A study of

ERROR IN THE INTERVIEW

By

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PREFACE

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TWILA E. NEELY

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CHAPTER I

Introduction

Research persons and professors who are interested in social research methods have been wishing for a really concrete and practical book on the personal interview as a research technique. To fit their desires this book must give more than a theoretical discussion of research techniques. There are many theoretical discussions; they are boring to the inexperienced student and contain nothing of value to the experienced person who wants some concrete proofs for his contentions about good and bad techniques.

The book which they desire must concentrate on the accuracy of the personal interview method; it must discuss types of error which occur in it and critically evaluate interview techniques in order to make it possible to say which techniques can be used to avoid or decrease the error. Most of all, throughout the discussion every type of error must be illustrated by concrete examples from research experience. The discussion of techniques for avoiding error must be similarly illustrated. In addition to this the concrete examples must if possible, be summarized so that one can tell the degree of accuracy which can be effected when various concrete social facts are asked. The book must also tell what types of data can not be secured satisfactorily by interview. This book attempts to do exactly those things.

Part I of the book discusses errors caused by the Interviewed Person; Part II discusses errors caused by the Interviewer. As each type of error is discussed the results of it are illustrated by the presentation of statistical checks of the accuracy of data. When non-statistical data are discussed case illustrations are given. Some of these latter have been found in books by psychiatrists; others come from the personal experience of the author as an interviewer on social research studies and as a supervisor of other interviewers.

After each type of error is explained and illustrated, methods for eliminating each are given. Some of these methods have been suggested by the research organizations whose checks of accuracy of data are given here. Others are suggested by the author; most of these have been tried by her and found to be useful.

Explanations and illustrations are given of errors caused by emotional strains of the interviewed person, lack of interest or lack of knowledge on his part, prevarication by him, and subjectivity or inherent difficulty of recalling of the data. The last two make it difficult for him to report data accurately. Variation of accuracy with the interviewed person's ability to recall and to make the calculations and necessary report enters into the discussion at this point.

The discussion of errors by the interviewer includes errors due to carelessness, intentional falsification of data, lack of skill, and lack of knowledge. Errors caused by poorly phrased questions, suggestive
approaches, schedules taken from memory, and incorrect tones of the voice are
discussed. The variation of the interviewer's success with the maturity of
personality and enthusiasm of the interviewer are concretely illustrated.

The concluding chapter contains a list of the concrete types of social
information which seem most difficult to secure accurately, those moderately
difficult, and those which are relatively easy. It also lists the types
of information the accuracy of which cannot at present be judged; concrete
checks of the accuracy of these were not found.

The appendix of the book contains the full report of a study never before
published. Concrete illustrations from it are given throughout the book.
The study was made by the author for the Yale Law School and is a check of
the accuracy of data secured by personal interview concerning the injuries,
duration of disability and financial losses of persons injured in motor
vehicle accidents. Information given by the injured persons was checked
against information secured from hospitals, doctors, schools, and employers.
The Yale study marks the beginning of the author's active interest in
securing concrete statistical checks of the accuracy of interview data.
Before that study she had two years of experience in interviewing, seventeen
months of this being under the watchful eye of the U.S. Children's Bureau.
Since the Yale study she has supervised cost of living studies for the
Federal Government. Illustrations from all of these experiences will be
used in order to make the interview emerge as a more concrete and skillful
research technique.

***

Definitions and a few preliminary explanations must be given before
entering the main discussion.

It is necessary to define the use of the term "personal interview." The
center of interest in this study is the accuracy of data secured by
the personal interview method when the data are secured for social research
purposes alone. For this reason it is important to define the term personal
interview as it is used in social research as distinguished from its use
for other purposes. The distinguishing feature of the personal interview
as a research situation is that it represents a pre-planned effort to se­
cure tabulable, i.e., accurately generalizable information on one or more
topics. The only statistical checks of the accuracy of interview data
which will be used in the book will be checks made in studies whose sole
purpose was to secure such information.

A discussion of other types of interview will reveal clearly the
differences between the research interview and other interviews, and the
reason why this limitation is made:

The personal interview is used by such persons as the social worker,
psychiatrist, and newspaper man. The news man secures information for news
and not for research study. The others use it for influencing action and
changing attitudes; some use it for imparting information. None of these
use it for the sole purpose of securing information as a basis for study,
as does the research person. The fact that the information is being secured for a definite purpose which may benefit the interviewed person, frequently affects his answers. His answers are often biased to a greater degree in such interviews than in research interviews which will not benefit him personally. In addition to this the material obtained for other than research purposes may be biased by the interviewer because the information required by him is less than the amount which would be sufficient for research purposes. The truth of these statements is revealed in the chapters which follow.

Because of this probable difference in the accuracy of data between the research interview and interviews with more definite purposes, social agencies and mental hygiene clinics were not visited by the author for the purpose of securing accuracy checks. Social agencies should have many checks because they know their clients may deceive them; they rely less upon the word of the interviewed person than do research people.

Despite the fact that statistical checks of accuracy of data have not been taken from social agencies and psychiatrists, case-histories by psychiatrists have been used as illustrations of types of error when no other illustrations of specific errors could be found. This is allowable because the same types of error occur. They merely occur in different degrees.

The terms used in the discussion can be defined by saying that the printed sheet upon which questions to be asked in the interview are written is called a "schedule". The paper upon which the questions are printed, which is mailed or given to persons to fill out, is a questionnaire. The schedule is filled out by the interviewer, the questionnaire by the person who is answering the questions. Questions printed on a schedule are asked orally; those printed on a questionnaire are not.

The discussion which follows will be limited also to errors in reporting external facts and personal experiences rather than attitudes, feelings, opinions and ideas. Since research methods and techniques are different when attitudes and feelings are being studied, a discussion of errors in such data would have to be carried on in a different way. The author has done no research in this field and is not qualified to discuss methods of research in it. As a matter of fact psychologists, especially psychiatrists who have both psychological and medical training, are better qualified to do research in it than are the sociologists.

The external facts which are to be discussed include personal experiences of the interviewed person and facts about him. They include also facts about other members of his family and facts about family life. They include also social facts outside of his family such as the number of workers in his mill, the number of people living in his town. Most of the facts discussed here are concerned with the interviewed person and his family.

Within these limitations all published checks of the accuracy of interview data (which the author has been able to find) have been used as illustrations of the discussion. Illustrations from one questionnaire study have also been used because illustrations of certain types of error could be found only in this study. The errors were accentuated by but not peculiar only to the questionnaire method.
Social, psychological, educational, and general periodical indexes and journals were consulted. A detailed search was made for data in research studies published in book form in social, psychological and economic fields. The titles to the volumes did not tell that they contained accuracy checks. One had to glance over as many studies as possible and look for materials.

Letters were written to federal government bureaus and agricultural experiment stations to ask what checks of accuracy they had made and whether they had any unpublished data which could be made available to the author. Letters were also written and visits made to prominent research persons.

Educational and legal journals were only partially read because the literature on the subject of the personal interview and the psychology of testimony is immense and it was neither possible nor worth while to cover it. Bingham and Moore covered these in their book, "How to Interview." Illustrations of types of error have been found elsewhere and if any checks of the accuracy of data have been missed in these journals they are probably checks of data secured for other than research purposes, and so are not applicable to the discussion here.

Psychological periodicals were read for the purpose of finding what experiments were being made on the psychology of testimony and on retention and recall. The information was almost entirely limited to American journals. A list of articles from American psychological journals is given at the end of the book. It will be helpful to social research persons who want to know how psychologists conduct experiments in this field.

As a final preliminary to the discussion which follows it will be well to outline the point of view which is taken in this book. This book is a discussion of errors made by people. There are two sets of people: the interviewed person and the interviewer. They influence one another greatly during the interview. In fact the person interviewed, the interviewer, and the method of approach are so intertwined that they all react on one another, a variation in one usually making necessary a variation in the others. The reason for this is that interviewers vary in their ability to secure information, according to their skill, training, and temperaments. Some interviewers are much more successful than others, and some interviewers are successful with certain people when others are not. For this reason the accuracy of interview data depends not only upon the abilities and habits of recall and report of the interviewed person. Inaccurate data can be secured even from the most capable reporters if unskillful interviewers and incorrect methods are used, or if the reporter dislikes the person who is sent to interview him.

When these things are realized one sees the interviewed person and the interviewer as human beings. And because of these interactions the interview method may be used successfully only when they are seen as such and are treated accordingly by the persons who are planning and conducting the survey. Since failure to do this breeds inaccuracy of data they must be viewed in this manner in this discussion. The interviewed person and the interviewer. How do they behave in an interview? What do they think of one another and of the questions which are being asked? And how do these thoughts affect their answers?
PART I

ERRORS OF THE INTERVIEWED PERSON
CHAPTER II

Intentional Prevarication or Withholding of Facts by the Interviewed Person

It is the purpose of this discussion to show the reasons why interviewed persons may withhold or distort facts and to suggest methods for attempting to get at the truth.

The usual reasons for distortion by the interviewed person are seven in number:

1. Possible benefits to be derived from such distortion of facts.
2. Pride.
3. Interviewed person regards the questions as too personal to be answered.
4. Fear of employer.
5. Distrust of interviewer.
6. Presence at the interview of a third person from whom the interviewed person wishes to withhold the facts.
7. The carry-over of a distortive emotional effect from an immediately preceding situation which may be totally irrelevant to the interview save for some element that serves as a bridge to the new situation.

These will be discussed in order:

1. Possible benefits to be derived from such distortions of fact.

These benefits may be either real or imagined. The author encountered imagined benefits in a study of persons injured in motor vehicle accidents in New Haven, Connecticut. Despite the attempts to make injured persons realize that their answers would not help them to recover accident compensation, some of the interviewed persons thought it would. Their replies were to some extent influenced by this. Everyone was willing to tell how long they were in the hospital or out of school, but some people refused to tell or said they did not know the amount of their doctor and hospital bills. A careful check against the hospital records and records of the doctor showed that they had been told the amount of the bills.

Interviewed persons who wished to exaggerate length of time under doctor's care said they were still going to him after the care had been completed.

Persons who wished to make a good case for themselves did not refuse to tell how long they had been out of work and only three out of a total of forty-nine refused to give their "average pay per week." However three persons refused to tell whether or not they had lost their pay during absence. Ten persons claimed to have lost their pay; but their employers, when the matter was subsequently checked, said they had lost no pay. The
interviewer was never allowed to read the employer's records herself; the employers, therefore, could have been lying. In eight of the eleven greatest discrepancies on "total lost pay," however, statements made in the interview seem to indicate clearly that the injured person was attempting to mislead the investigator. The median average "Total Lost Pay" as given by the person injured was forty dollars; as given by employers was ten dollars. The following table shows how different is the discrepancy from others in the same study:

<table>
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<th>Median Averages as Based on Replies Given by the Family and by the Outside Source</th>
<th>Median Average</th>
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<tbody>
<tr>
<td></td>
<td>Family</td>
</tr>
<tr>
<td>Length of time in hospital</td>
<td>9 days - 8 days</td>
</tr>
<tr>
<td>Time under doctor</td>
<td>9 days - 8 days</td>
</tr>
<tr>
<td>Time out of school</td>
<td>5 days - 4½ days</td>
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<tr>
<td>Time out of work</td>
<td>2 weeks - 1 week</td>
</tr>
<tr>
<td>Amount of hospital bill</td>
<td>$34.88 - $32.75</td>
</tr>
<tr>
<td>Amount of doctor bill</td>
<td>$19 - $16</td>
</tr>
<tr>
<td>Average pay per week</td>
<td>$21 - $21</td>
</tr>
<tr>
<td>Total lost pay</td>
<td>$40 - $10</td>
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</tbody>
</table>

This tendency to falsify employment information is especially common when the interviewed person thinks he may receive a job or charity as the result. Testimony as to this is given in Alice W. Sollenberger's book, "1000 Homeless Men," published in 1911.1 The men were applicants at the Chicago Bureau of Charities for assistance during the years 1900-1903 inclusive. The histories of the men were traced both before and for some time after their application for charitable help. The personal history stories told by the men were checked for accuracy in 874 cases; 171 were false and 703 true. It was impossible to verify 126 other cases.2 Deceptions about work history occurred so frequently as to warrant the conclusion that statistics in regard to trades of homeless men cannot be depended upon as accurate unless the statements have been verified.3 Tendencies to falsify employment information are also frequent when persons are already receiving relief and may lose it if they are known to be supplementing the relief by earnings.

In some cost of living studies there also may be a tendency to falsify statements because of the benefits to be derived. People are not likely to see personal benefits in government studies but in studies made by individual employers exaggerations are easily understood. Whenever people are tempted to falsify facts for purposes of personal gain the facts should be checked for accuracy against sources outside of the family.

1. N. Y., Charities Publication Committee.
2. Pride

Personal Pride or pride of family may result in falsification of data. Several examples of this may be given: People are very reticent about admitting that they have received charity. In 1932 a study of wage earning families was made in Columbus, Ohio, for the purpose of seeing the effects of depression unemployment on the finances of such families. Members of the families showed a hesitancy to divulge financial details and the interviewers thought some of them suppressed the facts most humiliating to themselves. Because of this one hundred schedules chosen at random were cleared through social agency records for the purpose of discovering how many families receiving city relief had concealed the fact.\(^4\) The check up showed that one out of every nine receiving city relief concealed it.\(^5\)

Examples of exaggeration of educational achievements have also been found. In the study of "The Negro's Church,"\(^6\) made by B. E. Mays and J. W. Nicholson for the Institute of Social and Religious Research, a check was made of the accuracy of answers given by negro ministers with regard to their education.\(^7\) Among 591 city pastors 155 claimed B. A. degrees; a check against the records of college registrars showed that only 118 of them actually had received that degree. One hundred claimed B. D. degrees and seventy-nine actually had received that degree.

In a study of women delinquents in New York State a similar tendency toward exaggeration was evident among the women with whom the interviewer could not establish satisfactory personal relationships. The group of women were interviewed in the state prison, reformatory, workhouse, penitentiary and Magdalen home. The work house group answers about schooling were the least satisfactory; many of the first statements given by them were so unreliable that repeated efforts to locate school records were unsuccessful. Many had forgotten the address of their last school and then exaggerated their attainments. Among the younger women repeated interviews were held and scarcely a case refused information.\(^8\) The mean grade completed in school by the women whose records were verified was 5.3 on the basis of the women's statements alone and 4.6 on the basis of verified record. A tendency toward exaggeration was therefore evident. This exaggeration did not affect the mean average grade completed in school in this particular group because school completion data of women with lowest amount of schooling and of foreigners were hard to verify. They brought the average of the whole group down to that based on school records of verified cases.\(^9\)

People dislike to admit that members of the family or ancestors were mentally deficient:

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\(^4\) Persons in charge of the study felt that the item of information most likely to be concealed was the family dependence upon public relief.
\(^5\) Ohio Commission on Unemployment Insurance, Report, 1933, Part II, pp. 72, 83.
\(^6\) N. Y., Institute of Soc. and Religious Research, 1933.
\(^7\) Op. cit., p. 43.
\(^9\) Ibid., P. 252.
"It is not sufficient to ask the general question, 'Has any member of the family been mentally deficient, insane or nervous?' A great many persons will answer in the negative, whereas a detailed inquiry will often bring out one or more instances of psychopathology. Inquire for symptoms rather than diagnoses."\textsuperscript{10}

Everyone recognizes the tendency to falsify age. Census Bureau Bulletin No. 13, (1901) "A Discussion of Age Statistics says that, "The tendency to report ages as less than the truth is strongest in the negro population, stronger in the foreign-born white than in native white population, and is stronger with females than with males."\textsuperscript{11} Table IC on page twelve of the bulletin gives a measure of the inaccuracy of reported ages for different classes of population. The proportion of persons of unknown age is largest for the colored population and smallest for the native white; this is true of both sexes. Persons of advanced years are liable to overstate their ages.\textsuperscript{12} The number of centenarians in the census returns is grossly exaggerated, this exaggeration being especially marked in the case of the more illiterate classes.\textsuperscript{13}

It seems that pride can produce very false data if not checked by skillful interviewing. The personality of the interviewer is the most important factor in preventing this.

3. Personal Questions

Some questions are so personal that persons hesitate to answer them. Most investigators agree that it is very difficult to secure accurate data about savings, money borrowed or loaned, and investments. An example of such reticence is contained in the Social Science Research Council's publication on "Research Methods and Procedures in Agricultural Economics," Volume I (1928). Agricultural experiment stations listed the following as questions which were definite in type but did not work out well because they were too personal in nature:

- Amount of interest payments made on land contracts or mortgages, amount of the payments made on the principal of the contracts, amount of cash on hand or in deposit in the bank.

On the first question in one study about 40% of the persons asked gave the sums to the nearest dollar, but only half of the remainder were willing to admit that they made no interest payments. They either evaded the question, indicated by their manner that they did not want to answer it or made an unreasonable statement. On the second question the results were even less satisfactory. On the third question about 80% of the people answered it definitely and the rest evaded.\textsuperscript{14}

\textsuperscript{12} Op. cit., p. 16.
\textsuperscript{14} Op. cit., P. 86.
People are much more reticent about these questions than those about earnings. If people falsify earnings it is usually for another reason than the feeling that they are too personal to reveal. The personality and trustworthiness of the interviewer are the most important factors in securing correct data on these subjects.

Questions concerning sex subjects and practices also are regarded as very personal. Psychiatrists disagree to some extent concerning the extent of this difficulty. Some say that direct questions do not bring true answers and that sexual facts can only be inferred. Probably such inferences would be as incorrect as the direct answers. In medical cases Dr. David M. Levy has found that responses concerning anatomic variations, sex differences, knowledge of sex, sex practices, etc., can be secured during the physical examination, which may not be forthcoming where the patient is fully clothed. Six psychiatrists observed his method and said that the productivity was greatly enhanced by it.15

Direct answers to some embarrassing questions may also be secured by asking round-about questions. For example, an interviewed person may be embarrassed if asked how many baths a week he takes. The subject may be introduced, however, by saying that some eminent doctor claims that too many baths are not good for one's health. Then the interviewed person may be asked how he feels about it and what his experience is. During the ensuing discussion it will probably be possible to secure accurate information concerning the frequency with which baths are taken by the interviewed person.16

Another method for securing answers to embarrassing questions (especially those concerning sex) is that of assuring the anonymity of the answers. In her study of "Factors in the Sex Life of Twenty-two Hundred Women,"17 Katherine B. Davis used questionnaires because these assured a complete anonymity which cannot be secured in the personal interview. However in Appendix II of her book she compares sexual data secured by questionnaire with that secured by interview. She concludes that "objective answers can be taken not far off their face value, but the subjective answers must be taken with more reservation." And that the method used by Hamilton in his study of 100 marriages, which combined the questionnaire, personal interview, and psychoanalytic method, appears to give promise of being more reliable than either the ordinary interview or the questionnaire.

Obviously this is perhaps the most difficult field of research in the social sciences. In his book on "An Introduction to Objective Psychopathology"18 Doctor G. V. Hamilton gives an excellent example of this difficulty:19

"When she was asked to tell her story in her own way she proceeded, as these patients usually do, to construct a eulogistic account of her merits, martyrdoms and great mental suffering. She never really got ahead with her story, and never really admitted a single personal imperfection...."

"She proved to be one of the most inaccessible patients of my experience, and it was impossible to hold her to an account of anything but her rare soulfulness...."

"The next day came a letter, expressing a patient tolerance of my failure to understand her, but repudiating me and my works. She had decided to go over to Christian Science, which had proved the falsity of the 'claims' implied in my talk."

"I had expected a revolt, and replied to her letter in a way to make her feel than any course but that of absolutely willingness to permit unconscious forces to flash into her mind whatever she was "wound up" to have flashed into her mind would be cowardly. Several weeks passed,...when I received a letter from her, announcing her recovery."

"...I do not believe that she ever gained any real insight into the mechanisms involved in her illness."

4. Fear of an employer

Working people have been known to withhold information because of this fear. On a cost of living study supervised by the author all of the employees of a certain company refused to answer questions. Becoming suspicious, the supervisor sent her most expert interviewer to see one family. This interviewer was a former lawyer about fifty years of age--distinguished looking and charming of personality. He returned with a complete schedule obtained when he promised that no one except his boss and himself would know that the information had been given. The story was as follows:

"My employer said that he would fire any persons who answered the questions of you government people. Everyone was afraid to answer. I was too when you sent out that very young man; I was afraid that he would gos­sip about it. But you are an older man and I think you know enough to keep your mouth shut."

Since this leads to our next source of error the discussion will be made under that.

5. Distrust of the Interviewer

Distrust of the interviewer seems to result most often from the youthful appearance and immature manner of the interviewer. Other cases similar to the one just given have been encountered. In fact the author knows a

20. During the depression of 1929-1935 exceptionally capable persons could be hired either on or off the relief rolls.
twenty-two year old college graduate who had passed the Civil Service examination for Junior Industrial Economist and yet was very unsuccessful in the field. During his short career as interviewer he was never able to secure information accurate enough to enable him to balance his schedule within five per cent. Older agents had to complete his schedules. Though this is not true of all persons of that age, in selecting employees a supervisor must be careful that the persons are mature in thought and appearance.

These examples in which one interviewer succeeded when another failed show one of the most useful techniques of the field supervisor. There are occasions when even a good interviewer cannot secure part of the required information. A careful discussion of the case will show what sort of an interviewer would be successful. An example of this technique can be given:

A middle-aged woman was sent to secure cost of living information from a family composed of two middle-aged women and a twenty-one year old man. Though the women replied readily the man absolutely refused: "You got their information easily but you can't have mine." She could not change his mind. A good-looking twenty-one year old man was sent out and secured the information easily.

The interviewers sent out on such cases are always the expert interviewers of the staff. The most important thing is to send a mature looking and reliable person with a pleasing personality and considerable skill in technique of interviewing.

6. Presence of a person in the interview from whom the interviewed person wishes to withhold the facts.

Lies or the withholding of facts may be caused by the presence of unwelcome persons in the interview, or by secrets of one member of a family against another. Examples will be given:

a. A fifteen year old daughter was present at the first interview of a certain family. The parents said they had bought a new piano during the schedule year and had paid $500 for it. On a return visit when the daughter was not present the interviewer that they had lied to prevent their child from knowing that her piano was a second hand one. They had paid only $200 for it, the other $300 being in the savings bank. This information changed the pattern of spending and saving of this family considerably.

b. Many cases are found in which either the husband or wife lies because he or she is doing something with money which he wishes to keep from the other. In such cases the person lies even though the other person is not present at the first interview. In most cases they cannot lie convincingly enough to balance the schedule. A return visit is made when both husband and wife are present. This visit does not balance the schedule. Then the interviewer meets the husband at work and says, "I have no personal interest in what you do with your money but I want the truth so I can balance the schedule. Help me to do that and I'll forget what you tell me." Such a procedure evokes a confession that the man earns five dollars more per week than he told his wife but he gambles with it. She doesn't approve of gambling. Such secrets can be secured from either husband or wife if they are sure the secret will not be revealed.
Since intra-family matters so complicate the information it can be seen readily that interviews should never be held when neighbors or friends are present. The presence of a person who accompanies the interviewer equally jeopardizes the accuracy of the data. If a word-for-word record of the conversation is needed the interview should be made where a recording instrument can be used.

