the same way, may be computed for any of the categories of analysis.

The expression

$$\frac{R_3 - \left(\sum_{i=1}^{6} g + \sum_{i=1}^{6} h + \sum_{i=1}^{6} i\right) = Q_3}{Q_2 - \sum_{i=1}^{3} N + \sum_{i=9}^{11} M = R_3}$$

represents the survival through the phase 5½ to 8½ months.

These separate survival proportions may be used to derive a cumulative survival table of the same sort as in the work table. But if we compute the survival proportions for different characteristics at different employment phases we can also derive cumulative survival tables for each of these characteristics. Suppose for example we have divided our group into categories of well, medium and poorly educated. By compounding the different survival proportions at different employment phases for the well educated group we can derive a cumulative survival table for this group. It will allow us to say (on current separation rates) what proportion of well educated men will survive any given period of employment. A similar computation for medium and poorly educated people allows us to compare the survival rate for these categories after given periods of employment and so make deductions about the effect this characteristic has on labour stability.

The Problem of Changing Characteristics

If averages are being considered over a long period, e.g. over three years as in this study, a practical difficulty arises since some of the characteristics may have changed in this time. An obvious example of this is age. It is likely that the age of an employee recorded among his personal data is his age at engagement. But the age of the employee naturally increases with his length of service so that after any given period of service the age recorded on the personal data sheet is no longer applicable. The same sort of argument could be applied to several characteristics which are variable e.g. conjugal status, wage, and to a less extent educational level.

If the period over which the data are being averaged is small - say six months - and the personal record sheets are kept up to date it is unlikely that the changing variables will introduce much error. Even when the data are averaged over much longer periods - e.g. over three years - the error introduced by the change in the characteristics during the course of the study appears to be small.

Survival Indices

The survival curves tell us not only how quickly workers leave employment but also at what particular periods of their service they are most likely to do so. But it is difficult to compare one curve with another. If we are interested in the over-all rate of separation we can make comparisons more easily by means of some kind of an index.

Perhaps the simplest is what I call the mean labour service expectancy. This is simply the period a new recruit can be expected to remain in employment on the basis of current separation rates. An index of this sort can be computed by determining the area under the survival curve. An

approximate formula for the curves presented in Part 1 of this study would be:

$$E = \sum_{i=1}^{\infty} P - 0.25\ P_1 - 0.5\ P_n + 25$$

Where E is the mean labour service expectancy in months $\sum_{i=1}^{\infty} P$ is the sum of the percentages surviving at each monthly period, P_1 is the percentage surviving to the end of the first half-month and P_n is the percentage surviving to the longest period of service. Normally P_n would be very small and could be ignored. In this case the expression would simplify down to:

$$E = \sum_{i=1}^{\infty} P - 0.25\ P_1 + 25$$

We can also compute the number of months further service which can be expected of an employee at any point in his service if we have sufficient data to prepare a curve which tends towards a final survival percentage of nil. For example it should be possible to compute the mean labour service expectancy of an employee after say five years of service, or ten years, or twenty years or any other period of service. An approximate formula for this would be:

$$E_x = \frac{2 \sum_{i=x}^{\infty} P - P_x - P_n}{2\ P_x}$$

where E_x is the mean labour service expectancy in months at the x'th month of service; $\sum_{i=x}^{\infty} P$ is the summation of all the survival percentages from the x'th month to the longest period of employment; P_x is the percentage surviving after x months of service and P_n is the final surviving percentage.

Once again if P_n, the final surviving percentage is small it can be ignored in which case the expression simplifies down to:

$$E_x = \frac{\sum_{i=x}^{\infty} P}{P_x} - 0.5$$

In this study the number of employees with more than five years service was so small that it was not practicable to carry on the cumulative survival percentages beyond five years. Therefore there was no point in computing a mean labour service expectancy.