Interviews should be made as private as possible because in answering questions the interviewed person is not only reacting to the verbal stimuli of the question. He is reacting to everything in the interview situation. He even reacts to the physical set-up of the room in which the interview is made. (It will be recalled that Dr. G. V. Hamilton regarded the physical set-up of the interview so important in his study of 100 marriages, that he tied the interviewed person's chair to a door to prevent him from moving closer to the investigator).

Since these things may distort the truth of answers regarding even simple facts like age and education, they must be taken into account. The use of more than one visit to the family, of private conversations with individual members, and the careful fitting of the personality, sex, and age of the interviewer to difficult family situations are among the most important techniques in an interviewer's bag of tricks. Only by these techniques and by hiring intelligent and reliable-looking interviewers can one be at all expectant that reasonably true information is being secured.

7. The carry over of a distortive emotional effect from an immediately preceding situation which may be totally irrelevant to the interview save for some element that serves as a bridge to the new situation.

Emotions on the part of the interviewed person may result either in prevarication or in complete refusal to grant an interview. Interviewers often approach people who seem to be irritable; if they feel sure that they could not secure satisfactory information under the circumstances they postpone the interview until a later day when the interviewed person is in good spirits. The same procedure is sometimes used if the interviewed person becomes irritable in the middle of a long interview.

A less frequently encountered reason for prevarication or refusal is the opposition because of some previous experience of the prospective interviewee which has prejudiced him (either against all information giving or against the specific organization which the interviewer represents). Such opposition can sometimes be overcome and it is important that it be overcome to a great enough extent to prevent it from spreading to the neighbors of such persons. Situations of the types described here are encountered by skilled as well as unskilled interviewers.
CHAPTER III

Distortion of Facts by the Interviewed Person, due to the Influence of Interest and Emotion on Memory

Such errors are caused by factors which either make a person forget certain facts entirely or make him recall them incorrectly. This faulty memory may be caused by two things:

1. By events (either previous to or inherent in the immediate interview situation) which produce a strong emotional effect upon the interviewed person.

2. By reason of the psychological fact that events which do not interest a person are more easily forgotten than interesting facts.

These will be illustrated and discussed.

1. Events which produce a strong emotional effect upon the interviewed person.

Thoughts and activities are dominated to a great extent by emotional forces. Of many of these we are scarcely conscious. Emotional forces throw into the stream of consciousness ideas belonging to them, reinforce currents in harmony with them, but inhibit currents incompatible with them. The result of the strong influence of emotion upon thought and action is bias and prejudice which are difficult to control. Dr. Bernard Hart explains this in his "Psychopathology."

Bias produced by strong emotion is encountered in the personal interview. It is difficult to overcome because persons are unconscious of it. Frequently sources other than the person interviewed must be consulted as a check on the accuracy of his memory. If this is not possible painstaking care must be taken to help the interviewed person to overcome it. Examples of this bias and of methods of handling it can be given:

The United States Bureau of Crop and Livestock Estimates has discussed this form of bias:

"When the farmer's chief source of income is from one product he is likely to be ultra-conservative in his estimate of yield per acre or of crop conditions. This bias occurs every year in varying degrees and it is not safe to assume that it is constant; it is especially important in years of heavy production when prices are very low and there is general dissatisfaction among the farmers. This kind of bias might be called price conscious bias. In the fall of 1926 the price of corn was low and there was considerable newspaper publicity concerning large crops and low

prices. The yield corn reports from Iowa were fully two bushels below the yield of corn reported to the assessor in the late winter and early spring.\textsuperscript{2}

Farmer bias due to emotion is also noticeable if there has been a freeze of hail storm that has caused a serious injury to a crop. The reports frequently over-estimate the damage. If weather conditions are particularly discouraging the returns are likely to reflect this temporary discouragement. Field travel and personal contacts are essential if weather bias is to be allowed for accurately.\textsuperscript{3}

The memory of periods of unemployment or of the amount of earnings are also seriously affected by emotion. Worry over long periods of unemployment results in the overestimation of unemployment and the underestimation of earnings. When large numbers of unemployed persons are being interviewed this fact must be taken into consideration. If possible the information given should be checked against a record outside of the family.

Even more serious than this is the tendency completely to forget incidents which the mind considers shameful or fearful. Excellent examples of this type of forgetting are found in the book on "An Introduction to Objective Psychopathology," by Dr. G. V. Hamilton. This psychiatrist attempted to free certain nervous patients from fears or shames which appeared to be the cause of their illness. He frequently found that the memory of the events which caused the nervousness had completely faded—or as the psychoanalyst would say, they had been driven deep into the unconscious by the censor. Only perseverance enabled the doctor to bore into the past of the patient to the extent necessary to revive the memory of the events, as shown in the following cases:\textsuperscript{4}

**Nervous Case. No. 1. Female. Fourth Decade:**

"Her memory of her wild 'teens seemed to fade, and left her somewhat as does the memory of any shameful event which one instinctively bars from consciousness. There was never any true amnesia for the above-described events. When she had finished her account she remarked naively, 'I don't see how all that could affect me now. I haven't thought of it in years."

**Nervous Case. No. 7. Male. Fourth Decade:**\textsuperscript{5}

"The patient's initial account of his experiences disclosed the unusual inability to recall, without important omission, the more shameful events of his boyhood swimming days."

**Nervous Case. No. 90. Male. Fifth Decade:**\textsuperscript{6}

"The patient had no explanation to offer for his claustrophobia and none appeared in a minutely detailed account of his

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\textsuperscript{2} Social Science Research Council, "Research Methods and Procedures in Agricultural Economics," Vol. I., P. 128-129.
\textsuperscript{3} Ibid., P. 130
\textsuperscript{4} Ibid., P. 29-30
\textsuperscript{5} Ibid., P. 49
life. He seemed to be on good terms with his wife, who verified his account of their sexual and other relations to one another. He was instructed to spend a half hour lying on a couch in a dimly lighted room on any evening when no guests were expected and after the children were settled for the night. His wife whose presence was always reassuring to him, was to hold his hand while he was to practice non-resistance to any flow of reminiscences which might be initiated by a contemplation of his claustrophobia panics. He was instructed to avoid all efforts to explain his panics, and all conscious direction of his successive awareness.

"On my return to the office a few days later, after an absence, the patient called me on the telephone and asked for an immediate appointment and soon appeared in a state of enthusiastic excitement, announcing that he was cured...."

"At the first session on the couch there came into his mind the memory of an event which occurred when he was about eight years old. He made his first visit to the country, where he spent several days with an uncle who was a farmer.... They chased him into an upstairs bedroom and threw the animal after him. Then they locked him in the room with the live wild animal. The patient was utterly terrified, and made frantic but ineffectual efforts to escape from the room...."

"The patient said that as the memory of this episode came into his consciousness he experienced a lively emotion of fear."

Errors due to these emotional tendencies are perhaps the most serious ones which the social research person has to encounter. They are certainly the most insidious because they are so hard to discover and to eliminate. In handling the types of emotionally loaded questions where these are likely to appear, special attention should be paid to the form of the question. Good interviewing goes hand in hand with psychologically adroit question phrasing.

2. The interviewed person may also err in his statements because the facts asked for were of minor interest to him at the time of occurrence. Just as events which produce a strong emotional effect upon a person may seriously affect the recollection of these events, events which make little impression upon the observer may drop out in recall or be recalled very inadequately. ".... The impressive facts remain, less impressive facts disappear and the whole story is rounded out. When any emotional bias adds distortion the result in memory may be very wide of the original events."

The truth of these statements can be proved by reference to social research studies. State Agricultural Experiment Stations have observed

6. Ibid., P. 126-127.
Questions can be asked calling for definite answers which are very nearly correct: 'Amount of first payment on his farm by a settler in the cut-over region of North Carolina.' 'Amount of cash on hand at the time of the settlement.' These represent events which stand out very clearly in the memories of persons involved.\[6\]

The U. S. Bureau of Crop and Livestock Estimates has made a similar comment in the Research Council report:

"Memory Bias is much greater, however, in items of minor importance or items which change materially from one time to another."\[9\]

The Illinois Insurance Commission report of 1919 also emphasises the importance of the "interest" with which an event is regarded. Investigators who interviewed 3600 wage-earning families in Chicago concluded that items of cost of sickness, dispensary and hospital bills were "quite correct because of the attention in the family economy" which is given to these unforeseen expenditures.

The author came to a similar conclusion in her Yale Law School study of persons injured in motor vehicle accidents.\[10\] In this study in only 42.8 percent of the school cases did the mother's statement of "time out of school" exactly agree with that in the school record. The two statements agreed within 20 percent in only 52.3 percent of the school cases. It seems logical to believe that the "length of time lost from school" would not impress itself upon the mind as definitely as the length of time a person lost from his job. This is true because "time out of work" frequently means lost pay. In the Yale study employer statements and the statement of the injured person agreed within 20 percent in only 54 percent of the cases. However information about "time out of work" would have been quite accurate if persons had been willing to tell the truth. The questions were asked soon after the accident.

"Length of time out of school" was also less definitely recalled than "length of time in the hospital" because for most people hospitalization is an unusual event. In 90 percent of the hospital cases the hospital record and the injured person's report agreed within 20 percent. They agreed within 10 percent in 75 percent of the cases. This was a much closer agreement than on the school question. Since in the Yale study there was no evidence of conscious attempts to lie about the length of time out of school, inability to recall this was probably the cause of the low percentage of accurate replies. Though the median averages based on the school and home reports agreed closely in this study the minor part which "time out of school"

10. Reported in Appendix A.
school" plays in family life makes this question a dangerous one to ask.\(^{11}\)

The cost of medicine bought for the injured person was another difficult question in the Yale study. Thirty-eight out of ninety-nine persons who bought medicine could give no approximation of its cost. They had no idea and though pressed for an estimate, refused to give one. Thirty-one people estimated the cost. Thirty-one people named the kind, amount and price of each medicine bought. While only one person who named the exact amounts and prices gave a report of over six dollars expenditure for medicine, thirteen of the persons who estimated the amount spent gave the amount as over six dollars. Eighteen persons who remembered prices spent less than one dollar while none of the estimates were as low as this. In fact eight estimates were between ten dollars and fifteen dollars and three were over twenty-five dollars. Though the injuries of the injured persons who did not recall the amount spent were more serious than the others, a careful study of the cases shows that this fact does not account for such a difference in the amount of medicine bought.

The author feels very certain that information secured by interview on this subject is practically worthless. Even in poor families who are compelled to watch how they spend their money, medicine is less easily recalled than expenditures for clothing, food or carfare because it is less frequently bought and is bought in small units. It is less easily estimated than cost of soap or wash powders because it is not purchased at regular intervals. It has none of the features which make for correct recall.

This question of cost of medicine is representative of a type of facts about family life which can be secured from no source outside of the family and yet are relatively of so much less interest to the family than other facts that no member of the family can recall them accurately. When such information is needed for research purposes the only accurate way of securing it is to have the family keep a day-to-day written account of the facts. If these accounts are well planned and carefully supervised satisfactory data can be secured.

Enough illustrations have been given to show clearly the fact that events which are of minor importance to an observer or participator are remembered less accurately than events in which he is interested. Two statements may be added at this point. The first is of a fact which the psychologists Conrad and Jones have found to be true in their experiments

\(^{11}\) There are variations in the accuracy of recall of dates just as there are of periods of time. Bingham and Moore once investigated the attitude of employees of two paper mills toward the company plan of guaranteeing stable employment the year round. "When asked "When did you come under the plan?" 43 per cent of the employees were in error as much as one year, and 57 per cent of them were correct within one year. This plan had been adopted seven years before the investigation by Bingham and Moore. Then the twenty-two employees who had not yet come under this plan were interviewed, however, every one of them gave correctly the year and day when they would be allowed to come under the plan. This was an important date to them. ("How to Interview," N. Y. C., Harper, 1931, 228-229.)
with the recall of the content of motion pictures. These experimenters found that questions on significant content were not in these films remembered better than those on less essential or quite incidental questions. The reason for this was that the recall value seemed to depend almost wholly upon interest factors and appeal—interest either in the specific item or in the general context in which the item occurs. Incidental items related to a person's personal orientations were more accurately recalled than significant items in which he was not interested.

Another important fact on this subject is that not only do individuals differ in recall according to their interests, but that there are also characteristic differences between the sexes in this matter. Psychologists have made experiments which show this. They have discovered that the differences which exist are culturally determined ones and do not demonstrate differences in such a genetic trait as "power to recall." They have also discovered that there is no general advantage for either sex group in this matter; there is only superiority for certain materials. The following statements may be made about recall by males and by females:

a. The testimony of women is likely to be less free from suggestion than that of men.

b. Women are found to remember pleasant things longer and to forget more of the unpleasant ones than men do. Both men and women, however, forget unpleasant things more easily than pleasant ones.

c. Men seem to be superior in answering questions involving numbers except in questions about things in which women are particularly interested.

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14. This complicates social research considerably. In their interviews with textile workers during a textile strike Bingham and Moore found that only 55 per cent of the strikers could state the date when the notice of the reduction of wages was posted, though they were still on strike and this notice had precipitated the strike. It was easy to recall because it was the Monday after Easter. These investigators also discovered that few employees knew accurately the number of workers in the mill where they worked. ("How to Interview," N. Y. C, Harper, 1931.)

15. This latter statement is made by Allen H. Moore on the basis of a survey of 26 controlled experiments in the field of memory recall. J. Soc. Psych., VI, Nov. 1935, 445, "The Factor of Sex in Testimonial Accuracy."


d. The testimony of men seems to be superior to that of women in matters of masculine exploits such as conquests and pioneering. It also seems (at least among college students) to be somewhat superior to that of women in the recall of events concerning sports, aviation, murders, national affairs and science. Since men spend more time, when talking among themselves, in discussing money, business and sports than do women, one would expect them to surpass women in their ability to recall matters concerning money and business as well as sports. Their duties and activities are connected more directly with these than are the activities and duties of many women.

e. The testimony of women is superior to that of men in the recall of facts concerning romantic, tender or pathetic episodes, and their

in the midst of a highly social, somewhat romantic portion of the picture. The number recalled (cost of a baseball glove) was revealed during an intimate conversation between lovers. The females recalled it for this reason and not because of their interest in baseball. (P. 145).

In these experiments reports on the content of three movies were obtained from 76 persons -- 353 adolescents (10-17 years of age) and 393 adults (18-54 years of age). Tests of accuracy of memory were given immediately after showing of the film and again one week later. On the subject matter of each picture tests were made consisting 40 to 80 completion and multiple choice items. The questions dealt with verbal as well as pictorial material and with incidental episodes and atmosphere as well as with direct continuity. Each reel was systematically covered, the final test being edited by a group of psychologists who had studied the film in experimental reviews. (pp. 433-434).

18. This has been pointed out by Conrad and Jones. The first film which they used was a tale of masculine exploits. Tests results failed to show a single case of female superiority in score, either among adolescents or adults. (P. 145.)

19. This was noted by Elon H. Moore in his experiments on the recognition of names and items which had occupied headline space in newspapers in recent years. In the group of college students tested by him the recall by women of items connected with sports and murders was only about two-thirds as efficient as that of men. For items about national affairs, aviation or science their relative efficiency was less than one-half as great as that of the male students. (J. Soc. Psych., VI, Nov., 1935, 485-489).


21. Conrad and Jones found this to be true in their motion picture experiments. Women and girls recalled the incidents of the second film (a typical romantic drama with a heroine and love story) much better than they did the film which dealt exclusively with masculine exploits. (J. Soc. Psych., 1931: II: P. 145.)
recall of newspaper stories involving scandal and notoriety is equal to that of men. Perhaps these facts may be explained by saying that women are very much interested in personal relationships, the intimate affairs of life, personal attractiveness and the aesthetic side of life. Experiments in the field of sex differences show that they differ from men in this way. Though these interests probably arise from an interest in sexual matters, however, women are not more interested in sex than men. They merely express their interest less openly. Experiments by Professor Symonds of Columbia University lead him to believe that men show a greater interest in sex adjustments than do women.

Each sex excels in answering questions touching its own peculiar interests or training and its own characteristic activities and duties. Since the duties of various members of families differ, it is obvious that some members may recall things correctly which are recalled very imperfectly by other members. It is important for this reason, that in securing information interviewers should approach the member of the family who knows the most about the question under consideration. Errors caused by failure to consider the varying points of view and interests of members of the family will be discussed in the next chapter.

Before going on to the next chapter two statements of caution should be made concerning sex differences in recall. First, in a different type of culture and stage of civilization the interests of the two sexes might be very different from those in our own; certainly the role of the male and female and their characteristic duties would be likely to differ from our own. These differences might render untrue the findings of the psychological experiments which have been quoted here.

Second, the differentiation of interest between the sexes seems to reach its height in late adolescence, when men and women have matured to the maximum and the process of mating is beginning to be the main concern. In the adult period of life differences become less and probably vanish as senescence is reached. Since duties and responsibilities of the two sexes usually remain different throughout life the lessening of the difference in their interests is not likely to make them equally capable of giving correct information on subjects which concern one sex more directly than the other. It is a good idea, however, to keep this in mind.

23. Teacher's College Record, Nov., 1936, 144-151, Symonds, P. M., "Life Problems and Interests of Adults."
24. Teacher's College Record, Nov., 1936, 144-151.
   Teacher's College Record, Nov., 1936, 144-151, Symonds, P. M., "Life Problems and Interests of Adults."
CHAPTER IV

Errors by the Interviewed Person Due to Lack of Information: he did not know enough about the facts to answer questions correctly

There are three causes for errors of this type:

1. The interviewed person may be deficient in education and experience. This results either in inability to report in the terms and detail required or in lack of understanding of the facts.
2. He may not be in a position to know the facts.
3. He may not have been interested enough in the facts at their occurrence to be able to recall them clearly.

The second and third types will be discussed first.

PART I

An illustration of lack of knowledge of the facts can be given from a study in which questionnaire answers of freshman college girls were checked for stability of response against interviews with the girls and the questionnaire responses of girls were checked against responses of their mothers to a similar questionnaire. This study was made by Dr. Eugenie Leonard of Teacher's College, Columbia University. Questionnaires were filled out by 203 girls at Syracuse University but not all of these were checked for stability of response. Sixty-eight questions were formulated concerning different aspects of the life of the girl. Information was secured concerning choice of college and liking of college, vocational choice, religious habits and attitudes, use of money, selection of wearing apparel, care of clothes and room, previous experience away from home, experience of leaving home, homesickness, frequency and intimacy of contact with home, health habits, smoking, sex adjustment, making friends, social habits.

The difference in the percentage of answers of girls and mothers which agreed on the following two questions is high:

1. Did you live at home while you were going to high school? Yes--No. 98% agreeing; disagreeing 1%; indefinite 1%.^5

68. Did you go to boarding school during your high school years? Yes--No. 96% agreeing; disagreeing 3%; indefinite 1%.^4

But the responses of the mothers and daughters agreed in only 67 percent of the cases on the question "Do you know many of the girls in your classes? Yes--No." It is obvious that mothers are in a better position to know the answers to the first two questions than to the last. The girl

2. Ibid., p. 12
3. Ibid., p. 52
4. Ibid., p. 53
5. Ibid.; p. 89
was at home when the first two occurred. With the girl away at school it was impossible for the mother to know the latter question as well.

Even more important than this fact of the necessity of proximity in the home is the fact that even if children are at home, parents do not always know the facts about them. Leonard's study showed that in only 64 per cent of the cases did the girls' responses agree with those of the mother on the question "Do you tell your mother all about your affairs with boys? Yes—No." As a matter of fact only 68 per cent of the interview responses of the girls agreed with their own questionnaire responses on this question, so there must have been something wrong with the question itself. Leonard made no comment on this.

The answers of girls and mothers to the question, "Do you disagree with your mother as to the way in which you spend the money given you? Yes—No.", disagreed in 87 per cent of the cases. Leonard says that many of the girls disagreed with their mothers but did not tell their mothers about it.

Proximity in the home is not enough to insure accurate knowledge on the part of the parents. Some facts can be secured only from the children themselves. The questions just given are examples of this. Another striking example is found in a report given by Dr. G. V. Hamilton about "Nervous Case No. 10, Male, Second Decade:"

"The parents assured me, privately, that they had thoroughly explored the possibility of masturbation in his case, and had found that this habit did not exist; he was even ignorant of sexual matters. The boy was seen alone—a procedure which ought always to be followed in such cases. A sympathetic talk about the difficulties experienced by boys in avoiding this almost universal habit quickly led to a shame-faced admission on his part that he masturbated almost daily. He was quite sophisticated as to sexual matters, and masturbated to the accompaniment of heterosexual phantasies."

Obviously this type of information would be withheld from parents. It is the most extreme example of lack of knowledge on the part of parents. There are many other less spectacular but just as important facts about the family which may not be known to certain members. In a discussion of these it is most important that we discover the extent to which the wife can be relied upon for information about her husband and about financial affairs of the family. This is important because in many studies information is secured from her and other persons are consulted only if she says she does not know. If she thinks she knows but does not, social information secured from her may be far from correct. Two illustrations can be given of errors which were caused by her.

6. Ibid., p. 84.
7. Ibid., p. 122.
8. This is published in his book, "An Introduction to Objective Psychopathology." (P. 52.)
The first is taken from the Census Bureau discussion of the accuracy of age statistics:

"Errors in census age returns of males are probably due in larger measure than those of females to the ignorance of the true age of the person enumerated on the part of those who furnished the information." This seems to be the logical conclusion from the fact that the addition to the census schedule of 1900 of date of birth as a supplement to the question asking "age at last birthday" seems to have had a more marked effect on accuracy of age returns of females than of males.

The second illustration is taken from the late Dr. Leila Houghteling's study of "Income and Standard of Living of Unskilled Laborers in Chicago." Authorities regard discussions of consumption and standards of living as incomplete unless this study is mentioned. It may be therefore considered a good authority. Schedules were obtained from 476 families in 1925. The names of the families were obtained from a list of 2,354 names and addresses furnished by twelve representative employers of semiskilled and unskilled laborers. The data was secured from housewives during the day by asking what the husband earned every week and multiplying that figure by the number of weeks during the year that he was reported to have worked at that wage. Some return visits may have been made to the husbands, but no record was kept of the number and it was probably a small minority. The investigators who visited the families were all persons who were experienced in family case work and who knew something of life among low wage groups. Dr. Houghteling said, "Therefore the inaccuracies in the estimates cannot be charged to lack of intelligence or experience among the investigators, but are apparently inherent in the method itself."

In order to check the information on yearly earnings a letter was sent to each employing firm asking for the actual earnings of the husband of the family for the scheduled year. Checks were obtained on the answers given by 421 out of 476 wives on the total yearly earnings:

Out of the 421, in only 13 (3.1%) were the yearly earnings estimated by the wife the same as the actual earnings as reported from the records of his employer. In 287 (68.2%) the estimated earnings were below the actual earnings, and in 121 (28.7%) they were in excess of the actual earnings. These 13 correct estimates were either for men who were paid a certain fixed sum by the month, or for families who had been given statements of the yearly earnings by employers, so that the statements were not really estimates. (Page 35) Of the total 421, 68.2% were in error by less than 20%, and 24.9% by less than 5%. However, there are interesting differences between the overestimating and underestimating groups.

Of the men whose estimated earnings were smaller than actual earnings there were only 55 (19.2%) of the total in this group with an error of less than 5%; of the group of 121 who overestimated there were 50 (41.3%) with less than 5% error. Of the underestimating people, 111 (38.7%), and 77 (63.6%) of the overestimating people made mistakes of less than 10%. Among those with a very large percentage of error—20% and above—the opposite is true; those who underestimated showed a larger proportion, 106 (36.9%), while the overestimated numbered only 14 (11.6%) in that group.12

"Even if a difference of less than 10% is conceded to be so small as to be of very little importance, there still remain 220 families, or 52.3% whose estimates show larger errors. Moreover, 120 families, or 28.5% of the whole group, made estimates with errors of 20% or more."13

Dr. Houghteling says that:

"All of these facts seem clearly to indicate that at least for a group of the kind studied, it is not safe to rely on estimates alone in obtaining facts concerning wages. This tendency to underestimate and to do so with a substantial divergence from the facts, is so pronounced that it furnishes strong evidence that estimates of wages and earnings such as have frequently been accepted in other inquiries as reasonably accurate, are far from reliable."14

It is obvious that lack of knowledge on the part of the wife was not the sole cause of these errors about earnings; there was probably intentional prevarication among the wives who underestimated the amount. In addition to this some errors resulted from the fact that no trial balance was made during the interview between family income for the year and family expenditures plus savings, in an effort to get the housewife to revise her estimates on the basis of such a balance. The investigators were instructed not to question the statements of the housewife. Both of these sources of error, however, have operated in many other important studies, and the interviewers used by Houghteling were as capable as most. These statistics are therefore fair illustrations of the type of error which may occur when information is secured from wives unless exceptional care is taken, and unless the receipts and expenditures are balanced within, say, five per cent.

Such errors occur either because the wife is not in a position to know certain facts or because she pays little attention to them. There are a substantial number of husbands who earn more than they tell their wives and who spend money in ways unknown to the wives. There are other husbands who do not discuss matters of income and investments with their families. Correct information in these cases can be secured only from the husband. Incidentally, it may be noted that a wife is frequently unwilling to admit

that she does not know how much her husband earns.

In addition to this, there are wives, especially in the social classes in which the income is large enough to permit careless spending, who pay too little attention to the earnings and income of their husbands and children to have accurate information about them. And in cases of adult child earners the children are self-sufficient enough not to tell their families all of their affairs. In such instances, the wife and mother of the family is not a good source of information about family financial matters.

Examples may be given of the types of questions which wives probably can and cannot answer correctly:

In securing data about motor vehicle accidents the housewife of any class or group can tell as well or better than anyone else how long her minor child was out of school, in the hospital or under the doctor's care, because the care of the child is her direct responsibility and problem. This was true in the Yale study. However, since doctor and hospital bills were less directly within the realm of her personal experience and responsibility, her ability to answer these questions was more doubtful. If she knew a numerical answer for these it was as correct as that of anyone else. However, she did not always know, and if she said, "No bill has been received," she was frequently wrong.

Since in the Yale study she was only asked about time out of work and lost pay when she herself worked for pay, her information about these was as accurate as that of other workers.

In cost of living studies one occasionally finds a father who does practically all the spending in the family; in such cases he is interviewed on matters of food, clothing, household operation supplies, personal care and medical care as well as other items. The homemaker, however, can usually give data on these subjects (except possibly clothing of grown-up children). However, there is always reason to doubt her knowledge of housing expenditures (especially if a home is being bought), taxes, interest, mortgage payments, and fire insurance. She may not know fuel and light expenses correctly, particularly coal and wood bills. She probably would not know automobile expenses, tobacco and cigarette expenses, and liquor expenses, as well as the purchasers themselves know them. There is a chance that she will not know earnings and income, and that she will not know accurately the details of any major transaction of the family.

The amount of attention she pays to such things and the extent to which the male head of the family discusses them with her vary with income and nationality group. It is a matter of individual difference and of social custom, as well as of the amount of financial strain which is felt by the family.

This discussion of the variations in the extent of housewives' knowledge of and interest in the financial and other affairs of the family, makes necessary a comment on how far one must go in consulting other sources in
order to avoid housewife errors. It is quite obvious that housewives must continue to be a fundamental source of family information because it is easier to find them at home than to find other persons. However, this discussion makes it equally obvious that they must be trusted less and cross-questioned more frequently than has been the case. There must be frequent and careful check-interviewing of schedules, especially of those taken by less competent members of the staff. There must be many return visits to see other members of the family. And there must be frequent consultation of records outside of the family.

It is important that some comment be made about the ability of children to answer factual questions concerning their parents. Such questions are sometimes asked at school and the replies are used as though they were accurate. Because this is true, a number of investigators have been interested in such data. Studies have been made of data given by public school, high school, and college students.

In some studies two questionnaires were filled out by the children, the second being filled out several months after the first. In other studies home visits were made to part of the families in the group studied in order that the replies of parents could be compared with the questionnaire replies of their children. In a few studies interviews were held with both parents and children.¹⁵

Though questionnaire studies are not accurate estimates of the accuracy of interview data, such studies would throw some light on our subject and could be quoted in detail here if the conclusions seemed reliable. Unfortunately the percentage of disagreeing answers on the various interviews and questionnaire studies varies so much that one doubts the reliability of the studies.

"Present job of the father" seems to be answered more correctly than age, birthplace, education, length of time in America, and health of the parents. Even this question, however, was poorly answered in one study. One can safely conclude from these studies that information secured from children about their parents cannot be relied upon. Neither can one rely upon their information about family income. Many children are not in a position to know the facts or do not pay enough attention to recall them accurately. In studies made by reliable research organizations it is usually the rule that no family information is accepted from children under 16 years of age.

¹⁵ The following are examples of the studies which have been made of data which have been secured from children:

Smith, M., American Journal of Sociology 38:713-720.
Cavan, R., American Journal of Sociology 38:721-727.
Conklin, Agnes, "Families of Intellectually Gifted Students." The accuracy data about this study is not published. It is the property of the New York School of Social Work and is an excellent study.
PART II

Thus far the discussion of this chapter has related to errors caused by the fact that the interviewed person was not in a position to know the facts. Errors may also be caused by the fact that the interviewed person had insufficient education and experience to be able to report the events. Such errors have been discovered both in psychological experiments and in social and economic research. They work in two ways: 1. The interviewed person may be able to understand the facts but unable to report them. 2. He may not be able to understand the facts.

Agricultural economists definitely link accuracy of data with the education of the farmer and his experience in record-keeping. Some farmers know the facts but do not know how to report them. Others do not have enough education in agricultural details and in keeping accounts of expenditures to know all the facts that may be required. Cost of living investigators have found that women who have had experience in keeping daily accounts give more accurate interview data than do other women.

The Bureau of the Census has discovered a link between illiteracy and the accuracy of age returns. Inaccuracy in this case would probably be caused by lack of knowledge or inability to figure it out:

"The age returns of the more illiterate classes of the population are less accurate than those of the more intelligent classes. For native white persons of native parents, native whites of foreign parents, and negroes, the greatest amount of inaccuracy is found in the South Atlantic geographical region and the least amount in the North Central division."

Illiterate or inexperienced people do make more errors than other reporters of facts. It is unfortunate that no studies have been made which show the exact differences in the degree of accuracy secured on important questions such as earnings and time out of work. At present one can only suggest more frequent checks against sources of information outside of the family when illiterate people are interviewed, or use of other methods of securing information if persons do not know all of the facts.

In attempting to overcome these difficulties one must be careful to recognize the fact that reporters do not always realize their own lack of knowledge. And it is not always easy for an investigator to spot it. In the following case the lack of knowledge is easily distinguishable:

In the Illinois Insurance Commission investigation of 1919 the knowledge of families of most of the details connected with sickness were "surprisingly definite" but certain immigrant groups could not name the illness. They could only tell what part of the body was affected.

In this particular case the fact that they did not know the name of

the illness was probably easily seen. However, it is not always so easy to recognize lack of knowledge on the subject of health. In the Yale motor vehicle accident study the family seldom knew the difference between skin-muscle and bone and joint injuries—yet these are important differences. They also did not understand or had not been told of concussions. Most of these inaccurate reports could not be discovered until doctors and hospitals were consulted. The importance of not relying upon the information given by interviewed persons on the subject of health has also been discovered by the Child Guidance Clinic of the Institute of Child Welfare of the University of California. They found that there was little agreement between mothers' reports of their physical condition during pregnancy and a physician's judgment on the basis of records.

While highly educated people are more often correct than the average person in discussing illness, even here one must be initially skeptical of the data. Doctors do not always tell their patients the truth. The author is more skeptical of health data secured by personal interviews with families than are some other investigators. People know too little about medicine to give adequate health explanations. Moreover, people are likely to let their imaginations run away with them in discussing health. In the Yale study twenty-five persons declared that they did not feel so well as they had before their motor accident. They described all sorts of aches and pains. When the doctors were consulted about these cases, they said that fourteen out of these twenty-five people were perfectly well. In the Yale study the author wished to see how often she could judge correctly exaggerations on the part of the interviewed person. For this reason she noted on each schedule the questions on which she suspected exaggerations. Notes of this type were made on thirty-two out of 199 cases. In twenty-six of these suspected exaggerations bore on health—type of injury, how well the person became, disability duration (as judged by time in bed, time under doctor's care, out of school, out of work). Five of the twenty-six doctors refused to answer questions. In seventeen of the other twenty-one cases the author's suspicion of exaggeration was supported when sources outside of the family were consulted. It is evident from this, that between lack of knowledge on the part of the interviewed person, and his tendency to exaggerate, one must be very careful not to grant to such health data a greater degree of accuracy than they deserve.

In the field of intimate personal problems one comes upon another type of information about which people are as ignorant as they are about health. Perhaps the majority of individuals cannot off-hand give the root-reasons for their behavior in many personal affairs. One reason for this is that the individual is too greatly influenced by emotional forces to report correctly. He cannot view himself objectively. This last point was discussed in the section on "bias" in the preceding chapter.

Another reason is that an individual is too accustomed to the culture into which he is born to be able to describe his own development from the organism he is at birth to an organism capable of social life and on from that to a mature individual. And yet it is only by this type of sequential description that the causes and stages of development of many social phenomena can be understood in their true light (delinquency, criminality, family disorganization, cultural changes, etc.)
Of course, even if the individual were not prevented by these things from describing himself clearly in answer to many questions about intimate personal affairs, his ignorance of Psychology and Physiology would make him unable to fully understand himself.

For all these reasons it is difficult to secure correct answers to questions about many personal affairs. Because of this, the reasons for certain behavior may be entirely incorrect if direct questions are asked. This is particularly true if a person is in trouble and is filled with conflicting emotions. In such cases the real reasons lie too deeply buried to be unearthed by direct questions. The most skillful interviewer, working with a cooperative person could not secure correct answers because the person is too filled with inhibitions, fears or conflicts to know how to or to be able to describe his situations. The situation is caused by feelings which would be suppressed if he knew them. And he does not know them.

The same difficulty in securing from individuals accounts which are accurate enough to make it possible to see reasons for social behavior is encountered in any social problem as soon as one leaves the obviously simple questions which are asked in social research. Sometimes in securing information the truth must be inferred from answers given to questions which indirectly deal with the facts under investigation. Often direct questions have to be abandoned entirely and the person allowed to tell his own story without interruption. When he is allowed to talk freely about his family affairs he becomes so at ease that he (perhaps unconsciously) reveals facts and impulses which have hitherto been hidden. The advantages of this free-narrative method have been described by Grace Marcus, Case Work Consultant of the Charity Organization Society of New York City, in "Mental Hygiene." 18

This free-narrative method is frequently used by social workers and psychiatrists because answers to certain direct questions vary so much if asked at successive interviews. Since it has been found essential to them it is a necessary tool to research persons in the investigation of intimate problems.

Answers given by different persons in free narrative are spoken in such varying terminologies that it is difficult or impossible to know how many persons mean the same thing. It therefore yields data which frequently cannot be treated statistically. In studying many social phenomena personal histories, diaries and autobiographies (all untabulable) are, however, a fundamental source of information.

It is vitally important that the direct question-and-answer technique be not stretched to cover data which cannot possibly be secured correctly by that technique. However, one cannot say that causes of social behavior or stages of social development can never be investigated by personal interview. One must say that, though individuals may be able to account for some parts of their behavior and reveal some of their personal problems by

18. 1933, 17, 353-368
this method, one can never be sure that these revelations are significant until personal histories, diaries, and autobiographies are used to study these same social problems by another method. As the reader can see, it is in the investigation of causes and in tracing lines of development that the personal interview method falls down.\(^9\)

The difficulty of securing information about certain problems by interview is discussed here merely in order to indicate to the reader that the interview method may need to be abandoned almost entirely when certain phases of phenomena are studied. The reason for abandonment may be the lack of understanding of the interviewed person of his own life, behavior and personal problems, or it may be the great difficulty of securing by it the kind of data needed.

\(^9\) E. R. Mowrer has given a convincing discussion of this point in his book, "Family Disorganization," (Chicago. University of Chicago Press, 1927.) He used the statistical method in analyzing court records and social agency records of desertion and divorce. He then analyzed social agency records individually as case records. According to his findings any successful attempt to prevent family disorganization by finding the causes of it must have as its basis conceptual descriptions of typical sequences of behavior and events. He could not find such facts in either statistical analyses of the problem or in case records. The personal interview method is, of course, the primary source of information for both social agency records and court records, and is used in securing most of the information collected in statistical studies.
CHAPTER V

Errors of the Interviewed Person, Caused by the Inherent Difficulty in Remembering the Required Facts

Some facts are difficult to report because they require complicated calculations. Other facts are difficult to report because they themselves are so complicated that it is hard to remember them. Both of these types will be discussed. Actually they overlap because facts which are hard to recall are usually hard to report.

Several factors influence the capacity to recall. One is the complexity or simplicity of the life of the interviewed person. This can be illustrated by the farmer:

"One reason for his accuracy is that there are relatively few business transactions on the average farm per year, and most are fairly large items; he remembers the details of the principal products of the farm disposed of in a single sale, until the corresponding figures for the new year replace them in his mind."\(^1\)

Another factor which influences accuracy of recall is the variation of the event from month to month. Some varying events are harder to report than others. Testimony to this effect can be given from two sources:

W. A. Spillman, in "The Validity of the Survey Method," just cited:

The farmer remembers with a fair degree of accuracy the usual monthly income as well as the variations in income from eggs, milk and products sold in fairly regular quantities from month to month.

Certain questions such as "amount of labor done in producing a crop" are not so accurately reported by interview because the answers given are "averages" formulated on the basis of memory of experiences of several years rather than figures applicable to any one year.

U. S. Bureau of Crop and Livestock Estimates:

"When there has been little actual change from one day to another there is relatively little memory bias in reports on most items, such as horses, cows, acreage of corn, wheat, etc. Ordinarily the memory bias on wheat, hay, horses, cows, is less than 1%. Memory bias is much greater, however, in items ... which changed materially from one month to another."\(^2\)

Thus the difficulty in reporting events which vary over a period of time is caused by the necessity for judging and estimating the variations

\(^1\) U.S. Dept. of Agriculture, Bulletin 529, 1917, "The Validity of Survey Method."
and for giving the answers in terms of averages rather than in one lump sum which is recalled as such. One of the most widely varying items in family affairs is the weekly pay checks of some groups of workers. This will be discussed later.

A third factor which influences the difficulty of report is the amount of detail which is required about the fact under investigation. This can also be illustrated from experiences with the farmer:

Questions on the value of the farm are sometimes dependable and sometimes not; these questions call for the exercise of judgment; an Indiana study seemed to show that the farmers' estimates were as satisfactory as actual sale prices, but if he is asked to separate the value of buildings from that of the rest of the farm he may go far astray.  

A fourth factor which influences the ability to recall facts accurately is the length of time elapsing between the event and the time of the interview in which the recollection is being asked for. The U. S. Bureau of Crop and Livestock Estimates makes the following statement about the reports of their farmer reporters throughout the country:

"When a considerable time has elapsed, the errors of those remembering too many is much less exactly offset by the errors of those remembering too few."

This fact may be illustrated from the experience of the Child Guidance Clinic of the Institute of Child Welfare of the University of California:

This institute compared records taken by public health nurses from mothers soon after birth of children with reports made by the same mothers at the twenty-one-months physical examination of the children made by the Institute physician. Duration of gestation and birth weight were reported with the greatest consistency. Month first tooth appeared and month walked alone were fairly consistently reported; duration of labor and weight at twelve months were least consistently reported.

Sixty-seven per cent of the mothers who were delivered with instruments reported this fact when the child was twenty-one months old. Twenty-three per cent of the mothers who were injured during delivery reported this fact when the child was twenty-one months old.

There is apparently no single causal factor determining the extent of the discrepancies between reports, since the intercorrelations of the extent of the discrepancies for the various items are low. There is a tendency in the later reports to indicate a greater precocity than was suggested in the early records.

3. Ibid, p. 86.
4. Ibid, p. 129
5. Personal letter to the author
This is especially true for age first tooth appeared and month child walked alone. There is no relation between the education and intelligence of the mothers and the extent of the discrepancies.

Length of time elapsing between the event and the interview operates in the recall of facts concerning employment history, earnings and income, and cost of living, as do the other factors which have been enumerated.

Employment History

The difficulty of securing accurate data about past jobs may be illustrated by quoting the study, "Ten Thousand Out of Work." At the same time that Dr. Clague made his unemployment study a similar study was made by Webster Powell, a graduate student at the University of Pennsylvania. These were published together. The Jewish Welfare Society of Philadelphia also made a study of all the unemployment relief cases on their rolls. Clague discovered that a certain number of families had been visited by his investigators as well as those of Powell and the Jewish Welfare group. In addition to this, certain families had been visited by two of his interviewers by mistake. He could therefore measure the stability of the responses given to different investigators.

One always knows that the interviewed person has made a mistake if he tells different interviewers different stories. One does not know that he is right if he tells the same story twice; he may recall his first answer rather than the fact itself. However, instability of response shows that it is not easy to secure correct answers.

On "length of time on last job" the number of answers agreeing to a "satisfactory" degree were:

| Clague-Powell duplicates | time on last job—78.1% |
| Clague duplicates | time on last job—56.0% |
| Clague-Jewish duplicates | time on last job—62.5% |
| Clague duplicates | time on longest job—57.6% |

"Satisfactory" here means "approximate," not perfect, agreement.

Despite the discrepancy the mean average length of time on last job was 3.9 years for the cases interviewed by two Clague workers and 3.8 years on the Clague-Powell duplicate cases.

"The total working time reported in the history," as tabulated from Clague's data showed an "approximate" agreement in 49.1 per cent of the fifty-nine men who were interviewed by two of Clague's workers. This tabulation was made in the office by totaling the figures secured about length of time on each job. The figures were secured by the correct method,

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since he asked the date when the man began and when he left each job.

"Length of time out of work" is a difficult question. In his book on "The Occupational Experience of One Hundred Unemployed Persons in Bloomington, Indiana," Thomas R. Rogers says that his interviewers found it difficult to secure accurate information about time lost between jobs. The reason for this was that interviewed persons tended to disregard a few—e.g., three or four—days lost and to give as an answer "no time lost."

This phenomenon is also revealed in the curves representing frequency distribution of numbers of persons unemployed for a specified number of weeks. In these curves the number of persons who say they have been unemployed less than one week is much too small in proportion to the number who have been unemployed for longer periods of time. In some distributions this smallness of proportion runs up into the second or even the third week of unemployment. This phenomenon is noticeable in all unemployment curves, but is less noticeable on carefully done studies than it is on studies such as the 1930 census.

Clague also had difficulty with "time out of work." Exact agreement was secured in only twenty-three out of fifty-nine cases (38.9%) who were interviewed by two of his workers, and the Clague-Jewish Welfare duplicate cases agreed in only thirty out of sixty-four instances (16.6%). The mean averages, as computed from fifty-nine cases which Clague used, was 7.8 months, and from the fifty-nine duplicates it was 9.1 months. The mean average of the sixty-four cases in which the Clague group and the Jewish Welfare group duplicated each other was 11.9 months for the Clague cases and 10.1 months for the Jewish cases. If the median is used, one set of Clague's cases falls in the six months group and the duplicates fall in the seven months group, while both the Clague cases which are duplicated in the Jewish Welfare group and the Jewish Welfare cases fall in the eight months group.

Clague regards the question of "length of time out of work" as one of the most difficult questions on the schedule, because "the date is not marked, as a birthday is, and is not fixed once and for all; the interviewee must choose as a base the date of leaving a certain job which is specified by the interviewer rather than some small two weeks' job he has just left." He says that on the whole the largest sized differences between interviewers occur on the larger periods of unemployment.

As a matter of fact, Clague expressed dissatisfaction with the entire employment history as well as with individual questions. He concluded from his study of his cases that the memories of workers far in the past are not better than fair, and that time intervals are especially difficult for them.

12. On carefully done studies the interviewers are skilled enough to press for more accurate responses after the first answer is given. One of the commonest sources of error with unskilled interviewers is the accepting of the first statement given without attempting to verify it by other questions.
He says that this does not mean that the data on job histories are useless, but that they must be carefully used.\textsuperscript{15}

This conclusion is based on records of the past five years "or as far back as you can remember." Burton P. Horley makes a significant addition to this in a study published in 1930. It is entitled "The Occupational Experience of Applicants for Work in Philadelphia. The study examines the occupational experience of persons of both sexes who applied for work to thirty-nine establishments during the first week of March, 1929. The types of business and industrial plants represented were automobile, banking, rugs and carpets, cotton textile, furniture, hosiery, insurance, knit goods, machinery, retail trade, shoe, silk, steel, sugar refining, tapestry, woolens and worsteds. Records of 3,036 applicants were secured and final sample chosen for tabulation included 1,332 applicants for work. Among the excluded schedules no less than 2,132 (63 per cent of the total) were excluded because the person interviewed could not give a complete employment record for "at least three years preceding the interview." In his discussion Horley says, "A longer period would have been more satisfactory but the limitations of memory, as the number of records which were rejected because they were incomplete for the three-year period indicated, make it extremely difficult to obtain the information."

The information for this study was taken when the application for re-employment was being made, so that the men frequently thought the records were part of the work application. The interviewers were the employing persons of each firm.

The degree to which employment history facts are recalled accurately probably depends partly on the complexity of the history; persons who change jobs frequently may recall less easily. In Horley's study only 14.3 per cent of the selected schedules were from persons in "low clerical" occupations, while 17.9 per cent of the rejected schedules were from that group. Only 18.1 per cent of the selected schedules were from the "low manual" occupational group, while 26.5 per cent of the rejected ones were in that group. Twenty-five and two tenths per cent (25.2 per cent) of the selected ones were from the "high grade manual" group, while only 16.2 per cent of the rejected ones came from persons in that group.

The length of time elapsing between the events and the interview date also probably affects the accuracy, as Clague has suggested. No


On this subject Clague asked:
"How long between your last regular job (job of 3 months or longer) and made work?"
"Have you held any temporary jobs since leaving your last regular job?"
"How many of these temporary jobs lasted more than one week?"
In addition to this he had asked the date when the man had begun to work on his last regular job and when he had quit working on it ("dates from .......... to ...............")