An index of survival however, could have been computed by relating the area under the truncated curve to the area which would have existed if no separation had taken place at all. In other words, if no separations had taken place at all during the five years following recruitment of a cohort of 100 employees, then the aggregate number of months service amongst them would have been (nearly) 60 x 100 = 6000 months. If we were to compute the actual months of service contributed by a cohort of 100 employees over a period of five years (i.e. the area under the curve) we could express this as a proportion of the hypothetical possible number months they could have served. This would produce an index summarizing the degree of separation among the employees over this time. In fact because we assumed that all engagements took place in the middle of the month the total possible number of months that could be served by a cohort of 100 employees would be 5950 and not 6000.

To illustrate the computation of an index of this sort let us consider the material presented in Graphs 1 and 2 of the report which shows the survival curves for six different periods from June 1957 to May 1960.

	Periods	Months served by cohort of 100 employees	% possible
I	June 1957 - Nov. 1957	1455.45	24.46
III	June 1958 - Nov. 1958	1539.85	25.88
V	June 1959 - Nov. 1959	1953.14	32.82
II	Dec. 1957 - May 1958	1971.51	33.13
IV	Dec. 1958 - May 1959	2219.54	37.30
VI	Dec. 1959 - May 1960	2204.61	36.92

This summarizes the trends shown in the graphs.

The same procedure can be applied to the curves computed for personal characteristics. Because the survival percentages are averages over three months and not over one month the formula must be modified. It is in fact:

$$E_c = 3 \sum_{t=1}^{\infty} P - 1.75\ P_1 - 1.5\ P_n + 125$$

where the symbols have the same meaning as before. The total possible working period for the three year period to which the curves are taken becomes 3550 instead of 3600 because of the assumptions of mid-monthly recruitment.

As an illustration of this type of index we may consider the material presented on Graph 5 of the report, which shows the survival curves of employees from different territories.

Territory of Origin	Months served by cohort of 100 employees	% possible
Southern Rhodesia	1679.6	47.3
Mozambique	1506.9	42.5
Nyasaland	1303.8	36.1

This shows the relatively greater stability of the Southern Rhodesian labour as against the Mozambique and Nyasaland labour.

An index of this sort is essentially an average and has the disadvantage of all averages, i.e. it obscures the detailed differences in the curves but it may possibly be of use in bringing out the main differences in data of this sort.

BIBLIOGRAPHY

(* Regular official statistics)

Arbous, A.G.	Feb. 1951	'Research into Absenteeism, Labour Turnover and Accidents at a large Industrial Corporation'. Summary of Report. National Institute for Personnel Research Bulletin 534. Vol. III. 1. Johannesburg.
Armsen, P.	1956	'A Rough and Ready Method for Computing Labour Turnover Rates'. Journal of the National Institute for Personnel Research, Johannesburg. Vol. 6. 2. p.83.
Aronson, R.L.	June 1961	Labour Commitment among Jamaican Bauxite Workers'. Social & Economic Studies Institute of Social and Economic Research. University College of the West Indies. Jamaica, W.I. Vol. X. 2.
Australia	1959	Personnel Practice Bulletin Department of Labour and National Service. Especially 'Spot Check on Labour Turnover Sept. 1959' in Dec. 1959, vol. XV. 4.
Barber, W.J.	1961	The Economy of Central Africa. London. Oxford University Press.
Beaglehole, Ernest & Pearl	1946	Some Modern Maoris. New Zealand Council for Educational Research.
Buzzard, R.B.	1954	'Attendance and Absence in Industry. The Nature of the Evidence'. British Journal of Sociology V. 238 - 252.
* Canada		'Hiring and Separation Rates in Certain Industries'. Dominion Bureau of Statistics. Catalogue 72.006.
C.C.T.A./C.S.A.	1960	'Absenteeism and Labour Turnover in Industry' Report for Northern and Southern Rhodesia. Committee for Technical Co-operation in Africa. Project No. 5.
Central Statistical Office	1958	Preliminary Report of Salisbury Demographic Survey. Salisbury, Rhodesia and Nyasaland.
Central Statistical Office	1959	Second Report on the Salisbury African Demographic Survey. August/September. Salisbury, Rhodesia and Nyasaland.