\textsuperscript{14} Ibid., P. 151.

\textsuperscript{15} Ibid., p. 155
.. statistics on this point have been found, but investigators re-interviewed a number of the same families in the 1933 Russell Sage Foundation unemploy­ment survey of New Haven who had been interviewed on the 1931 survey. A tabulation could be made of answers given by these families which would show the degree to which their memory of certain employment events had changed in the two years elapsing between these two studies.

The accuracy of employment history data is also affected by the tendency of persons to answer in "round numbers" rather than giving precise answers. It also depends, of course, upon who gave them information. If a landlord gives the information (sometimes the case in the 1930 Federal census), the data are notably apt to be incorrect. Even a housewife may not know that her husband or child was unemployed until two or three weeks after he had been laid off, due to a desire on the part of the unemployed person to save his own face or to save her from worry.

These quotations and illustrations show that it is hard to secure accurate unemployment data. Since it is difficult to secure complete and accurate data from ordinary workers, it is much harder with delinquent and mentally deficient persons. The difficulty of securing employment data from mentally deficient children is evident in the U. S. Children's Bureau study of "Employment of Mentally Deficient Boys and Girls." Part of the difficulty in securing data from mentally deficient persons is caused by their low intelligence rating; part is due to the fact that mentally deficient persons have more unemployment than have workers of higher intelligence. Because of this latter fact it is not easy to secure correct data about their unemployment histories even from normal relatives.

Testimony in regard to occupational records of delinquent persons is given by Jean Walker in a study of "Factors Contributing to the Delin­quency of Defective Girls." The subjects of her study were a group of 246 girls who had been examined during 1914 to 1918, inclusive, by the psychological clinic of the University of California Medical School. No statistics are presented about the reliability of the records, but the following statement is made:

17. "Tests indicate that certain individuals are so lacking in ability to retain an impression that we can only assume that they lack something in the neural apparatus that is requisite for retention." (Morgan, John B., "The Psychology of Abnormal People," N. Y. C., Longmans, Green & Co., 1936, 195.) J. A. McGeogh has studied the "Fidelity of Report of Normal and Subnormal Children." His experiments show that the range of report is greater for normals and that they have a smaller percentage of error than subnormal children. The two groups are equal, however, in absolute number of errors. He concluded that intelligence is positively related to report ability, (within the limits of the material and subjects used), in the sense that a certain degree of normality of intelligence is necessary for a normal range and accuracy of report. But that when this report threshold is passed, there is no definite relationship between intelligence and ability to report. (Amer. J. Psych., 1925, 36, pp. 134-145.)
"The girls' statements appear so unreliable in respect to the length of time to a job that no tabular presentation is presented. The girls who did housework presented more examples of continuous employment than the girls doing other work; we find a few doing housework in the same house for periods as long as a year or more. Very few, indeed, of the others worked at a factory or store for so long a period. They have great difficulty in remembering all the places in which they have worked."

In view of these difficulties, research people must be especially careful in correlating information from work histories with other social facts. The large number or "no reports" in answers to questions about employment history, the number of incomplete histories, and the inaccuracy of the numerical answers which are secured, may lead to false conclusions. It is obvious that the persons who are unable to recall the facts may be the most important groups to be investigated when causal factors are being studied.
Figures for Total Yearly Family Earnings and Income should not be asked for in lump sums because most families do not recall them in that form. They should be secured by asking specific questions from which the interviewer, with the help of the interviewed person, can form an estimate of the total. Close approximations cannot be secured by any other method.

This may easily be illustrated from Dr. Clague's study, published in the book "Ten Thousand Out of Work." In this study he asked the job-holder for a lump sum in the question, "What is your normal family income per week?" The mean average for fifty-nine cases which he used in his tabulations was $32.00, while the mean average for fifty-nine cases which were re-interviewed by mistake by his own workers was only $30.96. Thinking in yearly terms at this income level, this is a large error. In only forty-three out of the fifty-nine duplicate cases did the two figures check within five dollars. Not even stability of response between data secured by different interviewers from the same worker can be secured when lump sums are asked for.

In order to arrive at an accurate yearly estimate of earnings, the interviewer must find out the number of weeks in which the person received no pay on a specific job, and then must secure a history of the different "average pays" which were received at various seasons of the year covered by the interview. It is easy to start at one end of the year, and work either back or forward, saying "How was business last spring? Did you work short time, full time or overtime?" Then, "How long did that last?" and "What was your average pay then?" These questions are followed by "What happened next?" And so on, until a complete picture of the year is secured.

The detail of the questions hinges upon the varied nature of the job or of business conditions during the year. Frequently the interviewed person forgets how long he was out of work and must be helped to recall this fact. The interviewer may help him by saying, "You say you were unemployed in the winter. The baby was born on February twenty-fourth. Were you out then?" He replies, "Oh, yes. I can remember now. The baby was born on a Thursday and I was laid off the following Monday and was out for eight weeks."

2. Dr. Paul F. Lazarsfeld has called this technique "interviewing along the time line." "It aims to get at the history of the act just as it went on from step to step . . . When we want to know what someone did yesterday at eight o'clock in the evening, we ask him first when he left his office, because we are sure that he remembers that. Then we ask: "What did you do next?" "Next?" And so on. While going along the time line of his experience, the probability that we shall hit eight o'clock together is much greater than if we ask him to go back to that particular time without a lead to guide him." (American Marketing Society, "The Technique of Marketing Research," N. Y. C., McGraw-Hill Co., P. 64.)
The seriousness of the errors which results from not asking enough questions about earnings and income can be illustrated from a study of farm families in Vinton, Jackson, and Meigs Counties, Ohio.³ When the records of the 300 farm families had been worked up in the office, it seemed that too large a proportion of them showed a considerably larger cash outgo than cash income. Accordingly, seventy-three of the farms were re-surveyed; that is, the same field record was taken back to the farm and checked over item by item. Thirty-eight had their cash income increased by an average of $396.00 and only one had it decreased ($120.00). The balance of income over outgo increased in forty cases; in these forty cases it increased an average of $375.

Some of the miscellaneous items from which the increased income estimate came were board and lodging, interest on government bonds, dividends from stocks, receipts from operating of business, notary's fees and money earned at work off the farm. The interviewers on the study were experts on farm business who tended to overlook income from other than farm sources, with which they had little experience.

It is obvious, of course, that in many cases the year's history of jobs, unemployment, and pay received will be a simple one. In such cases there is no reason why people of normal mental ability should not report earnings accurately. It is probably also possible for persons of fair education and mental ability to report even more complex yearly histories correctly. Ability to do this naturally varies with education and mental age. Unfortunately studies are not available to show how complex the work history for a year can be before the reports of persons of various degrees of education and mental ability become inaccurate. Such studies would be of great value to investigators.

It is at present possible, however, to indicate the types of work on which most earnings are difficult to report accurately. From this discussion conclusions may be reached concerning the probable accuracy of such information.

It is very difficult for workers in seasonal occupations to report earnings and unemployment accurately. Only one actual check of yearly earnings on such an occupation has been found. It is contained in the U. S. Children's Bureau study of "Welfare of Children in Coal Mining Communities of West Virginia."⁴ In that study the data about earnings of the chief bread winner were supplemented by the consultation of pay-roll figures of one of the larger coal companies. Forty-one of the chief bread winners interviewed appeared on this pay-roll. The yearly earnings had been secured from the man himself whenever possible; otherwise it was secured from the mother or the most responsible member of the family. Of the forty-one men whose earnings were checked, twenty-six had reported "slightly larger" and fifteen "somewhat smaller" earnings than the pay-roll showed:

⁴ Bulletin No. 117, 1923.
"The average discrepancy where the bread winner had reported his net earnings as larger than the amount indicated on the pay-roll was $197.00; where he had reported his net earnings as smaller than the pay-roll showed, the average difference was $98. Had the forty-one been classified into wage groups ($200 class interval), according to pay-roll figures instead of according to the wage data supplied by the family, twenty-four would have fallen into the same income group, twelve into an income group lower and five into a group higher than that in which they are classified in the present report. If the cases of these forty-one workers, 8 per cent of those in the families interviewed reporting wages, are typical—and there is every reason to believe that they are—it seems likely that the annual earnings as reported are somewhat higher that the pay-rolls, had they been available for all the workers, would have shown."

Use of a $100 class interval would have changed the distribution considerably. Since only thirteen per cent of the workers in the mining industry who were interviewed earned as much as $1,850, some researchers would have tabulated in $100 intervals. This is done in low income groups. Dr. Leila Houghteling, whose startling figures on errors of yearly earnings have been quoted in an earlier chapter, used a $100 interval for earnings under $1,850 per year.

These inaccuracies are not surprising in view of the amount of unemployment which there is in the mining industry. In the study under consideration, 210 out of 393 (.66 per cent) of the chief bread winners working in mining occupations who reported that they had been unemployed during the year were unable to report the duration of their "total unemployment," and 216 out of 342 were unable to report the duration of their "industrial unemployment." Among the 612 men who had been chief bread winners for the entire year ninety-eight were unable to estimate their annual earnings, and no report of annual family earnings could be secured from 119 families out of 639.

This is a good example of the type of job in which the memory of the family should not be relied upon for correct data about earnings. When so many workers are entirely unable to report unemployment or earnings, one is inclined to doubt the accuracy of all the data given on these subjects. One doubts even more the representativeness of the sample. Attempts to find a relationship between variations in unemployment and other social factors would be practically useless in such a situation. Information on the most important group is inadequate.

Seasonal variations caused by weather conditions affect the yearly earnings of workers in the building trades and of such workers as taxi drivers, even under normal business conditions. Regular seasonal variations

5. Ibid., P. 66.
constantly affect earnings in such industries as textile, clothing, and automobile; while in other industries there are rush seasons, e.g., before holidays, and slack seasons. Earnings of persons in such industries, as well as earnings of persons who work irregularly because of business depressions, are hard to secure. Studies should be made of the ability of such workers to report yearly earnings accurately, and of the number of workers who are entirely unable to make yearly estimates. In all probability employer records will always have to be used as a supplement to information secured from families in such industries.

Several other types of workers present equally difficult problems. One of these is the industrial home-worker, i.e., the person who is paid by a jobber or manufacturer to sew, embroider, etc., at home. The U.S. Women's Bureau interviewed many of these in their study of "The Immigrant Woman and Her Job." They found it difficult to estimate the time devoted to industrial home work; the women knew they were busy all the time but did not know how many hours were devoted to family affairs and how many to work for pay. The women were, however, keen in their ability to estimate how many pieces were done per week, and they knew the pay rates per dozen. The completeness with which they recalled the many details relating to their work histories was surprising in view of the numerous jobs which some of them had held.

The author has interviewed many home workers and knows that this is true. Yet there seems reason to doubt estimations of yearly earnings for work as unregulated and as difficult to dissociate from family affairs as this. Since it would be impossible to check employers' records for the yearly earnings of such workers, probably a record keeping system in which income records were kept under the supervision of field worker would be the most accurate means of securing earnings from this group.

Similar difficulties in securing data from families have been experienced by the U.S. Children's Bureau in their studies of child laborers and migratory families. In studies of child labor on truck farms, beet fields and hop growing districts they could rarely find out the number of days worked during the year. Instead of using this form of question, they asked the number of hours of work done on the "last typical day" before the agent's visit, usually the day immediately preceding. It was thought that this information would be accurate and that, though the work was somewhat irregular and the number of hours varied from day to day, the average hours worked on a large number of typical days would give a fair picture of the average length of the working day.

In addition to this, it was impossible to estimate the money earned during a season by hired children on Maryland truck farms. In a study of child labor in the fruit and hop growing districts of the Northern Pacific coast, similar difficulties were encountered. Out of 268 children who were

7. Bulletin 74, 1930, pp. 75, 155
9. Ibid., p. 16.
interviewed in one district, sixty-four reported "no earnings" on the "sample
day" chosen for the investigation, ninety-eight reported their earnings
on that day, and there were 106 "no reports." In another district there
were sixty-two "no reports" out of 219 on this question. It is, of course, very difficult to secure accurate data from such
casual workers as migratory families working on truck farms. The exact
number of hours worked per week and the amount of work done could not be sec­
cured from migratory families working on Maryland truck farms. Since it is hard to estimate the amount of work done and the length of time worked,
it is also hard to estimate earnings. It was entirely impossible to find out
the amount earned by individual children on the last day worked before the
interview, because of the method of payment; families could give the family
earnings for the last working day, however. It was even impossible for most
migratory families to tell how much the family could earn in the six weeks
of the ordinary working season because of the irregular work and the number
of days when there was no work.

In view of these difficulties, many data secured by interview from such
families are of very doubtful accuracy. It is obvious that when more detail­
ed data about patterns of family living are desired a different method of
getting them must be used.

The same conclusion must be drawn concerning families in which the in­
come is secured from small businesses operated by the family, e. g., tailor
shops, shoe shops, grocery stores, and street peddling businesses. In such
businesses few accounts are kept. Professor A. L Bowley says that it is
almost impossible to answer the question, "What sort of a living do the great
bulk of street traders make at their trade?" The "great majority keep no
accounts and do not know the average amount of their profits even if willing
to disclose them." Any person who has ever tried to secure income data
from them will agree with him.

One other group of workers must be mentioned in this discussion of meth­
ods of securing income data from families: farmers. This discussion can be
a short one because it is difficult for anyone who has not made a special
study of Agricultural Economics to secure accurate data on farm income. The
truth of this statement can be checked by any one who reads "Validity of the
Survey method," and glances at M. K. Bennett's "Farm Cost Studies in the
United States" and G. A. Pond's "The Place of Farm Accountancy in Research." Farm management experts in universities and in state and federal governments
know how to secure these data. Other people do not, without careful prepara­

12. Ibid., pp. 16, 31
15. Stanford Univ., Food Research Institute, 1928
16. J. Farm Econ., 1931, 13, 49-56
tion for the work.17

Thus far we have been discussing the accuracy of figures on family earnings. Figures for family income other than earnings are also hard to secure. Research people seem to think that the refusal to admit other sources of income is the greatest problem here. Examples and discussion of this have been given in Chapter One. The personality of the interviewer is of prime importance because no one except the family knows how many sources of income there are and what they are.

In conclusion it seems particularly important to emphasize two things:

First: Check-interviewing is limited as a method of checking the accuracy of figures. Check-interviews are useful in discovering additional sources of income and in securing more detailed data. They can never correct actual biases of memory on the part of the interviewed person. Check interviews can never take the place of the consultation of actual recorded data as a method of insuring accuracy of data.

Second: It is important not to think that while the figures are not absolutely correct they are sufficiently accurate for the tabulations which are to be made of the data. Such statements, always dangerous, are frequently made more dangerous by the use of tabulations in which incomes are grouped into very small class intervals for comparison with other family events. The validity of the conclusions reached in such comparisons is doubtful unless the class intervals of income are large enough to allow errors in estimation to remain in the same class that the correct income would occupy.

17. In their bulletin, "Comparison of Schedule and Account Methods of Collecting Data on Family Living," The U. S. Bureau of Home Economics says that obtaining data on money receipts of farmers "involves so much specialized knowledge and so many computations that it is usually regarded as an additional piece of research."
CHAPTER VII

Errors of the Interviewed Person Caused by the Inherent Difficulty in Remembering the Required Facts: Cost of Living and Consumption Studies

The problem of securing accurate data on this subject is complicated by the fact that persons are usually required to recall consumption, receipts and purchases for an entire year. To place the major items of expenditure within the limits of one certain year rather than before or after, is difficult; to estimate the number of purchases of items such as stockings, is not easy. The only saving feature is the fact that many of the families visited are compelled to "watch their pennies." Though they could not possibly give the investigator a lump sum of money spent on any type of item, they can recall the amounts of some individual purchases and can estimate the frequency of other specific purchases and the amounts usually spent each time.

Willingness on the part of the field supervisor to have staff members spend enough time on each schedule to look carefully for errors and to make as many contacts as necessary in order to correct them greatly increases the accuracy of data. Records of outside sources can be checked to secure correct information on taxes, earnings, mortgages, light and power bills, furniture, and clothing. These are valuable when total receipts do not balance with total expenditures plus savings, loans and investments.

No amount of effort on the part of staff members can, however, entirely remove the difficulty of securing accurate data on this subject. The serious errors which are sometimes discovered by check interviewers on schedules in which receipts and expenditures balance within 5 per cent are surprising. They entirely remove the last vestige of complacency which one may feel from the old adage that schedules which balance within such a small percentage must be "approximately correct." Mrs. Mahoney tells the check-interviewer that she made a mistake when the field worker took her schedule. She did not buy the $500 piano during the schedule year, and she did re-finance her home during the year and her husband must be consulted because very complicated transactions took place. So the schedule must be greatly changed but will again balance within 5 per cent when the changes are made.

With a "good" (i.e., detailed enough to insure some degree of accuracy) schedule, many field agents can secure only two schedules per week. Skilful agents can secure three or four.

On the other hand, though there is another method for securing data concerning family living - the daily account method - there is no method which will yield accurate data without the most extreme care in supervision of the field work. One has only to read the reports which are printed currently in the Internation Labor Review about cost of living data secured by the daily-account method to discover that interview-method field supervisors are not the only persons who have difficulties in securing accurate data. Since difficulties are inherent in both the interview and the account method for securing cost of living data, the best way to discuss the problem of securing accurate data is to present figures which will illustrate the
extent of the difference between data secured by the two methods. That can be followed by a discussion of the limitations of the account method and suggestions concerning a compromise.

The Bureau of Home Economics methodological study presents the basis for such an analysis.\(^1\) This study was made in 1926-1927. Data on family living were secured from daily records kept by forty farm families in Vermont, Illinois, Ohio, and Maryland, and from twenty-four professional families in Washington, D.C., Elmira, Poughkeepsie, Cranford (New Jersey), and Chicago. At the end of the year estimates secured by personal interview were obtained from the same families covering the same period. These estimates were secured before they had received summaries of their accounts. The cooperation of every member of the family was needed in the account keeping and two farm home makers dropped out because they could not get that cooperation.

It is very important to notice that different methods of editing and correcting this daily accounts were carried on. The records of the nineteen Maryland farm families and of the twenty-four professional families were edited weekly and returned by mail promptly to the families for correction. Records sent by eight farm families in Illinois and Ohio were edited and returned by mail for correction at intervals of one to three months. Records sent by thirteen Vermont farm families were not edited and corrected until the end of the year. Most of the Vermont interview average percentages for expenditures were above the account averages (account average taken as 100 per cent) and there was a relatively large difference in the figures for "total value of family living" for this group.

In addition to the different methods of editing the records, with the attendant effects on the accuracy of the accounts, something must be said about the type of schedule-form used. The schedule used for the professional families could have been improved by entering upon it a more detailed list of possible expenditures for recreation, furnishings and equipment, and gifts of money made to persons outside of the family from savings accounts;\(^2\) also by including enough questions on money receipts to make it possible to balance receipts and expenditures. This was not done for either farm or professional groups. The accuracy of farm schedule data could have been improved by increasing the detail of questions on expenditures for housing, for new automobiles, and for savings other than insurance.\(^3\)

Some of the figures tabulated for the farm and professional families are presented in Tables I and II.

A short account of some of the figures for the forty farm families tabulated together, and for the twenty-four professional families follows:

The R. A. Fisher "T" formula for computing "significant differences" was applied to the data. In the data given by professional families significant differences were discovered on expenditures for furnishings and equipment, gifts to persons outside of the family, and recreation.\(^4\) The items

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3. Ibid., p. 12
4. Ibid., p. 30
on which significant differences appeared between the account data and the interview data represented only 9 per cent of the money value of family living. When the questions are excluded on which defects in the schedule form were known to be partially responsible for the differences in the two sets of figures, all of the Fisher formula "significant differences" are eliminated in the professional group. This is not true of the farm group. Significant differences were found in the farm data for expenditures for

TABLE I

Quantities of Specified Food Materials Purchased during 1 year by 18 Maryland and 13 Vermont Farm Families and by 24 Professional Families.

<table>
<thead>
<tr>
<th>MATERIAL</th>
<th>Relation of schedule to account average (Account average=100)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>18 Maryland farm families</td>
</tr>
<tr>
<td></td>
<td>13 Vermont farm families</td>
</tr>
<tr>
<td></td>
<td>24 Professional families</td>
</tr>
<tr>
<td>FOOD</td>
<td>per cent per cent per cent</td>
</tr>
<tr>
<td>Meat, fish and poultry</td>
<td>11¾ 126 113</td>
</tr>
<tr>
<td>Eggs</td>
<td>1,110 738 107</td>
</tr>
<tr>
<td>Cheese</td>
<td>120 156 127</td>
</tr>
<tr>
<td>Milk</td>
<td>..... 9,400 112</td>
</tr>
<tr>
<td>Cream</td>
<td>..... 18 96</td>
</tr>
<tr>
<td>Butter and butter substitutes</td>
<td>109 124 108</td>
</tr>
<tr>
<td>Bacon and salt pork</td>
<td>..... 117 91</td>
</tr>
<tr>
<td>Lard and lard substitutes</td>
<td>180 93 122</td>
</tr>
<tr>
<td>Potatoes and sweet potatoes</td>
<td>167 118 94</td>
</tr>
<tr>
<td>Other root vegetables</td>
<td>400 217 122</td>
</tr>
<tr>
<td>Tomatoes</td>
<td>68 117 122</td>
</tr>
<tr>
<td>Leafy vegetables</td>
<td>11¾ 91 124</td>
</tr>
<tr>
<td>Other vegetables</td>
<td>120 120 116</td>
</tr>
<tr>
<td>Fruits, fresh</td>
<td>138 146 122</td>
</tr>
<tr>
<td>Fruits, dried and canned</td>
<td>139 97 99</td>
</tr>
<tr>
<td>Bread</td>
<td>98 91 117</td>
</tr>
<tr>
<td>Flour</td>
<td>117 115 132</td>
</tr>
<tr>
<td>Other cereals</td>
<td>16¾ 129 123</td>
</tr>
<tr>
<td>Sweets</td>
<td>103 117 115</td>
</tr>
</tbody>
</table>

TABLE II

Money Value of Items Included in Family Living for One Year as Shown by Accounts and by Schedules from Farm Families

<table>
<thead>
<tr>
<th>Goods Furnished by the Farm</th>
<th>Schedule Minus Account Average Dollars</th>
<th>Relation of Schedule to Account Average (Account = 100) Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Maryland</td>
<td>Vermont</td>
</tr>
<tr>
<td>Food</td>
<td>420.4</td>
<td>71.0</td>
</tr>
<tr>
<td>Housing</td>
<td></td>
<td>1.0</td>
</tr>
<tr>
<td>Fuel, ice, and soap</td>
<td>+12.0</td>
<td>+18.0</td>
</tr>
<tr>
<td>Total Value of Goods Furnished</td>
<td>+216.0</td>
<td>+90.0</td>
</tr>
</tbody>
</table>

Savings:

<table>
<thead>
<tr>
<th>Payments on Principal of Mortgage</th>
<th>Maryland</th>
<th>Vermont</th>
<th>Ohio and Illinois</th>
<th>Maryland</th>
<th>Vermont</th>
<th>Ohio and Illinois</th>
</tr>
</thead>
<tbody>
<tr>
<td>Life Insurance</td>
<td>-0.4</td>
<td>+15.0</td>
<td>-3.0</td>
<td>98.0</td>
<td>119.0</td>
<td>97.0</td>
</tr>
<tr>
<td>Other Savings</td>
<td>-30.0</td>
<td>-8.0</td>
<td>-8.0</td>
<td>64.0</td>
<td>91.0</td>
<td>65.0</td>
</tr>
</tbody>
</table>

Total Savings: -34.0 + 7.0 -11.0 86.0 104.0 90.0

Total Money Value of Family living: +105.0 363.0 +13.0 104.0 116.0 101.0

One can readily see from this that the two methods did not yield equally satisfactory results for the professional families and the farm families. The comparison of the account and the schedule data from farm families did not show the schedule method to be as satisfactory with that group as with the professional group. Differences in the figures obtained by the two methods from farmers' are great enough to leave the usefulness of

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7. Ibid., pp. 11, 15 -- schedule excesses on food, clothing.
8. Ibid., p. 33.
the schedule method still open to question." The authors of the study felt that with farm families similar to those cooperating in this study it could "perhaps" be made a satisfactory method of securing data on family expenditures and savings. They thought that the value of family living furnished by the farm, however, could not be secured accurately by the schedule method. The amount of goods furnished by the farm was difficult to compute from memory. This seemed to be the principal reason for the great differences between some of the figures secured by the two methods from farm families. It resulted in great schedule excesses for some items. Since farm families found it difficult to recall the amount of goods furnished by the farm they also found it hard to recall how much money they had spent for these types of goods. Some of the expenditure figures secured by the schedule method, as well as the figures for money value of goods furnished by the farm, therefore, seemed to be of doubtful accuracy. Since the computation of the expenditures of professional families was not complicated in this way, expenditure figures secured by the two methods more nearly coincided in this group than they did in the farm group.

In addition to the seemingly doubtful accuracy of some of the figures secured by the schedule method from farm families, this methodological study revealed other disturbing facts. They may be summarized as follows: 1. Figures on the quantities of food purchased by both farm and professional families changed greatly when the interview method was used instead of the account method. In fact it was impossible to tell whether the schedule data overstated or the accounts understated the quantities. Evidence collected in the study seemed to warrant the conclusion that the personal interview data obtained therein were probably more accurate than estimates concerning cost of living would ordinarily be. Keeping household accounts seemed to increase the accuracy with which the homemaker was able to give estimates in personal interviews. As a corollary to this fact one might say that studies similar to the one quoted here have been made by other research persons and the data secured by personal interview differed so widely from data secured from daily accounts that the results were never published.

9. "Perhaps" means that this might be done if a more complete schedule form were used and if it were possible to check the total money received for the year against total expenditures plus savings.
10. For example, the schedule figures for quantities of bacon and salt pork, leafy vegetables, and fresh fruit furnished by the farm were more than twice as large as the figures secured from daily accounts kept by these same families for the same period of time. The interview average quantities of eggs purchased by thirty-one families and of milk purchased by thirteen families were more than seven times the account figures. (Ibid., P.20.)
11. This does not account for the significant difference between clothing expenditures secured by the two methods. The clothing data secured by the account method may be inaccurate because of the inadequate supervision of the families. Certain members of the family may have sometimes forgotten to record their expenditures.
12. Ibid., pp. 21, 34.
13. Ibid., P. 25.
In view of the great differences between figures secured by these two methods, authorities now agree that a combination of these two should be used, employing the one on certain items and the other for the remainder. A statement of the limitations of the account method is the best preface to discussion of which types of information should be secured by each method:

1. Most account studies relate to the well-to-do, intelligent, and socially best-situated part of the population. This is due to the difficulty of finding families in the lower strata with the necessary qualifications for keeping accounts. Data secured by daily account-keeping, therefore, are not truly representative of the income expenditures or consumption patterns of either farm or working class population.15

2. Many families lose interest during the account-keeping period and keep the accounts carelessly or discontinue them entirely. A large fraction of the families cannot be induced to keep the accounts regularly without the expenditure of too much time by the field workers. Estimates of the number of families who will actually keep accounts vary between 10 per cent and 25 per cent, and such a selectivity probably skews the representativeness of the sample in other respects.

3. Supervision for an adequate period and the detail involved in tabulating the data makes record-keeping studies almost prohibitively expensive when enough families are included to make the sample reliable.16 If these studies are to be carried on every ten years, as the International Conference of Labour Statisticians suggested, the cost item must be seriously considered.

16. As a result of this some record-keeping studies have been carried on for too short a time. International Labour Review, Vol. 28, Nov. 1933, 637
17. In 1926 the Third International Conference of Labour Statisticians adopted resolutions recommending the "best" methods for conducting such inquiries. This conference recommended the keeping of daily records by families for a period of twelve months. If twelve month records were impracticable, they said that every effort should be made to secure accounts from as large a number of families as possible for at least four periods of not less than one week, one period in each quarter of the year, or of two periods of at least a fortnight each in different seasons of the year. Such records were considered indispensable for supplying information regarding expenditures which occur daily. (Intem'l Labour Review, Vol. 15, 1927, pp.17-18.)
Failure to adequately supervise record-keeping families results in the securing of accounts not any more accurate than estimated data secured by personal interview. The U. S. Bureau of Home Economics found in their methodological study that even supervision by mail was not enough, even though accounts were edited and returned weekly for correction. Recent account-keeping studies in the United States prove that semi-weekly or even daily visits should be made to record-keeping families if accurate data are to be secured. Failure to adequately supervise account-keeping studies sometimes also results in slip-shod work or even falsification of records by the agents who are carrying on the work.

4. It is difficult in daily account studies, to secure adequate data on income, savings and investments, and loans. People tend to record these in less detail than they record expenditures.

5. Annual estimates computed by multiplying daily account figures for a week or a month by fifty-two or twelve are incorrect. Such estimates furnish unsatisfactory figures for items which are relatively expensive and are paid for at irregular intervals—fuel, furniture, medical care, college tuition—unless the accounts are obtained for a very large number of families. They are especially unsatisfactory for families with fairly large incomes, because there are many irregular expenditures and because expenditures vary considerably from month to month.

As a matter of fact, in the Bureau of Home Economics study, even average "total annual expenditure" based on accounts kept for two months and four months differed more from those based on accounts kept for twelve months than did the schedule estimates for one year which were secured by personal interview. This occurred in the professional group and in the Maryland farm group.

This is one of the best arguments in favor of using a combination of two different methods in securing cost of living data, and in view of this and of the other limitations in the accuracy of the account method the interview method will probably continue to be a popular form of securing information in the United States.

Specific items composing the "family living" can be discussed in order to summarize possibilities for securing accurate data by interview:

1. Savings, investments and income therefrom, loans:

As already noted, authorities on the record-keeping method seem to agree that information on these subjects cannot be secured accurately in daily account studies. Personal interview authorities say the same thing about securing these data by interview. In view of this fact it seems best to secure data on these subjects by the personal interview method,
carefully supplemented by records from sources outside of the family. Skillful and friendly interviewers are the deciding factor in securing complete and accurate data here. Another decisive factor here is the consultation of the right member of the family.21

2. "Free consumption goods and services," i.e., free medical care, and gifts from persons outside of the family:

The completeness with which answers to these questions are secured by interview depends largely upon the detail with which the schedule is drawn up. This will be discussed in Chapter IX.

3. Clothing, furniture, household operation, recreation, transportation, personal care, education:

These will be discussed in Chapter IX.22

4. Kind and amount of food consumed by the family:

Studies of the nutritional adequacy of the food consumed by the family cannot satisfactorily be based upon interview estimates, because of the difficulty encountered in estimating the quantities of foods purchased23 and the impossibility of estimating the kinds and quantities of table waste and spoilage of food. The difficulties of keeping an accurate record are, however, great, especially when real accuracy can be attained only by actually weighing and measuring the quantities consumed and quantities spoiled or wasted and by supervision by daily visits to families.

The best method for securing information seems to be by the use of a combination of the two methods. In the interview the family can be asked about the amount of each food consumed (without asking for details concerning food spoilage and table waste) and the amount purchased for the seven days immediately preceding each interview. This can be secured from the entire sample of families. It must be supplemented, however, by daily accounts, supervised in person for at least one week in each of the four seasons of the year. These records should be made for a portion of the entire group of families. The records should contain figures, entered after each meal, of the amount (weighed by scales loaned to each family) and kinds of table waste and spoiled food. In addition to this, of course, quantities and purchase prices of all foods purchased should be recorded. "The frequency and duration of the record periods would vary with different climates and with families of different types. For some families, accounts for one month in every three or four would be necessary for satisfactory results; with others, accounts for one month in six might be sufficient."24

preference of results. Actual falsifications seem rare."

Ibid., p. 34, "As regards other income it is believed that pensions were usually recorded; but income from investment and property (other than ownership of home occupied) was not necessarily revealed. Great care had to be taken in the sections and tables dealing with income to draw only those conclusions which are justified by the data."

21. This was discussed in Chapter IV.
22. They were also mentioned in Chapters II and IV.
23. Mentioned elsewhere in this chapter.
The Bureau of Home Economics has suggested that daily accounts be obtained in such a way that the separate months of the year are equally represented in the sample of families. In records obtained for less than one year the irregularities in the expenditures of individual families from month to month would tend to disappear in the averages if this were done.

The Bureau of Home Economics has also suggested that two, three, or four interview schedules be taken covering periods of six, four, or three months each, rather than one schedule covering twelve months.

5. Cost of food:

Further methodological research will be required before it is possible to tell exactly what combination of the interview and account-keeping methods are best for securing data on this subject.

In the Bureau of Home Economics methodological study average annual food expenditures were estimated for the Maryland farm families in several ways. Those estimated on the basis of accounts kept for two months were $267; while those on the basis of four-month accounts were $266. The average tabulated from the twelve-month accounts was $271, while estimates secured by interview gave an average expenditure of $366.

Among the twenty-four professional families the average annual food expenditure estimated on the basis of daily accounts kept for two months is $723, on four-month accounts is $716, on twelve-month accounts is $664. The same figure, based on estimates secured by personal interview is $675. Thus the annual expenditure based on interview estimates for this group coincides more nearly with the twelve-month account average than do estimates based on accounts kept for shorter periods. Their food expenditures apparently varied more from month to month than did those of farm families. 25

25. Ibid., P. 38.
PART II

ERRORS OF THE INTERVIEWER
CHAPTER VIII

Errors of the Interviewed Person and the Interviewer, Caused by the Difficulty in Describing the Required Data

Errors can easily be made in securing information about data which the interviewed person understands and remembers; sometimes the data asked for are objective but the calculations or descriptions required are beyond the capacity of the interviewed person. Sometimes the data are subjective and the meanings of words are vague. The first illustration of this is taken from statistical research concerning the farmer. W. A. Spillman speaks of it in his "Validity of the Survey Method." He says that the farmer is capable of remembering when the investigator knows how to extract the information from him. He frequently does not know how to make the necessary calculations but knows the basic data and an experienced interviewer can secure the data from which to make the calculations.

Experienced investigators realize the truth of this statement. Because of this, interviewed persons should never be asked to give answers in terms of percentages. This is also one of the reasons why when computations from basic data must be made (as in computing unemployment, income and earnings), detailed questions should be asked, from which computations can be made by the interviewer and not by the interviewed person. This rule should be followed with all classes of people because no interviewed person knows enough about the research study for which he is giving information to know what is required of him. Even educated people therefore make mistakes.

Another statement of this difficulty in expression may be presented from the field of marketing research. In the book, "The Technique of Marketing Research." Doctor Paul F. Lazarsfeld states that people find it especially difficult to express themselves when opinions must be indicated with more than usual precision. Marketing research investigators have discovered

2. From their study of the information in possession of textile workers during a strike and their attitudes toward the strike, Bingham and Moore concluded that quantitative statements given in terms of percentages tend to be larger than those statements given in gross numbers. ("How to Interview," N. Y. C., Harper, 1931, p. 263.)
3. In his study of "Objective Methods in the Personal Interview," B. V. Moore says that when Penn State College students were asked to tell what percentage of the student body were women, 33 per cent of those who gave this in both numbers and percentages had a difference of fifty or more between the two numbers. In answering the two forms of question in regard to the membership in a fraternity, 39 per cent of the students gave answers in percentages which varied as much as 10 per cent from their own answers in gross numbers.
that when such opinions can not be expressed in quantitative terms (such as dollars or minutes) the use of comparative questions, or the presentation of pictures or samples often helps the interviewed person to express himself more easily and accurately. Such techniques have been found useful also in other fields of research when difficult or embarrassing topics are being discussed, and must be considered seriously. Many of the difficulties which interviewed persons encounter in expressing themselves adequately can not, however, be solved entirely by the use of any techniques thus far mentioned. Sometimes word pictures must be used exclusively, and the meanings of the words are vague. What can be done to reduce errors which arise under such circumstances? Examples of such errors will be given and a discussion will follow.

One type of error which is frequently encountered when word pictures are used is the "labelling" error. It is found especially in the study of non-objective matters such as family relationships, children's behavior problems, etc. It is found also in marketing research investigations. J. E. Foster and J. E. Anderson emphasized it in their study of "The Young Child and His Parents:"

"A collection of case histories suffers also from what we may call the labelling error. What one person may term irritable behavior another may term vindictive or obstinate behavior; what one person may consider a feeling problem, another may describe as an emotional difficulty. So complex are the foundations of our conduct and so involved are the interrelations of particular acts that it is impossible for a single individual, however expert he may be, to classify the child's behavior with a high degree of consistency and accuracy."

5. For example: "Which do you consider more nourishing—a bottle (pint) of milk, or one half pound of beefsteak, a half pound of potatoes, two eggs, or a half-pound of string beans?" Henry C. Link used this comparative question in some of his work. ("The New Psychology of Selling and Advertising," N. Y. C., The Macmillan Co., 1932.) When such a question was asked people were able to express opinions about milk which they would not have been able to formulate in more explicit words.

Pictures are also useful in this way. For example, in several European studies pictures were used in locating certain troubles people were having with shoes. The pain could be located easily but it was difficult to determine just what part of the shoe was at fault because people knew too little about shoes to describe the parts. When a picture of a shoe was presented persons interviewed could easily indicate the source of the trouble. (Am. Marketing Soc., "The Technique of Marketing Research," P. 68.) Samples may be used in the same way. In a chocolate study it was found almost impossible to get exact information about preferences. But, when the interviewed person was given different samples and asked to comment while tasting them, his communications were much improved. (Op. cit., P. 68.)

It is obvious that when labelling difficulties are encountered the errors may be caused by the interviewer as well as the interviewed person. Such difficulties are encountered for at least five reasons: 1. Words frequently mean different things to different people. 2. Different persons sometimes interpret the same gestures and facial expressions differently. 3. The conclusions drawn from or the label applied to any given event may be quite different if the study of the event is concluded at one point rather than at another. 4. The label applied may be greatly affected by the personal bias of the interviewer. 5. Interviewers or the interviewer and the interviewed person may differ in their preconceptions of the problem under investigation.

These complicating facts are encountered both in the direct observation of events, and in the reporting of past events. Though errors resulting from them are hard to overcome there are several means by which it may someday be possible to decrease some of them (especially those caused by the interviewer), in the personal interview. They may be reduced by methods developed as the result of research which is being carried on by Doctor Dorothy Thomas. Doctor Thomas and her associates are doing research concerning the reliability of records made by persons who observe and record human behavior. Methods developed by her for decreasing labelling errors might prove helpful to all research persons.

Labelling errors may also be decreased some day by the use of a dictaphone-like recording device which records interviews in their entirety. This device makes possible a recheck by an independent observer of the information secured by the interviewer, and of the grounds upon which any conclusions or diagnoses by him are based. Labelling errors of the interviewer may also be decreased by the use of psychological tests for determining bias in interviewers. Nowhere in social research do the personal biases of the interviewer and his preconception of the problem under investigation exert such an influence on the data as when vague words must be used and non-objective data studied. Even if the interviewed person gives a correct report the interviewer may misinterpret it. It is conceivable that psychological tests may be developed to the point of becoming standard aids in measuring the bias of interviewers. The labelling errors of the interviewed person may be decreased if more detailed questions are asked concerning specific experiences and events. This will be discussed in the paragraphs which follow. If the problem of reducing labelling errors is ever solved it will probably be done through the use of one or more of the devices described here.

7. The same non-objectivity of terms was noted as one of the deficiencies found by Luton Ackerson in his study of the records of 5,000 children who had been examined consecutively at the Illinois Institute for Juvenile Research during the years 1923-1927. (Ackerson, Luton, "Children's Behavior Problems," Univ. of Chicago Press 1931.)

8. A device of this sort has been used by Earl F. Zinn in recording the psychoanalysis of schizophrenic patients at the Worcester State Hospital, Worcester, Massachusetts.
Another source of interviewer trouble may be mentioned here, however, before proceeding further. That is the fact that if any one interviewer makes too many calls in one study he is likely to become psychologically exhausted with regard to the subject in question. As a result of this his reports become stereotyped; they lack freshness. This is just as serious as the errors which have been discussed in the preceding paragraphs. Enough interviewers should be used to make it possible to avoid this.\(^9\)

The difficulty encountered in labelling things is not the only difficulty which may be found when non-objective data are being studied. It is also difficult to answer questions when one attempts to describe frequency of events or number of persons participating in them. For example, "Did you discuss your own religious beliefs with your mother while you were at home?" If the investigator asks for a "yes" or "no" answer, many answers are incorrect because persons discussed part but not all of their beliefs. If, however, categories such as "all, almost all, many, few, none" are used, different people disagree in their conception of the meaning of these gradations. And the same person answering the question at different times, is likely to give a different answer each time. Dr. Leonard used this question in her study of problems of freshmen college girls,\(^10\) and asked for a "yes-no" answer. Responses given by the girls in interview agreed with their questionnaire answers in 80 per cent of the cases. Leonard thought that the two answers given disagreed or were indefinite in such a large percentage of the cases because the question was indefinite and they misunderstood it on the questionnaire. In the interview it was more carefully explained and they changed their answers.

Leonard also asked the question, "Have you changed any of your religious beliefs since you came to college?", and asked that the answers be given in one of the following terms: "none, few, some, all." The interview and questionnaire responses of 14 per cent of the girls were classed as indefinite and the responses of 30 per cent disagreed.\(^11\) The answers of a larger percentage of more mature people might agree on this question. Leonard felt, however, that the large percentage of indefinite and disagreeing responses were caused by the inherent difficulty of answering this question.

Of course she realized that many questions of this type yield more satisfactory answers by interview than by questionnaire. Most of these difficulties encountered, however, in describing types of behavior and frequency of occurrence cannot be overcome by the use of the personal interview method.

Leonard has used predominantly two types of questions for these data:

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9. Lazarsfeld suggests (for marketing research interviews) at least three interviewers for about one hundred interviews; for 500 interviews at least ten; and for 1,000 interviews not less than fifteen. (Am. Marketing Soc., "The Technique of Marketing Research," N. Y. C., McGraw-Hill Co., p. 89.)
11. Ibid., p. 33.
questions requiring "yes-no" answers and questions with scale answers, one
of which must be checked (for example, "all, some, few, none"). We have
already illustrated the fact that "yes-no" answers and scale-type answers
are frequently unsatisfactory. There are two other alternative methods of
securing information of this sort: free-narrative report, and more specific
questions than the scale-type questions listed above. An evaluation of
these methods must be given.

In Chapter IV the statement was made that for some types of intimate
personal data the free-narrative method will probably yield more accurate
data than direct questions and answers. Though this is true, it does not
yield satisfactory data when the difficulty lies in labelling things to mean
the same to everyone, rather than lying in the interviewed person's lack
of understanding of the problem under investigation. When the difficulty
lies in finding objective terms for phenomena, free-narrative answers to
questions increase rather than decrease the confusion.

This can be illustrated from Dr. G. V. Hamilton's study of 100
marriages. He handed to the interviewed person a list of questions and
told him to talk freely and uninterruptedly on each one. No attempt was
made in the interview to have the person use one of several predetermined
terms in answering the questions. As a result of this, when he attempted
to tabulate the answers he was practically compelled to list the answers to
some questions individually because very few persons used exactly the
same words in answering the questions. Many of the answers were sufficiently
similar, however, to make one think that they had the same meaning. One
question was, "Is there a particular type of person of the opposite sex
who appeals to you in a sexual way? If so, please describe the type." Hamilton
lists 110 types of answers to this question for the men alone; thirty-eight of these types were given by one person each and seventeen by
only two. Some of the answers about the figure were: slender type, good
figure (well built), small, large, plump, thin, Venus type (voluptuous,
Diana type, trim figure, slender waist, stocky, cab horse type. After
the data were collected, no grouping of answers into classes could be made
without the possibility of reading into them something that was not meant
by the interviewed person. Only by preparing before the interviews a
number of classes which represent every angle of the answer could Hamilton
have secured material capable of statistical tabulation.

Questions with carefully framed scale-type answers (adequately de­
defined) would have yielded data which could be discussed more easily by the
investigator. An example of this may be given:

"Is there a particular type of person of the opposite sex who appeals
to you in a sexual way? If so check the answers which describe such a
person. Check more than one type one each line if more than one appeals
to you."

Female

  1. Figure as a whole: tall, medium, short, slender, me­
dium, fat.

2. Breasts: small, medium size uptilted, large over-hanging.

3. Hair: black, brown, red or auburn, blonde, platinum blonde, curly, straight, bobbed, long.

4. Eyes: blue, grey, brown.

5. Hips: (same type of scale as used above)

6. Legs and so on.

Similarly detailed questions could be made for the male figure. The soundness of such a check-list depends upon its exhaustiveness, of course. And the degree of specificity of the questions must depend upon the amount that is known about the problem under investigation. In setting forth categories as specific as those listed above one is constraining the answers into the interviewer's conception of the problem. The interviewed person is more likely to use these than he is to object to them on the grounds that his answers will not fit into them. Because of this, very specific questions might, if little research had been done in the problem under investigation, be a hindrance to the discovery of significant facts. Since Hamilton was breaking ground in an untried field of research the free-narrative method brought forth vivid and suggestive material. In such a study, therefore, the specific questions illustrated above should be supplemented by many requests for a free-narrative discussion of points. With this addition of a modified free-narrative method to specific questions, data can be secured which are easily handled and which at the same time accurately picture the phenomenon under investigation.

Failure to ask specific enough questions is discussed further in Chapter IX because it frequently results from lack of skill on the part of the interviewer.
CHAPTER IX

Errors Caused by Lack of Skill on the Part of the Interviewer.

Lack of skill on the part of the interviewer results in errors on questions which should be easy to answer, as well as on difficult questions. Questions about age, nationality, length of residence in the city, when the first member of the family came to the United States, and number of members in the family, may be answered as incorrectly as more difficult questions. Examples will be included in the discussion.

1. Suggestive questions are one of the most widely recognized sources of error. Most persons understand that a question suggesting a negative answer—"You would not do that, would you?"—is likely to be responded to negatively, and one suggesting a positive answer is very likely to receive one. Without a dictaphone-like recording device which would enable the supervisor to listen to the interviewer and to correct such techniques it is impossible to know how frequently such questions jeopardize the accuracy of data.