Elkan, W.	Sept. 1951	The Persistence of Migrant Labour. Bulletin of Inter-African Labour Institute.
Elkan, W.	1956	An African Labour Force. East African Studies No. 7. Kampala. East African Institute of Social Research.
Elkan, W.	1960	Migrants and Proletarians. London. Oxford University Press.
Glass, Y.	Sept 1960	'Can Management Contribute to African Worker Stability?' National Institute for Personnel Research. Johannesburg. Paper No. 2006.
Glass, Y.	Nov. 1960	'Management, Supervision and Worker Productivity' National Institute for Personnel Research. Johannesburg. No. 2008.
Glass, Y.	1961	'Industrial Man in Southern Africa'. Address to the Institute for the Study of Man in Africa. Johannesburg, Sept. 27th 1961. National Institute for Personnel Research.
Greystoke, J.R. et al	July 1951	'Surveying Labour Turnover in the Sheffield Region'. Yorkshire Bulletin of Economic and Social Research. 1951. 3, 2, : 83 - 101.
Hakkinson, S. & Tiorainen, Y.	1960	'Psychology Factors causing Labour Turnover among Underground Workers'. Occupational Psychology. 34. 1. January 1960: 15 - 30.
Hauser, A.	1960	'Absenteeism and Labour Turnover in Manufacturing Industry in the Dakar Region'. Nigerian Institute of Social & Economic Research Proceedings. December 1960.
Hellman, E.	1953	Sell goods : A Sociological Survey of an African Commercial Labour Force. Johannesburg. South African Institute of Race Relations.
Hill, T.P.	May 1962	Wages and Labour Turnover. Bulletin of the Oxford University Institute of Statistics. Vol. 24. No. 2.
Hudson, W.	Mar. 1955	'Observations on African Labour in East, Central and West Africa'. Journal of the National Institute of Personnel Research. South African Council for Scientific & Industrial Research. Vol. VI. No. 1.
Knox, John B.	1961	'Absenteeism and Turnover in an Argentine Factory'. American Sociological Review. XXVI : 424 - 428.
Liddell, F.D.K.	1954	'Attendance in the Coal-Mining Industry'. British Journal of Sociology. V.

Miller, C.	Sept. 1959	'Problems involved in the Execution of Major Development Projects in Africa'. Inter-African Labour Institute. C.C.T.A. Bulletin.
Mitchell, J.C.	Jan. 1959	'The Causes of Labour Migration'. Bulletin Inter-African Labour Institute. Vol. VI,1: 12-46.
Mitchell, J.C.	1961	'Notes on the Measurement of Labour Migration'. (cyclostyled).
Mitchell, J.C.	1961	'Wage Labour and Population Movements in South Central Africa'. African Population Studies. M. Prothero and K.M. Barbour (eds.) London, Routledge & Kegan Paul.
Moore, W.	1951	Industrialisation and Labour: Social Aspects of Economic Development. Ithaca, N.Y., and New York. Cornell University Press.
* New Zealand		Labour Employment Gazette. Department of Labour.
* Northern Rhodesia Chamber of Mines	1957 1961	Year Books. Kitwe, Northern Rhodesia. 1959.
* Republic of South Africa		Monthly Bulletin of Statistics. Bureau of Census & Statistics.
Richards, A.I.	1954	Economic Development and Tribal Change. Cambridge. Heffers.
Silcock, H.	1954	'The Phenomenon of Labour Turnover'. Journal of the Royal Statistical Society. Series A. (General) 117. 1. 429 - 440.
Slotkin, J.S.	1960	From Field to Factory. Research Centre in Economic Development and Cultural Change. University of Chicago. The Free Press, Glencoe, Illinois.
Stent, G.	Undated	An Analysis of Supply and Demand for African Labour in Southern Rhodesia. Southern Rhodesia Department of Labour, Salisbury. Unpublished paper.
Tiryakian, E.A.	1959	'Occupational Satisfaction and Aspiration in an Underdeveloped Country'. Economic Development and Cultural Change. VII: 4. 431.
* United Kingdom		Ministry of Labour Gazette. Ministry of Labour and National Service.
* U.S.A.		Employment and Earnings. Monthly Labour Review. Bureau of Labour & Statistics. Also - Year Book of Statistics.