2. The accuracy of the entire schedule may also be jeopardized by the use of suggestion during the preliminary presentation of reasons for asking for the interview. The preliminary explanation should be made so that the interviewed person is neither tempted to overestimate nor to underestimate. This may easily be done. For example, the author once interviewed families and asked questions concerning their fortunes and misfortunes during the depression. If they had worked regularly and had no troubles she wanted to know that; if they had been unemployed and had hard luck she wanted to know that. She phrased her explanations so that they felt flattered to receive a visit and so that they were proud to report good luck if they had it and felt relieved to tell their troubles if they had any. This was an unsuggestive approach which could be relied upon to produce correct answers in a large majority of cases. The persons who were tempted to lie in this case refused to grant an interview.

3. The interviewer may make mistakes if he asks questions from memory and if he fails to record the answers during the interview. This is particularly true of inexperienced interviewers. It may be true of skilled interviewers as well, when detailed statistical questions are asked. When the accuracy of data is jeopardized by such things the schedule should be consulted and the answers recorded. Many families are interested in the schedules and enjoy looking at them, and they realize the importance of the interview much more if the schedule is exhibited and the answers carefully recorded.

One should not leave this point, however, without saying that in many research studies (especially ones concerning "touchy" subjects such as marital adjustments and neighborhood prejudices) the interviewer can not secure significant data if he approaches a person in an "I'm-going-to-take-down-what-you-say" manner. There are many types of problems and kinds of people; research methods must be adapted to meet them realistically. It is sometimes necessary for the interviewer to train himself to remember what is said without writing it down during the interview.
1. Bashfulness is one of the most serious causes of error by the interviewer. It results in failure to push questions far enough. The author tries to avoid hiring persons who would be unwilling to answer the questions themselves. It they regard the questions as too personal to answer they lack the fundamental requirements of good field workers—good salesmanship. Few people are good enough actors to "sell" research to other people which they are not interested in themselves. Bashfulness results in lack of nerve in asking people questions when no reward can be offered. Salesmen of wide field experience have been found who are too shy in research interviews to secure information.

Lack of nerve produces two very unskillful techniques;

a. Apologies, either in word or in tone of voice and manner, for asking questions.

b. Failure to ask the person interviewed whether he has kept any accounts or records which may be helpful in answering the questions.

In concrete situations serious errors have been traced to these. In some cases check interviewers have discovered that a number of persons had complete records of yearly earnings, tax receipts, or yearly records of electric light and gas expenditures. The bashful interviewer had accepted the estimates given from memory without even asking whether records were available. Other bashful interviewers apologize in their tone of voice. Instead of assuming a "nice day today" nonchalance in asking about earnings, age, savings, etc. they "hem and haw" and say, "If you don't mind I'd like to know--." When asked whether they think it difficult to secure answers to such questions they always say "yes." Naturally, for it is difficult for them. The interviewed person is very subject to suggestion, such an approach suggests a refusal.

5. Errors sometimes arise from the fact that the answer to a certain question is influenced by associations arising from or biases aroused by the question which was asked before it. This may be illustrated from the book, "The technique of Marketing Research:"1

"In a certain survey, the attitude of women toward advertising was being studied. In some of the cases questions regarding dresses were asked first; in other cases, attitude questions came first. It turned out that in the former cases, dresses first, the attitude toward advertising was on the average notably more favourable. An analysis of the reasons showed the following connection: If women were asked first about advertising they thought about all sorts of advertising—food, dresses, cigarettes, etc.; but when dresses were mentioned first, they were inclined thereafter to think mainly about dress advertising. As the women's attitude toward dress advertising was more favorable than, for instance toward food and drug advertising, marked differences appeared in the two samples."

If possible such influences should be eliminated by the use of specific questions which tend to counteract them. These influences creep in so easily, however, that no research man should ever put a schedule or questionnaire into use without first testing it for just such weaknesses.

6. Errors may be caused by the fact that the interviewed person does not listen carefully enough to the question which is being asked to answer it correctly. He answers, therefore, according to the content of the question or to what he feels is its purpose, rather than paying attention to the exact formulation of the statement. Women answering questions concerning cosmetics in a marketing research study are likely to give the wrong answers because they are more interested in the content than in the form of the questions. Students are easily caught in error if a psychology lecturer, wishing to illustrate this type of error says, "Do you know what time it is?" The students will probably reply "10:30" rather than "Yes. I know what time it is." The best way of avoiding such errors is by testing a schedule before the actual field work begins. Questions may be reformulated on the basis of these tests or interviewers may be told to watch out for certain errors on certain questions.

7. Errors may be caused by the failure of the interviewer to stress the most important word in the question. Because of the way in which some questions are stated, a different answer is secured if the interviewer stresses one word rather than another. For example, "Why did you buy this book?" If the word "buy" is emphasized the interviewed person may answer, "Because the waiting list at the library was so long that I shouldn't have got it for two months." If the word "this" is stressed he may report that he was especially interested in the author. If the word "book" is emphasized he may report that he at first thought of buying a concert ticket with the money but later realized that a book was a more durable possession. Questions should, if possible, be formulated to avoid such variations in connotation. If this is not possible the interviewer must be instructed as to the proper word to emphasize in asking the question.

2. The marketing study cited above gives an example of this: Readers of a technical magazine were interviewed in a certain study. They were spoken to first about their hobbies and technical interests and then were asked, "Did you ever buy anything following up an advertising in X magazine?" There was ample evidence of buying tools and other technical material but very few reports regarding other common commodities. It was necessary to insert special questions regarding food, garments, and other such items. The earlier questions and discussion regarding "hobbies and technical interests" set the interviewed persons in such a frame of mind that, when questioned about purchases, they could associate buying only with the technical aspect of the opening conversation.

8. Errors are frequently caused by the failure to ask questions in enough detail.

Though the interviewer is immediately responsible for such errors the field supervisor and the persons who planned the study are really responsible. The planners because they did not write detailed enough questions on the schedule. The field supervisor because she did not explain the necessity for asking details nor tell the workers exactly how much detail was required on each question.

"Age" will be used as the first example of this. In order to secure accurate data on this, one must ask more than "How old are you?" because some persons are likely to give age at next birthday rather than at last birthday before the interview. If some persons give age at last birthday and others give age at next birthday, there is a possible range of two years in the ages reported at each year of age. i.e., 364 days before the interview date and 364 days after it. This confusion may be avoided by asking for the year and month of birth. Then by asking the age at last birthday. A rapid calculation will show whether or not the two check. Census Bureau Bulletin Number 13, "A Discussion of Age Statistics," suggest this as the correct method.

The accuracy of age data thus secured may be illustrated from the Yale motor vehicle study. In that study age data secured by the investigator were compared with those secured from school records based on birth certificates and with hospital and police records based on interviews. In only one case out of thirty-nine did the Yale interviewer's answer for age of a school child disagree by more than one year from the school record. However, the police record of age of injured persons disagreed with the investigator's by more than one year in sixteen cases out of eighty-one. The hospital record for age disagreed with the Yale interviewer's by more than one year in nine cases out of seventy-four. The interviewer's answer for age disagreed as much but not more than one year from that of the school record in only four out of thirty-nine cases. The police record for age disagreed with the interviewer's by as much but not more than one year in twenty-one out of eighty-one cases. The hospital record for age disagreed with the interviewer's by as much but no more than one year in twenty out of seventy-four cases.

Lack of skill in securing age information may produce data of doubtful value. This can be illustrated from the Census Bureau bulletin. According to this bulletin there is a tendency to overestimate the age of young children by reporting them as being "in their second year" rather than as "one year old at last birthday." This causes a deficiency in the number reported as "one year of age." From this age up to the age of twenty there is no special form of error beyond the tendency to prefer even numbers to odd ones. This is noticeable throughout the age table. Above the age of twenty there is a tendency to report the age as a multiple of five.

6. This study is fully reported in the Appendix
especially if it is an even number, rather than the true age. For example, thirty instead of twenty-eight or twenty-five rather than twenty-four. Table III page fourteen of the Census Bulletin Number 13 furnishes a measure of the amount of concentration on multiples of five. In the concentration of ages on round numbers understatement is, except for persons of advance years, more common than overstatement.

If enough details concerning age are asked, these errors will be avoided. However, just as failure to ask month and year creates errors, failure to ask age at last birthday as well as month and year will result in error. In European census returns ages are obtained by ascertaining the date of birth. It is found that there is a tendency to concentrate on those calendar years which are multiples of five. United States Census Bureau Bulletin No.13 suggests that the most accurate grouping of ages is that of placing the year of concentration as the lowest in the group.

The inaccuracy caused by inadequate phrasing of a question may also be illustrated from another question on the Yale Motor Accident study. In this case the interviewer had no idea that such an error would occur. On the question "Length of time in the hospital," eighteen out of forty-one persons gave an incorrect answer; thirteen overestimated, and five underestimated. All except two were errors of one day, however, and were caused by the failure of the family to know how to count the number of days. The error was due to this rather than to a failure to remember the number. Hospitals count the day of admission but not the day of discharge; twelve families counted both of these and four counted neither. In order to secure absolute accuracy this would have to be taken into consideration.

This particular type of error is too small to require elimination in most studies. A really important fact about reporting periods of time was revealed, however, on questions in the Yale study. This fact is that people cannot always recall periods of time easily. Some have to anchor a date of doing a certain thing in terms of another event. Others can recall only the day of the week on which they did it. They say, "The accident occurred on a Tuesday and I left the hospital a week from the following Friday. Figure out the time for yourself." When periods of time or dates upon which an event occurred are asked, this fact should always be taken into consideration. It should be done especially when a date is asked, because people frequently "lose track" of the date. Failure to anchor the date of an occurrence may lead to serious error. When the date of the occurrence of an event is required the interviewer may already know the approximate time of year when the event occurred. He can help a person to recall the correct date by saying, "Was it near Easter?" The answer might be, "I remember now. It was the Monday after Easter."

Accurate data concerning "nationality" may not be secured unless detailed enough questions are asked. It is not enough to ask merely, "What is your nationality?" One should ask two questions: "Where were you born?" (geographic region); and "What is your nationality or race?"

8. Ibid., P.16.
The reasons for asking two questions rather than one have been explained by Dr. Bessie B. Wessel in her book, "An Ethnic Survey of Woonsocket, Rhode Island" (Univ. Chicago Press, 1931). Dr. Wessel discovered that, among 2,876 fathers, only 50.8 percent of them claimed "nationality" or ethnic descent which was identical with the geographic location of their birthplace.

The reason for this is simple:

While the word "nationality" signifies a political concept to most school teachers, it represents an ethnic concept to most immigrant groups. Children will say that their fathers are American citizens but that their nationality is German or Italian. Fathers whose families had lived for two generations in Finland claimed Finnish geographical derivation but Swedish nationalities.

The immigrant's sense of loyalty to a cultural group is very distinct and there is no confusion in his mind on the score of ethnic origin. Migratory fortunes of people among other countries do not change the blood or ethnic loyalties.

As a result of her studies Dr. Wessel has worked out an efficient classification scheme of nationalities and geographical regions.

Very good pointers are given by her regarding the attitude of various nationality groups toward questions relating to nationality:

A Jew from a Slavic country usually claims Jewish "nationality," but a Reformed Jew, especially from Germany will invariably give his nationality as American and make no reference to Jewish affiliation unless the question bears on religion; Reformed Jews say that Judaism is a creed and not a nationality. Irish are sensitive toward anything which may question their loyalty as American citizens and use the term "American" about nationality more than other groups do; the origin of the grandparents serves as a check. Italians readily claim Italian nationality; in general, Italians and Jews turn in more complete records than any other groups. Roumanians do not like to be classed as Albanians, and in Woonsocket Swiss and Alsatians claimed French affiliations.

10. She secured her information from questionnaires which were filled in by the parents of public school children. The questionnaires were supplemented by follow-up interviews with parents in every case in which the questionnaire was inconsistent, incomplete, obviously incorrect, contained facts which were in the nature of research cues for specialized investigation, or when they thought an interview might throw light on the possible use of better terminology or upon the nature of the response certain questions were evoking, and in general upon the techniques of gathering the necessary information.

In Stamford they interviewed homes of about 1,000 children (about 10 per cent of the children in the unit and 20 per cent of the families); in Woonsocket they visited 29 per cent of the families in the unit (841 families) and it took 922 visits to secure full information from these 841 families. In her surveys more than 2,000 homes were visited. (P. 16-17, 274.)

11. Ibid., p. 58.
12. Ibid., P. 58.
13. Ibid., pp. 20, 56.
Dr. Wessel also gives a warning about using schoolteachers as sources of information; they are cooperative but are not sure about ethnic classification. This is likely to interfere with the proper gathering of data unless precautions are taken to lessen their influence on the questionnaire replies. Some disdain was even found for the ethnic concept of nationality.

The whole problem of nationality bristles with difficulty for the interviewer.

The question "When did the first member of your family come to the United States?" (or to a specified city) is not as easy to answer as it appears on the surface. This is because the interviewed person does not know whether "first member" refers to members of his immediate small family, to cousins or other relatives, or to ancestors as far back as they can be traced. On the question "When did the father's family come to this country?" Dr. Wessel rejected 58.9 percent of the answers as inaccurate. With mother's family she rejected 54.4 percent. Concerning the date of arrival in Woonsocket, she rejected 42.2 per cent of the replies about the father's family and 36.5 per cent of the replies about the mother's family. In order to secure accurate replies to these questions the meaning of "first member" must be clearly defined.

Answers to the question "Number of members in the immediate family?" may be incorrect if the interviewed person is asked the question in that form. For example, in his unemployment study Clague asked it in that form and discovered that errors were made because of the failure of the person interviewed to count himself. In his unemployment study Webster Powell secured the names of each "dependent" and counted the number of members himself. This is much the more accurate way of securing information. The word "dependent" must however be defined in order to avoid misunderstanding as to the status of grown-up children, grandparents and other relatives living in the home. Just as "dependent" must be defined, so the words "immediate family" must also be defined. This usually means father, mother, children (and grandparents when they reside in the same home) rather than "clan family" (i.e., cousins, uncles, etc.)

Answers to the question "Number of members of the family who work for pay?" is also likely to be answered incorrectly if the question is asked in that way. In his unemployment study Clague found that the man of the family tended to claim entire responsibility for the support of the family. This type of error may be reduced by asking more specific questions concerning the activities—work, home, school—of each member of the family.

The next example, of errors which result from lack of detailed questioning, comes from Dr. Leonard's questionnaire study, already mentioned, of freshmen college girls. The reader has already noticed that Leonard divided the answers given at different times into three groups: agreeing, disagreeing, indefinite. In the third group she placed all replies which were indefinite, inconsistent, or incomparable; this class was used as a sort of standard of success of the question. If the percentage in this

15. Published in the book "Ten Thousand Out of Work."
16. Ibid., p. 158
17. Ibid., p. 158
third class was very large, or if the percentage in this class plus the disa­
agreeing class was very large, the question, as stated, was not a success. For
example, question 16 is, "Do you send your clothes home to be mended?" The
questionnaire answers of the girls agreed with their interview answers in
74 per cent of the cases; 9 per cent disagreed and 17 per cent were classed
as indefinite. The questionnaire answers given by mothers of the girls a-
greed with the questionnaire answers of the girls themselves in 63 per cent
of the cases. Twenty per cent of them disagreed and 17 per cent were classed
as indefinite. The large percentage of indefinite and disagreeing answers
to this question showed that it was not a satisfactory one. The reason for
this was that the girls sent part of their clothes home to be mended and
mended part themselves. Leonard came to the conclusion that a more specific
type of question was needed.19

The following questions were also unsatisfactory:

48. "Who mended your clothes when you were at home?
   You, your mother, a relative, a servant."20
   Girl: interview vs. questionnaire; agree 66%; disagree
   13%; indefinite 21%
   Girls--mother: Agree 40%; disagree 36%; indefinite 24%

49. "Who took care of your own room when you were at home?
   You, your mother, a relative, a servant."21
   Girl: interview vs. questionnaire: agree 79%; disagree 9%
   indefinite 12%
   Girls--mother: agree 52%; disagree 27%; indefinite 12%.

These questions were unsatisfactory because the girls were probably
unaware that their mothers helped them or because they did not like to ad­
mit that they performed these tasks. Leonard also concluded that the ques­
tions were ambiguous. This is obvious, for in many cases more than one per­
son would perform the task, and in this type of question there would be no
way of answering correctly on a questionnaire study unless more than one
answer could be checked. This error would be eliminated on an interview
study unless the interviewer accepted an answer giving only one person with­
out ascertaining whether anyone else helped.22

In Leonard's study specific questions supplemented ambiguous ones in
two other places. She asked:

19. A. "Do you dance? Yes-No."

23. A. "Do you smoke? Yes-No."

19. Ibid., P. 50.
20. Ibid., p. 48.
21. Ibid., p. 49.
22. A similar form of ambiguous question arises from the introduction of
two items into one sentence. This has been illustrated in the book, "The
Technique of Marketing Research," as follows: "Do you think that X blank­
ets are smooth and warm, Yes or No?" The interviewed person who feels that
they are warm but not smooth would have no way of expressing such an opin­
ion within the frame of the question. (P. 71.)
Asked alone, these would be ambiguous. Does question 23 A mean, "Have you ever smoked?", "Do you smoke habitually?", "Do you smoke at college? at home?; only with a 'date' who smokes? any time?" Leonard mentioned this question as an example of an ambiguous question which could be explained in the interview. In a purely interview study questions like this should not be asked. More specific questions should be substituted on the schedule because one must not leave the formulation of specific questions to the individual interviewer.

It is wise to point out here the fact that, in order to secure definite and helpful answers to questions it is frequently necessary to adapt the pattern of the schedule to the experience of the particular person who is being interviewed. For example, in a cost of living study the questions which are asked about housing expenses depend upon whether the interviewed person is a property owner or a renter. If he owns no property one asks the amount of rent paid; if he owns property one asks many questions concerning taxes, mortgages, up-keep, repairs, etc. This fact is well-known but an extension of this principle is less well recognized. It can be illustrated from the field of marketing research:

A company which manufactured electric motors wanted to ascertain from individuals why they bought only of that company. In the first trial schedule it appeared that certain persons were able to give very definite reasons, whereas other answers were completely evasive, or stereotyped, or otherwise of no value. Therefore, the subsequent schedule elaborated upon the inquiry. The first question was: "Had you any special reason in this instance to buy from our company?" If the answer was "yes," the person was asked about the process of his deliberations and efforts which led to the purchase; and, as he was selected in this way, he was able to give satisfactory answers. The other individuals, mainly clients who habitually purchased from this company, were given another series of questions which tried to trace the origin of their habits as to influences and tendencies.

It is obvious that when a schedule is made flexible enough to cover special experiences of all types, more concrete and understandable data will be secured. This technique should prove valuable in research concerning family relationships and intimate personal problems.

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23. Ibid., pp. 16-17
25. Lazarfseld gives an especially good example of the use of this type of schedule in discovering whether persons attending movies went "because of a certain picture," "just went to the movies," or both. All the different types of questions were entered on the schedule, and instructions for the use of each were printed on it. If the interviewed person attended the movie because of a certain picture, four specific questions were asked. If he attended just because he wanted to go to a movie, or both for this reason and because he wanted to see a certain movie, eight different questions were asked. An in addition to these, two groups of questions were answered by both types of persons. (Cp. cit., P. 6.)
Another important statement concerning the asking of specific enough questions may be made here. His also has been discussed by Doctor Lazarsfeld in his article on "The Art Of Asking why in Marketing Research." This research man says that the question why is not one simple question; it is actually only the beginning of research questionnaire. "If we want to carry out our program skillfully, we must state in which of the infinite number of determinants of an action we are interested. Only when we make it clear to ourselves and to our respondents which groups of determinants are at stake will we get results which permit a sensible statistical statement, which is, of course, the aim of every field study." An example of failure to do this will clear up this statement:

The question of why some persons bought a certain brand of coffee is a simple one. If this alone is asked, however, one person may answer that he likes the taste, while another may say that a neighbor has told him about the brand. One person thinks that the interviewer is interested in the attributes of the coffee, the other that he has in mind the outside influences which affected his choice. The neighbor who spoke to one interviewed person may have mentioned the taste, and the interviewed person who mentioned the taste may have heard about it from a neighbor in the first place. So the two cases may actually have had the same sequences of determinants, despite the difference in the answers given to the question. The answers, therefore, do not show actual differences between the reasons why the two persons bought that brand of coffee. They show only that the two persons interpreted the questions differently.

Doctor Lazarsfeld thinks that such errors may be avoided by asking more specific questions. For example, the question: "Why do you buy X brand of coffee?" should be amplified into two questions: "What made you buy this brand of coffee?" and "Why do you like it?" And if the first question is answered: "because it is a stronger brand" rather than "because I was influenced by such-and-such," the additional question should be asked: "What made you start to use it?" That should bring forth either an answer concerning an attribute of the coffee such as, "because it is a stronger brand," or the answer "I don't know." The question: "Why did you change from one brand of cigarettes to another?" should under this technique be amplified into two questions: "Why did you stop using the other brand?" and "Why did you choose the new one?" This last question should be split into: "What influenced you to buy it?" (radio advertising, neighbor, etc.) and "Why do you like it?" (what attributes of it attracted you?) when the question "Why did you do thus-and-so?" is amplified in this manner there is a much smaller chance for errors either in interpretation of the question by the interviewed person or of the answer by the interviewer. This method of breaking up

27. Lazarsfeld says that research concerning reasons for purchases may concentrate on discerning either: 1. What influenced the purchaser to buy the object. (Advice of friends, etc.). 2. What attributes of the product (its color, quality, etc.) led the customer to buy it. Or, 3. what impulses controlled the purchaser; whether he bought it for himself or as a gift; whether he bought under sudden impulse or after long deliberation; whether it was an habitual or a unique proceeding, etc. (Op. cit., P. 2.)
questions into specific ones should prove useful in asking reasons for actions in other fields of research when specific actions of a person are being investigated, as well as in the field of marketing research.

Chapter VI of the present study explained the large number of detailed questions which are necessary in order to secure an adequate estimate of yearly earnings. An example of failure to use this detail can be given: On a cost of living study a certain schedule was considerably out of balance because the expenditures exceeded the receipts. A careless or unskillful interviewer had failed to discover that the male earner of the family had earned extra money in the evening on a part-time job. The interviewer had not asked whether any extra money was earned in addition to the man's full time job. The man did not mention it until asked. One cannot rely on the interviewed person to volunteer such information; many of them do not know what is important to the interviewer and what is not.

Failure to ask enough questions also results in serious inaccuracies when one is asking questions concerning employment. The book "Ten Thousand Out of Work," by E. W. Clague and W. Powell, contains specific illustrations of this: 28

1. A man told one interviewer that he had worked five years for a contractor. He told the other interviewer that he had worked "off and on" for the contractor.

2. One man spent a couple of months every summer in working for pay at landscape gardening, though he also had a regular job with a steel company. "A careful interviewer obtained this fact; the more careless one got a record of the steel company job only."

3. A man was recorded as "never having had a steady job of as long as three months." A more painstaking interviewer got information of one such job.