Van Velsen, J. 1960 'Labour Migration as a Positive Factor in the Continuity of Tonga Tribal Society'. Economic Development and Cultural Change. VIII. No. 3 : 265 - 278.

OTHER RELEVANT WORKS

Allen, W.K. 1951 The Financial Effects of Labour Turnover. Case Study No. IV. Bulletin of Industrial Psychology and Personnel Practice. VII. 1. March 1951. 3 - 12.

Barber, W.J. 1960 'Economic Rationality and Behaviour Patterns in an Underdeveloped Area : A Case Study of African Economic Behaviour in the Rhodesias'. Economic Development and Cultural Change. VIII. 3. Chicago, University of Chicago Press.

Biesheuvel, S. 1961 'Some of the Characteristics of the African Worker'. Paper read at Personnel Management Convention. South African National Institute of Personnel Research. Johannesburg.

Brodman, K. & Hellmann, L.P. 1947 'Absenteeism and Separation in Relation to Length of Employment'. Industrial Medicine. 16.5 : 219-222.

Butler, W.P. & Wickham, O.P. 1953 Labour Turnover, September 1953. Bulletin of Industrial Psychology and Personnel Practice. IX 4. Dec. 1953 : 15 - 21.

Behrend, H. 1953 'Absence and Labour Turnover in a Changing Economic Climate'. Occupational Psychology. 27.2. April 1953 : 69 - 79.

Byrt, W.J. 1951 'Why Measure Labour Turnover?' Bulletin of Industrial Psychology and Personnel Practice. VII. 3. Sept. 1951 : 11 - 20.

Byrt, W.J. & Clarke, A. 1951 (or 61) Labour Turnover in Australia (1948-1950). Bulletin of Industrial Psychology and Personnel Practice. VII 2. June 1951 (or 61) : 23 - 30.

Byrt, W.J. Dec. 1957 'Methods of Measuring Labour Turnover'. Personnel Practice Bulletin. Melbourne Dept. of Labour and National Service.

* China (Taiwan) Report of Labour Statistics. Department of Reconstruction.

Clarke, A.C. 1952 Labour Turnover 1948-1952. Bulletin of Industrial Psychology and Personnel Practice. VIII. 3. Sept. 1952 : 22 - 31.

Cook, P.S.	1951	Labour Turnover Research. The Journal of the Institute of Personnel Management. XXXIII 313. Jan. Feb. 1951.
Douglas, P.H.	1933	'Labour Turnover'. Encyclopaedia of Social Studies. Vol. VIII.
[illegible]	[illegible]	Ursachen, Auswirkungen und Reduktion des Arbeitswechsels im Betrieb. Wohlen, Argau. Meiger's Sohne A.G. (Switzerland).
France		Statistique du Travail et de la Securite. Ministère du Travail.
Hill, J.M.M. & Trist, E.L.	1953	'A Consideration of Industrial Accidents as a Means of Withdrawal from the Work Situation'. Human Relations VI.
Hill, J.M.M. & Trist, E.L.	1955	'Changes in Accidents and other Absences with Length of Service'. Human Relations VIII.
Hill, J.M.M.	1951	'A Consideration of Labour Turnover as the resultant of a quasi-stationary process'. Human Relations IV 3. 1951 : 255-261.
Hill, J.M.M.	1953	'A Note on Labour Turnover in an Iron and Steel Works'. Human Relations. VI 1. 1953 : 79 - 8[illegible]
India		Indian Labour Gazette. Ministry of Labour and Employment Bureau, especially March 1958. May 1958 and August 1958.
Italy		Mondo Economico. Supplement. 3 July 1954. Instituto per gli Studi de Economica.
Japan		Monthly Labour Statistics and Research Bulletin and Year Book of Labour Statistics. Ministry of Labour, Labour Statistics and Research Division.
Kerr, W.A.	1947	'Labour Turnover and its Correlates'. Journal of Applied Psychology. 31. 4. Aug.1947. 366-371.
Long, Joyce	1951	Labour Turnover under Full Employment. Monograph A 2. Studies in Economics and Society. University of Birmingham.
Long, J.R. & Bowyer, I.	1953	'The Influence of Earnings on the Mobility of Labour'. Yorkshire Bulletin of Economic and Social Research. 1953. 3. : 81 - 87.
Malaya	1959	Monthly Statistical Bulletin, Department of Statistics, Nov. 1959.
Metzner, H. & Mann, F.	1958	'Employee Attitudes and Absences'. Personnel Psychology. 11. 3. Autumn 1958. 393 - 402.