In discussing the job record Clague says, 28 "Furthermore, such errors as do appear cannot always be traced back to the worker, but are due more largely to the failure of the interviewer to press for further details." (This same fact was mentioned by Bingham and Hoore in their discussion of the two industrial studies which they made.) 30

Failure to ask enough questions results in error also in asking questions about such matters as the amount of life insurance carried by the family and the premiums paid. The interviewer sometimes asks which members carry insurance and then accepts the first answer. This answer, so accepted, is incorrect because the interviewed person forgot to mention certain policies. Further questions—e.g., "Does so-and-so carry some?", "Does anyone carry more than one policy?"—bring forth the correct answer.

A failure on the part of the interviewed person to report with sufficient inclusiveness also causes errors in reporting such items as taxes

unl less the interviewer exercises skill and patience. An example of this is found in Bulletin 26731 of the North Carolina Agricultural Experiment Station. The error related in that bulletin is explained more fully in "Methods and Procedures in Agricultural Economics."32

In a survey of 1,115 farms each farmer was asked for the amount of his 1927 farm taxes; later the amount was secured from the county auditor's books. The survey reports are about 5 per cent higher; the farmers' amounts averaged about $4 per farm more than the county auditor's; 233 farmers were too high or too low by 20 per cent or more and 157 by between 10 per cent and 20 per cent. A total of 405 farmers reported too high and 224 reported too low. In most instances the farmer reported with his farm tax his poll tax and dog tax, while the auditor gave only the tax on property. The land on which the two reported often differed. Some of the farmers reported two years' taxes at the same time; some reported the drainage tax.

Serious errors may be caused in the field of cost of living by the failure to ask detailed enough questions on the schedule. Fortunately, the U. S. Bureau of Labor Statistics has used an excellent schedule in the studies of wage earners and clerical workers which it has carried on during the years 1934-1936, and this schedule may be regarded as a model upon which to fashion other cost of living and consumption schedules. The expensive printing of this eighteen-paged schedule is compensated for by the greater accuracy of data which will result from the more detailed questions printed on the schedule (given, of course, careful supervision of field work). Detailed questions do not, however, bring greater accuracy unless the interviewer asks every question on the schedule. The householder who is, for instance, asked only to enumerate all the furniture which she bought during the year is likely to forget some pieces. If, however, a list of all types of furniture is read to her, she recalls all that she has bought.

In questions regarding "food purchased and consumed during the seven days before the interview" the same thing is true; for reading a detailed list of foods recalls the purchases of the past week to the housewife's mind. Reading a list of all household operation expenses recalls expenditures for small items such as soap, starch, stamps, stationery, etc., which would otherwise not be recorded. Interviewers say that they find this the easiest way to secure their data.

In the clothing schedule a complete list of all articles of clothing should be made, and a separate column reserved for recording the purchases of each member of the family. This latter precaution is important because more accurate data may be obtained in this way. If this is done, the errors can be discovered more easily if the receipts and expenditures in the schedule do not balance. Needless to say, back-checking for discrepancies is apt to be a time-consuming process. The supervisor must study each major class of expenditure in order to tell the field worker where the error

may be. Frequently she says, "Johnny bought very few clothes this year. Perhaps his mother didn't know all his purchases. Go back and ask Johnny himself." This cannot be done, of course, unless clothing details concerning individual members of the family are separated. In the International Labour Review for 1933, 33 dissatisfaction was expressed with clothing expenditures on several daily-account studies because clothing expenditures for various members of the family could not be separated and because information on some expenditures was either incomplete or entirely absent.

In discussing cost of living schedules a comment should also be made concerning the use of a question termed "Other expenditures." One of these "catch-all" groupings should be included under each main type of expense (Housing, Household operation, Food, Clothing, Transportation, Recreation, Personal care, Medical care, Education, Community welfare, Contributions to persons outside the family.) In addition, a major final heading classification should be labeled "Other," under which expenditures which do not fit under any other major heading may be placed.

Since the major heading called "Other expenditures" is meant to be used only for expenses which do not fit under any other major heading, the percentage which it forms of the total family expenses for the year should be very small. In recent publications of the Bureau of Labor Statistics it has been .6 per cent or .7 per cent of the total yearly expense. One sure sign of a poorly constructed schedule (and therefore a schedule containing many possible sources or error) is a schedule in which "Other expenses" forms a large percentage of the total expenditure. 34

Just as one should never allow the major heading "Other Expenditures" to constitute a large percentage of the total expenditure, one should try not to include any individual unspecified expenditure on the schedule which amounts to a large sum of money. Occasionally one is forced to allow this—e. g., some "all expense" tours cannot be broken down into their constituents, or spending money given a child cannot be broken down because the child is away from home at the time of the interview and the parents do not know how he spent it. As a general rule, however, large unspecified expenditures must not be accepted. The reason for this is that the percent-

34. This major item "Other expenses" must not be confused with the term "Miscellaneous Expense" which is used in the International Labour Review tabulations as a means of showing the percentage of the total family expenditures which is devoted to expenses other than the necessities of life. Such a tabulation may yield interesting data on family living, but separate tabulations of the percentages spent for recreation, medical care, transportation, etc., must also be available. Frequently only five major headings are used, food, clothing, housing, light and power and "miscellaneous." Under the latter are included the subgroups listed above, plus the catch-all item called "Other Expenditures." Analysts of family living statistics find it almost impossible to make legitimate comparisions of the statistics available from different studies because of the different ways in which items of expenditure are grouped on the schedule. Discussions of methods of classification are given in Paul H. Nyström's, "Economic Principles of Consumption" (pp. 212-245), and E. L. Kirkpatrick's "Farmers' Standard of Living." (pp. 26-30.)
ages of the total expenditures for every major type of expense will be in-
correct due to that large unspecified expenditure.

Another reason may be given for the use of longer schedules and more
detailed questions. A wise editorial staff will not accept answers to
questions (especially quantitative ones which must be computed by the inter-
viewer) which are not given in great enough detail to enable the auditors
to re-compute the answers and thereby check the accuracy of the interviewer's
work.

The rule should be rigidly enforced that all complicated or unusual
schedule entries should be explained, and that all computations made by
the interviewer should be entered in notes which explain the final answers
given on the face sheet of the schedule. For instance, a schedule should
break down the total earnings for the year for each member of the family
in the accompanying notes by the investigator in a manner as to make it
possible to check the accuracy of the answer. A good test is to insist
that enough hand-written notes be added to every schedule so that a complete
stranger could read the schedule and understand it completely and trust its
accuracy. The advantages of the very detailed though expensive schedule
here become apparent, for one faces an enforced choice between a long
printed schedule and relatively few written notes explaining schedule entries
or a short printed schedule and perhaps fifteen or twenty pages of written
notes. It is certainly easier to read twenty printed pages and three pages
of written notes than three printed pages and twenty pages of hand-written
notes.

One must also give to assistants, if one employs them to make inter-
views, very detailed instructions concerning the use of the schedule. The
1936 revised instruction book for the Bureau of Labor Statistics cost of
living schedule is an excellent illustration of the great detail in which
instructions must be given if accurate data are to be secured.

One final point must be mentioned here, i. e., the necessity for in-
cluding enough detail in the questions concerning earnings, income, savings,
loans, debts and investments to allow a balancing between receipts and
expenditures for the entire year. This is one of the most important methods
for making possible the correction of errors by revisits to the family or
by the consultation of records outside of the family. Failure to do this
causes a great waste of time and money upon data which are of doubtful
value after collection.

The insistence upon this necessity of balancing, within 5 per cent,
of receipts and expenditures for the entire year leads to another important
point, i.e., the danger in discarding too many schedules because they do
not balance within 5 per cent. In Dr. Jessie B. Peixotto's study of typog-
raphers' families 38 per cent of the schedules were discarded as unreliable
or incomplete.35 In a University of California study of the "spending ways"
of street car men's families 11 out of 109 schedules were discarded36 and in

35. "How Workers Spend a Living Wage," Univ. of Calif. Publ. Econ.,
of a Semi-skilled Group."
a similar study of Mexican families in the wage earning and small tradesmen group 22 out of 122 schedules were discarded. In a study of workingmen's Standards of Living in Philadelphia 135 schedules out of 395 were discarded before tabulation began. It is obviously both dangerous and wasteful to discard too large a percentage of the cases collected, because the group of cases which are left may not be representative of the sample of population under investigation. This was found to be true of a sample of cases secured by Professor Helen Canon of the College of Home Economics of Cornell University:

Two surveys were made in 1928 and 1929 of the same farm families in New York, one by New York State College of Agriculture and the other by the New York State College of Home Economics. In these two surveys an attempt was made to account for all money received by these farm families, from whatever source, and all money paid out, for whatever purpose. For 193 records in Tomkins County, the average receipts were $73 more than the expenses, which was 3.2 per cent of the total cash receipts per family. For 277 records taken in Livingston County, the average amount unaccounted for was $208, which was 4.8 per cent of the total cash receipts per family. In both cases this error for the group as a whole is relatively small. In individual records however the amount of the receipts or expenses unaccounted for was in a few cases relatively very large, although it was under 50 per cent in 85 per cent of the records.

Two hundred and seventy-seven records were studied in some detail in order to determine whether those with a fairly high percentage of unaccounted-for receipts or expenses should be excluded. These records seemed in other respects reliable and would have been used without question had it not been possible through this test of balance between total cash receipts and total cash expenses to single them out for scrutiny.

Tests were made to determine whether using the records with a high percentage discrepancy between receipts and expenses would distort averages and disturb the tendency of the specific group averages to increase or decrease. Total cash expenses, household expenses, productive work units, number of persons dependent upon a family income, and age of the operator were the five factors studied. Professor Canon concluded that errors in estimate tended to balance one another, and that if only the records with the smaller discrepancies between total

cash receipts and total cash expenses were used, they would not constitute a representative group. 39

In passing, one should not take Professor Canon's sample of balancing of errors as a reason for allowing large discrepancies between receipts and expenditures to go uncorrected. The testimony which has already been given from Dr. Houghteling's study40 and from the methodological study made by the U. S. Bureau of Home Economics41 proved that one cannot always expect errors to balance. Since most discrepancies can be eliminated with patient checking,—e.g., by consultation of records outside of the family, by changing interviewers, or by promising secrecy if the truth is revealed—there is no need for such discrepancies and certainly not for any large discarding of schedules. The possibility of errors balancing and therefore cancelling one another, is discussed in the concluding chapter.

39. Personal communication from Professor Canon.
CHAPTER X

Errors Caused by Carelessness on the Part of the Interviewer.

It is quite obvious that a careless interviewer may permit any of the errors which have thus far been discussed, even in cases where error is inexcusable. Carelessness may take place either in the interview or while the schedule is being written up. The write-up of the schedule will be discussed first.

Some of the best interviewers are less careful about writing up schedules than other people. The top-notch interviewer is usually a person with a flair for field work. He enjoys the face to face tussle of interviewing and brings back to the office amusing tales of his experiences. Because of this love of interviewing, he can get better data than less enthusiastic workers, but he may be too irked by the paper work that follows an interview to spend sufficient time at it.

Carelessness can be checked by a staff of editors who are employed to make sure that the data collected are correct. It is their job to locate the errors and inconsistencies and to supervise the correction of them either by revisits to the family or by consultation of sources of information outside of the family. It is important that they like their job, because they cannot be good editors if they do not. It requires a sense of reasoning, a skill at detailed work, and an eye for error that many people do not have. The editorial staff should be carefully chosen and closely trained and supervised, the work of each editor being frequently reviewed and criticized. The reason for this is that errors and careless work must be caught at this point. If they are not discovered here they can never be corrected. After the tabulation is begun nothing can be done about them.

Editing should always be done in the field coincident with the interviewing, because many of the errors can be corrected only by the interviewer himself or by revisits to the family. Two examples of this can be given from the Clague and Powell book, "Ten Thousand out of Work." The first is an error in writing:

In many cases the different reports secured by two interviewers on length of time on last job were large errors on the part of the interviewer—a confusion of months and years in replies of eight months and eight years, misunderstanding of a date—writing 1921 instead of 1929.1

The second is an example of inconsistencies which must be corrected:

"Internal inconsistencies brand a schedule as unreliable and some were thrown out for this reason. One amusing example occurred in this connection when a tabulation of color disclosed the existence of eight colored Europeans, including

some Irishmen, Portuguese, an Austrian and a Jew. The check-up showed every one of these to be white in fact, the error having arisen through carelessness on the part of the interviewers. 2

One of the most important tasks of editing is this discovery of inconsistency between different answers on the same schedule. This is particularly true of cost of living schedules which are so complicated that some expenditures may be missed. One frequently finds persons who have taken automobile trips during the year but no expenses were recorded on the schedule for food or shelter on the trip. Other similar inconsistencies are frequently found.

Of course one must guard against careless editors, too. It is wise to edit every schedule more than once, having a different editor do it the second time.

Carelessness on the part of the interviewer may result in any of the errors thus far discussed in this book. With inexperienced interviewers carelessness may take the extreme form of actual falsification of data. This is particularly apt to happen on cases which are difficult to secure or which require a return visit to the family. There is a special temptation to do this on cost of living schedules when the receipts of money and expenditures of money for the year do not balance. Not only may specific questions be falsified but entire schedules may be made up from the imagination. Such schedules are popularly called "curbstone schedules." Even cost of living schedules have been composed in this fashion. The only way to lessen the danger of falsification of data is to use only reliable interviewers, or where this is impossible, to re-check sample interviews during the field work. In order to make this last effective, check interviewing should be announced before the field work starts.

It is important that check interviewing be undertaken in a way that does not antagonize the field workers. This can be done by announcing it during the training period and by explaining that it is a scientific technique which is automatically used in all scientific research—both social and physical. When the check interviewing is started the check interviewer should be publicly introduced to the staff. In the early part of the work he and the supervisor should discuss the errors in each schedule with the interviewer. This increases the skill and care of the interviewer and makes him feel that he is cooperating in the check-up rather than being merely spied upon.

Check interviews should be made both for civil service and non-civil service people on government surveys, and for college as well as non-college persons on other surveys. College persons are not immune to the temptation to falsify their records. The only "curbstone" schedules which check interviewing ever revealed on the staffs supervised by the author were done by a college graduate. He gave every promise in advance of being one of the best workers on the staff. Willingness to falsify was caused in

this case by a complete lack of interest in the work, which attitude was not disclosed in advance.\(^3\)

Careful discovery of inconsistencies and errors, insistence upon their correction, check interviewing, and discharge of poor workers, should all be used to impress upon the staff the serious nature of the work in hand. Explanations of how the study was planned, how similar studies have been made, exactly what steps must be taken before the field work is completed, and of how the material will be tabulated and used, decrease the probability that careless work will be done. Concrete instances about why questions should be asked in one way instead of in another arouse interest and put investigators on their mettle. The author found such advance explanations effective with her W. P. A. employees as well as with civil service and non-relief people. She also taught her people to regard complex family situations as challenges to the skill of the staff. She told them that falsification of data was a weak men's solution to complex problems. Persons with pride do not like to admit weakness; they especially dislike doing so if they have been out of work and have received relief.

Though one must interview dozens (it seems like hundreds) of people in order to assemble a staff of really top-notch workers, once the staff is assembled one discovers that the persons who are most interested and who work hardest are not from any one educational level or occupational group. Among her best workers on cost of living studies the author had two lawyers and two ministers; one lawyer and one minister were on the W. P. A. rolls. She also had a number of ex-salesmen who became good interviewers or editors according to their interests.

Middle-aged men make excellent workers if they have ability, because they have had longer personal experience in both family life and business. Because of these experiences the best ones among them are careful workers; they know how many details there are to family problems and how complicated they can be.

The author has found school teachers less effective workers than persons from other occupational classes. They did not in many cases know how to think for themselves well enough to be either good field workers

\(^3\) Perhaps this is, more than any other, the reason for curbstone schedules. This lack of interest is often the result of contempt for social surveys. The idea many workers have of social surveys is bred by unskillful population censuses, business censuses, unemployment surveys or housing surveys with which they have had experience either as the householders who were interviewed or as the workers who were employed to do the field work. In either role they experienced falsification of data, inadequate training and supervision of the staff and poor planning of work. For this reason they do not regard any social survey as a serious matter. Frequently several people have to be discharged early in the survey in order to convince some members of the staff that only "top-notch" work will be tolerated. However, when they learn this a substantial number of persons who were originally skeptical become excellent workers.
or good editors. And they lack the business experience which is so valuable an asset. They also were not as careful in general about details as they should have been.

This discussion of careless interviewers may be concluded with the statement that if skillful and careful research work is to be done, volunteer workers should be avoided. This is particularly true if they work only part-time. They are not on the staff regularly enough or long enough to be trained to do good work on skilled jobs. They may forget the research schedule between work periods, and they are not accustomed to office routine. This has been found to apply to some college students as well as to other persons.
CHAPTER XI

Conclusion

In the chapters of this book various types of errors have been discussed. Illustrations of them have been given and methods of eliminating them presented. As a method of summarizing this discussion tables will be presented and several points emphasized.

* * * * * *

For years interviewers have been skeptical of some of their data. They have thought that the data given by some families is practically worthless and that certain questions cannot be accurately answered by anyone. Field supervisors have quieted these interviewers by saying that just as many interviewed persons overestimate facts as underestimate them, and that the errors will cancel; and that when tabulated, therefore, these figures are as accurate as though correct answers were given. This explanation is given despite the fact that statisticians say that the theory of chance cannot be applied to the distribution of errors which are caused by conscious bias and by odd quirks of memory which bias the recall of facts.

On how many of the questions discussed in this book have the number of persons overestimating balanced the number underestimating? If the errors balance, the median average and the class groupings of numerical answers will probably be the same as though accurate information had been given. In that case one need worry less about the accuracy of individual schedules than a hasty reading of this book might lead one to believe.

The questions will be listed on which the number of persons over and underestimating do not balance. The research source of this information will also be given.

In the questions listed here the errors were great enough to make many of the research organizations which discovered them consider them a challenge to the accuracy of data. The organizations either advised the use of another method than the interview method, the consultation of records from sources outside of the family, or use of great care in asking the questions by interview. It seems obvious that one is creating an entirely false impression of the accuracy of data by saying that errors of over and underestimation balance and therefore cancel one another. Statisticians have been saying this for years but have lacked the positive proof of their contention.
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<tr>
<th>QUESTIONS</th>
<th>Over or Under</th>
<th>Citation to Preceding Pages</th>
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<tr>
<td>Yearly earnings of coal miners (given by the miners)</td>
<td>Over</td>
<td>45-46</td>
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<tr>
<td>Amt. farm taxes for one year</td>
<td>Over</td>
<td>77</td>
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<td>No. of persons making int. payments, mortgages.</td>
<td>Evasions</td>
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<tr>
<td>Money value, total goods furnished by the farm</td>
<td>Over</td>
<td>14</td>
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<tr>
<td>Money value, food furnished by the farm</td>
<td>Over</td>
<td>53</td>
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<tr>
<td>Expenditures for food and clothing by farmers</td>
<td>Over</td>
<td>53</td>
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<td>Quan. eggs and milk purchased by farmers</td>
<td>Over</td>
<td>53, 57-58</td>
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<tr>
<td>Quan. bacon, salt pork, and leafy veg. furnished by the farm</td>
<td>Over</td>
<td>54</td>
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<td>Damage to crops by weather</td>
<td>Over</td>
<td>19</td>
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<td>Amount of education received</td>
<td>Over</td>
<td>13</td>
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<td>Age, Babies</td>
<td>Over</td>
<td>69-70</td>
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<td>Persons advanced yrs.</td>
<td>Over</td>
<td>13</td>
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<td>Yearly earnings unskilled laborers given by wives</td>
<td>Under</td>
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<td>Investments and income other than wages</td>
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<td>No. persons with savings accounts</td>
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<td>No. families receiving relief</td>
<td>Under</td>
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<td>Length of time out of work, when it is a short period</td>
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<td>Size of crops when prices are low</td>
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<td>Child Development Data after time elapsed</td>
<td>Claim greater precocity</td>
<td>38-39</td>
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<td>Age:</td>
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<td>Negro</td>
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<td>Females</td>
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<td>Foreign born</td>
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Despite the fact that the proof of this contention has been furnished by reliable research organizations, they do not always follow their own advice. This is probably due to the fact that the persons who know the seriousness of the errors are not in a position to make the changes in research techniques and staff personnel necessary for the securing of more accurate data. The difficulty of securing adequate funds is also a reason for this. The lack of sufficient research funds makes it impossible for organizations to keep even a nuclear staff of permanent interviewers. Even field supervisors are hired for a special study and laid off afterwards. Interviewers therefore lack experience in research interviewing. Supervisors lack this also, even though they may have supervisory experience. (Personal experience in interviewing under the disciplinary eye of a reliable research organization is more necessary to a supervisor than is supervisory experience.) For all these reasons, research organizations have thus far done less toward insuring the accuracy of their data than they know they should do.

The degree of accuracy which may be secured by use of the personal interview method may be summarized further by listing the questions which seem to elicit the least accurate and the most accurate answers. The ratings on this list are made on the basis of the data presented in the preceding chapters. Most of the questions on the list are in the areas of cost of living, work history, unemployment, and earnings:

Questions Most Difficult for the Interviewed Person

1. Questions which bring forth such inaccurate answers that information concerning them should always be secured by a method other than the personal interview method.¹

(a) Cost of Living Studies:
- Quantity of food consumed by any type of family.
- Quantity of food furnished by the farm.
- Money value of food furnished by the farm.
- Money value of total goods furnished by the farm.
- Yearly expenditure for food by farmers.

(b) Intimate Personal or Family Data:
- Data about problems which so perplex a person that he does not know what he thinks.
- Data about shameful or fearful acts which cause nervous illnesses but have been forgotten.

2. Questions which bring such inaccurate answers that they should always be checked against records or organizations outside of the family.

(a) Yearly Earnings:
- Of coal miners and other seasonal workers or workers who have been unemployed a great deal.

(b) Have you received "relief" during the schedule year?

¹ To the two listed here may be added a third group, whose questions are not really hard. They are incorrectly answered because persons are sometimes not interested enough to know exact answers:
- Number of employees in the mill in which the interviewed person is employed.
- Number of inhabitants in a town or city.
3. Questions which are so difficult that special study should be made of the subjects before interviewers tackle them.

(a) Farm income.
(b) Farm production and management statistics.
(c) Intimate personal data concerning sexual phases of family life.
(d) Almost all intimate personal problems of the family can be understood better by a psychiatrist than by a person with less training.

4. Questions which should never be asked by interview and cannot be secured easily by any other method.

(a) Child workers on farms.
   Number of days worked during year.
   Number of hours worked per week.
   Money earned during the season.
(b) Migratory families working on farms.
   Number of hours worked per week.
   Amount of work done per week.
   Daily or weekly earnings of any one person.
   Amount of money earned by the family in the six weeks of the ordinary working season.
(c) Yearly earnings of persons with small businesses of their own, and of street peddlers.
(d) Yearly earnings (including tips) of taxi drivers.

Moderately Difficult Questions

1. Questions which may be answered correctly by some people but which should be checked against outside sources in some cases.

(a) Yearly earnings.
(b) Data concerning mortgages and other property financing schemes.
(c) Length of time out of work covering any except a period of a few months.
(d) Expenditures for specific items such as furniture, when the family does not recall definitely the amount spent.

2. Data which are frequently unreliable (answer withheld or incorrectly given) but which are difficult to check against sources other than the family.