Mitchell, J.C.		'The Mean Labour Service Expectancy : A Suggested Measure of Labour Stability'. (Unpublished)
Marsh, Manning	1959	'Some Social and Cultural Aspects of Economic Development'. Economic Development and Social Change. VII. 2: 137.
New Zealand	1957	Report of a Study Group on Labour Turnover. Personnel Group of the New Zealand Institute of Management. November 1957.
Ngcobo, S.J.	1954	'The Response of Africans to Industrial Employment'. Race Relations Journal. XXI.
Noland, E.W.	1945	'Worker Attitudes and Industrial Absenteeism'. American Sociological Review. X : 503 - 510.
Palmer, Purpus & Stockford	1944	'Why Workers Quit'. Personnel Journal. 23 : 111 - 119.
Pearce, F.T.	1951	Financial Effects of Labour Turnover Monograph A 4. Studies in Economics & Society. University of Birmingham.
Perin-Hockers, M.	1959	L'absentéisme des travailleurs Africains et l'instabilité dans les entreprises de la région à Elizabethville 1957-1958. Université libre de Bruxelles, Institut de Sociologie Solvay, Etudes Coloniales No. 7. p. 255.
Republic of South Africa		Report on the Measurement of Employment and Labour Turnover in Manufacturing and Construction. Special Report No. 215 Bureau of Census & Statistics.
Rice, A.K. & Hill, J.M.M.	1950	'The Representation of Labour Turnover as a Social Process'. Human Relations. III 4. 1950. 349 - 372.
Sweden		Sociale Meddelanden, Statistik Information. Kungl. Socialstyrelsen.
Thomson, W.	Feb. 1950	'Canada's Semi-Annual Report of Hirings and Separations' in Employment Security Review. Washington, D.C.
U.S. Dept. of Labour Bureau of Labour Statistics	1954	'Techniques of preparing Major B.L.S. Statistical Series'. Bulletin No. 1168. Washington.
Wilson, M. Hunter	1961	Reaction to Conquest. Oxford University Press.
Woytinsky, W.S.	1942	'Three Aspects of Labour Dynamics'. Washington Committee on Social Security, Social Science Research Council, Part I.

Some Publications from the University College of Rhodesia & Nyasaland

OCCASIONAL PAPERS

Department of African Studies

1. Kingsley-Garbett, G. Growth and change in a Shona ward. 1960. 7/6
2. Bell, Mrs. E.M. Polygons: a survey of the African personnel of a Rhodesian factory. 1961. 7/6
3. Bell, Mrs. E.M. Polygons: part two: labour turnover. 1963. 7/6

Faculty of Education

1. The education of the less successful secondary school child (papers and proceedings of a Conference held in August 1962), ed. by D.G. Hawkridge, 1963. 7/6
2. The teaching of Latin in Africa (papers supplementing the proceedings of a Conference held at the College, August 1962), ed. by C.R. Whittaker and M.E. Toubkin, 1963. 7/6
3. Community development, with special reference to rural areas (papers read at a Conference organized by the Institute of Adult Education, August 1962), with an introduction by E.K. Townsend Coles, 1963. 7/6

MISCELLANEOUS PUBLICATIONS

Periodicals in the libraries of the Federation: a record of the detailed holdings of the most important learned, special and public libraries in the three territories, compiled by James Hutton, B.A., LL.B., Dipl.Lib. Loose-leaf format with lettered portfolio binding. Basic volume published in 1962.

£2. 2. 0. post free

For a full list of the publications of the College, write to:

Librarian(Publications),
University College of Rhodesia & Nyasaland,
Private Bag 167 H,
Salisbury, S. Rhodesia.