(a) Yearly family earnings of migratory workers.
(b) Yearly earnings of industrial home workers.
(c) Yearly earnings of child laborers on farms.
(d) Number of sources of family income and earnings.
(e) Amount, number and types of savings and investments.
(f) Family history of epilepsy or insanity.
(g) Admissions of illicit sexual experiences.
(h) Admissions of any form of illegal or unsocial conduct.
(i) Number of jobs held in any specific period, and list of occupations.
(j) Years of schooling of foreign born and illiterate persons.
(k) Length of time out of work between jobs.
Least Difficult Questions

1. Questions which may be answered accurately by most people if skillful interviewers are used, sufficiently specific questions are asked, and if the right person is interviewed.

   (a) Age.
   (b) Education.
   (c) Nationality.
   (d) Number of members in the family.
   (e) Number of working members in the family.
   (f) History of weekly pay received by an individual over a period of eight weeks just before the interview. (This may be accurate for anyone except a member of a migratory family and for taxi drivers.)
   (g) Length of time on last job.
   (h) Time out of work over a period of two or three months.
   (i) Yearly expenditure for food by professional families.
   (j) Though there is still some doubt about the accuracy of cost of living data secured from professional and white collar families there is reason to believe that they can recall and estimate expenditures for a year with a fair degree of accuracy.

Accuracy not yet Known

1. The probable accuracy of data given by interview on the following questions may not be judged at present because of insufficient basis for judgment:

   (a) Cost of living data from wage earning families.
   (b) Variation of the accuracy of yearly earnings data, cost of living data, and unemployment data with the mental age and degree of education of the reporter.
   (c) Degree of accuracy that can be obtained regarding yearly earnings data of various degree of complexity.
   (d) Conclusive check of the exact ability of housewives of various social classes to give information concerning earnings and unemployment of other members of the family. Also concerning "other income," housing expenses, savings, investments, mortgages, and loans.

This table gives a fair idea of the work which needs to be done in discovering the accuracy of various types of interview data, as well as giving the probable accuracy of some specific questions. Despite the many pages which have been devoted in this volume to discussions of questions concerning parent-child relationships and other more or less elusive subjects, however, little has been said by way of summarizing them. The reason for this is that it is difficult at present to summarize the accuracy of data of specific questions in these fields as concretely as other questions have been summarized. Many vital problems in the field of family relationships have thus far been greatly underworked. More research should be done in them and investigators should publish suggestions concerning questions and techniques.
A few final statements must be made before this discussion is terminated.

It is not enough that certain difficult data which may be secured by direct question and answer should be checked for accuracy against records of organizations outside of the family. Accuracy may only be secured if intensive check-interviewing is done of the work of certain interviewers. Frequently interviewers do such poor work that they must be laid off. In the interval before they are laid off one must give them a fair chance to make good. After they are laid off all of the schedules which they have worked on should be carefully check-interviewed. The changes which are made in these schedules are surprising.

Of course one can see from this that fewer schedules of the best interviewers of the staff need to be checked than of the less successful persons.

Upon the basis of this fact and of the summary tables which have been given one may safely conclude that there is no short and easy method to secure accurate data by personal interview. Accurate data may never be gained by relying upon a large number of schedules to decrease the percentage of error in the group as a whole. Only careful planning of the research, adequately trained field workers and editors, and consultation of records of organizations outside of the family can bring it about.

This consultation of outside sources is not as much trouble as one might assume. When it is done on a large scale with an organization, special arrangements may be made whereby records are secured at regular intervals. The work is usually done by the organizations themselves. The author has secured large numbers of records of yearly expenditures for gas and electricity and has consulted the records of tax offices, the Home Owners Loan Corporation, relief agencies, department stores, employers, hospitals, lawyers and doctors. Cooperation has been much more frequent than refusal.

There is one final reason why one should use the careful techniques outlined in this book for eliminating errors. Allowing errors to go without correction by use of these techniques is like allowing one's body to be dirty because the dirt can be covered up with fact powder. A little dirt is excusable, but there are persons who do not know where to draw the line; they are inexcusably dirty. It is this way in research. If one allows one's field supervisors to use hasty research methods, or if a supervisor does not hold his interviewers and editors up to the highest work standards, some of them will certainly be too careless. Errors will thus be greater than one intends them to be. Many capable workers cannot judge for themselves which types of errors are allowable and which are not. One is fairly certain of the accuracy of data only if strict standards of workmanship are constantly upheld.
APPENDIX

The Interview as a Device for Recording Data on the Injuries and Financial Losses Sustained by Persons Injured in Motor Vehicle Accidents

The study reported here was an outgrowth of a study made by the Yale Law School in 1930 for the purpose of investigating the effects of motor vehicle accidents upon the families of persons injured in such accidents. A second study was made in the same field because the Law School wished to utilize the experience gained in the first study to make a further contribution to social research. Too often organizations drop a subject at just about the time when they know the pitfalls of it.

This follow-up was not visualized as a check on the accuracy of data secured in the first study. The primary object of the follow-up study was to do on a small scale a representative type of social study in order to study the difficulties involved in securing from and about families consistent and fairly accurate answers to questions. The study was planned so that it might yield useful results in three ways: First, all the time necessary was taken on each question and each schedule in order that the completeness of the schedules could be considered a measure of the great difficulties involved in the use of the social survey method. Second, the information secured by personal interview with persons injured was checked for accuracy against records secured from hospitals, doctors, employers, police, schools, and the Motor Vehicles Commission of the state of Connecticut. This was done in order to find out how many disagreements, what kind of disagreements, and how many serious disagreements there were between data secured from the family and data secured from sources outside of the family. Third, special care in interviewing and the recording of special details concerning the data secured were necessary in order that the data secured from two different sources of information—the family and the outside source—would be really comparable. It was thought that the techniques found to be useful in this study might prove interesting to other investigators.

The limitations of the sample must be given and several explanations made before the data secured in this study are presented:

All persons who called themselves "residents" of New Haven and West Haven were considered eligible for scheduling if they could qualify according to the other limitations of the sample. Motor vehicle accidents occurring in the months of December, 1930, January, February, March and part of April, 1931, were investigated. The Motor Vehicles Commission of the state of Connecticut and the New Haven police sent to the Yale investigator lists of motor vehicle accidents occurring during the months selected in the area chosen for the study.

Visits were made to the persons reported injured on these lists and persons were selected for scheduling as follows: All personal injury cases which fitted the definition of "personal injury," "financial loss," and "resident" were in-
Interviewed except cases in which more than one member of the family was injured and except cases in which the person injured was a member of a doctor's family. Every second case in which more than one member of the family were injured was eliminated in order that the cases would be secured from as many different families as possible. Members of doctor’s families were eliminated in order that no complications would later arise in securing data from doctors about their patients.

"Personal injury" was defined as an injury serious enough to involve one or more visits to a hospital or to a registered physician. In this way slight accidents where little or not expense was involved, and therefore not means of checking the accuracy of information given existed, were eliminated.

"Financial losses" were defined in the study to mean losses directly resulting from the injury, that is, medical expenses, wage loss, clothing damage, and personal property damage (including damage to the automobile when it was the property of the person injured).

Questions asked during the interview with injured persons covered the following facts:

The age, sex, marital status, and main activity (student, housewife, etc.,) of the person injured were recorded. The name of the head of the family was also secured.

Questions regarding the accident began with questions about the type and extent of the injury, and covered type of medical care time under the care of each doctor and hospital, duration of disability. This was measured by length of time in bed, length of time until bandages were removed, time out of work, out of school, length of time until a housewife could wash dishes, go shopping, clean the house, and carry on her usual social duties; and length of time before pre-school children were allowed to play around freely outside of the house. (In case they never went outside, this was asked for inside of the house.)

On the subject of employment questions were asked relating to the name of the firm, type of industry, and type of occupation of the injured person, type of pay rate (time, work, piece work, salary, commission); and whether he had a full-time or a part-time job. The injured person was also asked whether he had been working full time, slack time, short time or overtime at the time of the accident. He was asked the amount of

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1. By limiting the questions in this way fines paid by car owners, compensation paid to other persons injured, lawyers’ fees, and damages to property not belonging to the person injured, were eliminated. This limitation made the area covered by the questions simple enough so that it could be handled adequately in the time allotted for the study.
his full-time pay rate and of his last pay check before the interview. He was also asked to give a history of his unemployment, of hours worked, and of pay received per week for a period of eight weeks immediately preceding the accident.

Wage loss due to the accident was investigated in detail by asking whether pay had been lost, number of weeks' or days' pay lost, and what proportion had been lost. All persons except those working on salary or commission were asked to give the amount of pay they would have received per week for the period if they had been working. "Total lost pay" was computed by multiplying the amount of pay lost per week by the number of weeks in which no pay was received while ill.²

When the injured person was working on salary or commission a figure computed directly by him was accepted by the interviewer.³

Very detailed questions were asked about clothing and automobile damage.

In addition to these questions, of course, the name of school and school grade were secured for students, and the names and addresses were secured for all hospitals, doctors, lawyers, drug stores, garages, and undertaking establishments which were patronized.

The field work on this study began on February 4, 1931. Accidents occurring in December were interviewed first. All except eleven persons were interviewed for the first time within ten weeks after the accident. Most of the December cases were interviewed for the first time within seven to ten weeks after the accident. The March and April cases were interviewed for the first time within one month of the accident. Several visits were made to many of the persons injured because they had not recovered completely when the investigator first saw them. Thirty-seven schedules were incomplete at the end of the six-months field work period for this reason. Some of the injured persons had sustained permanent partial injuries.

After the information had been secured from 200 injured persons, visits were made to the doctors, employers and other persons mentioned by the injured person, for the purpose of checking the information given by the injured person. Each source of information outside of the family was used as a check on subjects about which it was in a position to have the required facts. The following statements may be made about these sources of information:

². It was computed in this way rather than by asking for a total amount because the investigator wished to test it by the method usually used in computing yearly earnings of working men.
³. Questions relating to the job were omitted when no time had been lost from work; only the name of the firm, type of industry, and occupation
Names of 117 doctors were given by persons injured; since some of the patients consulted several doctors, the 117 doctors represented 244 cases of medical advice and care. Doctors refused information on thirty-one cases (eleven doctors).

School records were checked for the date of birth of each school child as well as for the length of time out of school. This was done because public school records of births were based on birth certificate dates. This was not true of the parochial school records secured for six children.

Seventy-one employers were listed by injured persons, sixty of whom were successfully located and interviewed. Thirty-one employers gave the information required after consulting their records; three others gave part of the information from records. The others thought they knew the facts from memory and the interviewer could not persuade them to consult records.

Eight garages, two drug stores, one undertaker, an optical company, a wagon repair shop and a veterinary doctor were also consulted.

Records from three hospitals in New Haven were read and letters were written to several hospitals in other cities.

In comparing the information secured from these sources with that secured from the injured person the answers of the latter will not be regarded as merely information secured. They will be described as they really are—as behavior reactions of the interviewed person to the interview situation. This can be done if the interview situation is explained to the reader: In this study the results of a specific event, a motor accident, were being investigated. The event and the experiences which resulted from it were likely to make a deep impression upon the mind of the persons to whom they happened. The person interviewed had sustained certain financial losses, as well as having been injured. He wanted if possible to recover a sum of money which would compensate him for his inconvenience, pain, and loss. When the investigator from Yale arrived the person might already have settled his case and received his money; he might have known that it was impossible to get compensation; he might thus far have thought nothing about compensation; or, he might have been attempting to collect money and the case still not be settled. How would he react to a stranger who came to inquire about the accident? What effect would the particular stage in which his compensation case was at the time of the investigator's visit have upon the information given? Could he exaggerate the answers, refuse to answer questions, answer questions but evade the type of answer which was desired, or answer the questions straightforwardly and to the best of his ability?

of the injured person were recorded in such cases. A special set of questions were formulated for persons who owned their own business, and for professional men.
In addition to this, the investigator asked questions relating to the physical condition of the person injured, a theme upon which some people particularly like to expound; if the interviewed person wanted to "make a good story" out of the injury, illness, and financial loss, which questions was he likely to exaggerate? What techniques would be used to achieve this?

Certain questions may also be asked which could be asked of other studies as well as of this one: "What kinds of length of time can people remember most easily, and in what order of difficulty may the various types of lengths of time investigated in the study under consideration be arranged?" "Which types are so difficult that the utility of asking such questions is very questionable?" In how many cases did the person interviewed seem to know the figure on quantitative questions, and in how many cases did he use a qualifying word which indicated that he did not recall the answer definitely? "What was the relation between the number of qualified answers and the percentage of accurate replies?

All of these questions may be asked of the data collected on this study.4

Discussion of the Data Secured

Seven persons who were eligible for scheduling entirely refused to grant interviews. Among the 200 injured persons whose families granted interviews there were forty-eight school children, eleven pre-school children, twenty-three housewives who did not work for pay anywhere, twelve unemployed persons and 106 employed persons (twenty in business for themselves and four with their fathers). In 155 cases the person injured was interviewed or the parents of children fifteen years of age or under; in forty-four cases another member of the family was interviewed about another adult, because the person who first answered the door was unwilling to postpone the interview. In such cases visits were made at a later date to the injured person for the purpose of checking the accuracy of important points.5

In order to understand the replies of interviewed persons it is also necessary to know what the investigator told the person in order to secure his cooperation. The investigator not infrequently explained carefully at the beginning of the interview and secured cooperation, only to have the interview close by the person saying, "How tell me again. What did you say this information was to be used for?" With that sort of thing to face, the investigator made as her point of main emphasis the fact that the interviewed person could not help his compensation case by answering the questions. There was no doubt, however, despite this explanation, that some of the interviewed persons hoped that their case would be helped by it. No record was made of these cases but such a record should have been kept along with the other notes about the reactions of the interviewed persons.

Children from twelve to fifteen years of age usually helped their parents to answer the questions.

In some cases it was necessary, of course, to ask the head of the family questions about bills.
Eleven hundred and thirty checks of statements of interviewed persons have been tabulated. Tables I, II, III, IV and V give the important facts concerning them. The size of the sample need not be discussed in presenting these figures because no general conclusions will be drawn from the data. All of the statements will be made "within the limits of this investigation."

The following statement may be made concerning the rules followed in scoring the degree of agreement between the answers given by the injured person and the answers secured from sources of information outside of the family.

Agreement means exact agreement to the cent and to the half day. When non-numerical answers were given to numerical questions—answers such as "no bill received yet"—the answer was scored as correct if the bill had been sent to the lawyer and the family did not know the amount of it. It was scored as incorrect if it had been sent to the lawyer and the family did know the amount of it. This type of scoring was fair because the interviewer always suggested that perhaps the lawyer or the insurance company had the bill and gave the family a chance to ask for it. When the family gave the answer to length of time under the doctor's care in terms of visits and the doctor answered in terms of days the answers were regarded as incomparable and were not tabulated.

The rule of quantitative agreement meaning "exact" agreement seemed decidedly unfair in a small number of cases. This is, however, the only way to obtain strict objectivity of scoring and strict comparability of data produced by different investigators. The author has read reports of studies in which the figures presented were hard to evaluate because only "approximate" agreement between data from two sources was scored. Since no definition of this word was made she did not know what the investigators meant by the word. The studies in which exact agreement was tabulated seemed much more satisfactory.

7. More than this number of checks were made against outside sources of information but some had to be eliminated on each question because the answers secured from the family were not comparable with those secured from other sources.
<table>
<thead>
<tr>
<th>Question</th>
<th>Total number of cases checked</th>
<th>Number of exactly agreeing replies</th>
<th>Percentage of agreeing replies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time in hospital</td>
<td>41</td>
<td>23</td>
<td>56.0%</td>
</tr>
<tr>
<td>Time under doctor:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Numerical answer</td>
<td>105</td>
<td>54</td>
<td>50.9%</td>
</tr>
<tr>
<td>Non-numerical</td>
<td>42</td>
<td>27</td>
<td>64.2%</td>
</tr>
<tr>
<td>Time out of work</td>
<td>50</td>
<td>21</td>
<td>42.0%</td>
</tr>
<tr>
<td>Time out of school</td>
<td>42</td>
<td>18</td>
<td>42.8%</td>
</tr>
<tr>
<td>Hospital bill</td>
<td>58</td>
<td>32</td>
<td>55.0%</td>
</tr>
<tr>
<td>Doctor bill:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Numerical answer</td>
<td>96</td>
<td>49</td>
<td>51.0%</td>
</tr>
<tr>
<td>Non-numerical</td>
<td>54</td>
<td>36</td>
<td>66.0%</td>
</tr>
<tr>
<td>Average pay per week</td>
<td>45</td>
<td>15</td>
<td>33.0%</td>
</tr>
<tr>
<td>Total lost pay</td>
<td>42</td>
<td>10</td>
<td>23.8%</td>
</tr>
<tr>
<td>Type of chief injury</td>
<td>165</td>
<td>125</td>
<td>75.7%</td>
</tr>
<tr>
<td>How well the person injured finally became</td>
<td>25</td>
<td>11</td>
<td>44.0%</td>
</tr>
<tr>
<td>Part of body X-rayed</td>
<td>81</td>
<td>61</td>
<td>75.3%</td>
</tr>
<tr>
<td>Location in hospital</td>
<td>26</td>
<td>13</td>
<td>50.0%</td>
</tr>
<tr>
<td>Type job</td>
<td>49</td>
<td>46</td>
<td>93.6%</td>
</tr>
<tr>
<td>Other</td>
<td>10</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

8. Private room, semi-private, ward.
TABLE II.

The Percentage of Cases in which the Family and the Outside Source Agreed Exactly, Within 10%, and Within 20% of the Amount Involved.

<table>
<thead>
<tr>
<th>Question</th>
<th>Exactly</th>
<th>Within 10% of the amount involved</th>
<th>Within 20% of the amount involved</th>
</tr>
</thead>
<tbody>
<tr>
<td>Time in hospital</td>
<td>56%</td>
<td>75.6%</td>
<td>90%</td>
</tr>
<tr>
<td>Time under doctor</td>
<td>50.9%</td>
<td>50.9%</td>
<td>53.7%</td>
</tr>
<tr>
<td>Time out of work</td>
<td>42%</td>
<td>44%</td>
<td>54%</td>
</tr>
<tr>
<td>Time out of school</td>
<td>42.8%</td>
<td>52.3%</td>
<td>52.3%</td>
</tr>
<tr>
<td>Hospital bill</td>
<td>55%</td>
<td>87.9%</td>
<td>90%</td>
</tr>
<tr>
<td>Doctor bill</td>
<td>51%</td>
<td>55%</td>
<td>62%</td>
</tr>
<tr>
<td>Average pay per week</td>
<td>33%</td>
<td>55%</td>
<td>66%</td>
</tr>
<tr>
<td>Total lost pay</td>
<td>23.8%</td>
<td>30.9%</td>
<td>35.7%</td>
</tr>
</tbody>
</table>

TABLE III

The Number and Distribution of the Disagreements in Length of Time in Hospital, under Doctor's Care, Out of Work and Out of School.

<table>
<thead>
<tr>
<th>Disagreement between family and outside source</th>
<th>Time in hospital</th>
<th>Time under doctor</th>
<th>Time out of work</th>
<th>Time out of school</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>18</td>
<td>51</td>
<td>29</td>
<td>24</td>
</tr>
<tr>
<td>1 week or less</td>
<td>18</td>
<td>29</td>
<td>12</td>
<td>22</td>
</tr>
<tr>
<td>1 to 3 weeks, including 3 weeks</td>
<td></td>
<td>7</td>
<td>9</td>
<td>2</td>
</tr>
<tr>
<td>Over 3 weeks but less than one month</td>
<td></td>
<td>4</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>One month or more</td>
<td></td>
<td>5</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Other, not reported</td>
<td></td>
<td>6</td>
<td>5</td>
<td></td>
</tr>
</tbody>
</table>

The median average difference between the family answer and the hospital record for length of time in the hospital is one day; the median difference for time under doctor's care is seven days; the median difference for time out of school is three days; the median difference for time out of work is seven and one-half days.
TABLE IV.

The Number and Distribution of the Disagreements in Amount of Hospital Bill, Amount of Doctor Bill, Amount of Average Pay Per Week, and Total Lost Pay.

<table>
<thead>
<tr>
<th>Amount of the Disagreement between the family answer and the outside source.</th>
<th>Question</th>
<th>Hospital bill</th>
<th>Doctor bill</th>
<th>Avg. pay per week</th>
<th>Total lost pay</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total disagreeing ....</td>
<td>26</td>
<td>47</td>
<td>30</td>
<td>32</td>
<td></td>
</tr>
<tr>
<td>$1 or less ............</td>
<td>14</td>
<td>2</td>
<td>7</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Over $1, $3 or less .....</td>
<td>2</td>
<td>18</td>
<td>7</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Over $3, $10 or less ....</td>
<td>5</td>
<td>17</td>
<td>13</td>
<td>9</td>
<td></td>
</tr>
<tr>
<td>Over $10, $25 or less ......</td>
<td>1</td>
<td>5</td>
<td>1(10.50)</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Over $25, $50 or less .......</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Over $50, $100 or less ......</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
</tr>
<tr>
<td>Over $100 ................</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No report ................</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The median difference between the family answer and the hospital record for the hospital bill is one dollar (mean is $78.50 including all cases and $39.67 excluding one very large disagreement). The median difference for doctor bill is five dollars (mean is $11). The median difference for average pay per week is $3.75 (mean is $3.80). The median difference for total lost pay is $13.16 (mean is $38.15).

Perhaps the first question which should be asked concerning these figures is the extent to which the length of time elapsed between the occurrence of each event and the interview affected the accuracy of the answers on specific questions. In measuring this one had to isolate for comparison two groups in which the variation is based on the length of time elapsed between the date when the person went back to work, to school, came out of the hospital, made their last visit to the doctor, and date when the investigator secured the information on that particular question. This could be done only on a few questions and for only a few cases because of the short period of time covered by the field work. Answers to "Length of time in hospital" and "Amount of hospital bill" were answered as correctly by persons who had left the hospital a month or two before the interview as by those leaving it a few weeks before. Answers to "Length of time out of school," however, were less correct when persons had returned one month or more before the interview than when they had returned two and one-half weeks or less before the interview. The number of cases used in this tabulation is too small to give one a basis for a reliable interpretation of these results.

In view of the fact that a substantial number of injured persons hoped to or were attempting to collect damages for injuries and losses, one of the most interesting tabulations of this study is of the number of persons who overestimated rather than underestimated periods of time and amounts of money, when the outside source of information is taken as a base. For the eight principal questions these numbers are as follows:
Since all except two of the mistakes in length of time in hospital were errors of one day, the legal status of the case obviously had nothing to do with the accuracy of the answers. There were too few settled cases to make it possible to test the influence of legal status on length of time out of school. The percentages of exactly agreeing numerical answers were so alike for the pending cases, the no recovery cases, and the settled cases on the other six questions, that for this particular sample of cases the legal status of the cases did not seem to have influenced the accuracy of the answers given in numerical terms. It was possible only on one question to tabulate the numerical and non-numerical answers together in such a way as to render possible a study of the affect of the legal status of the case on the rate of agreement for the entire group. This was done in "Total lost pay." When it was done the pending cases showed a 9 per cent lower rate of agreement than the settled cases.

The median averages have been found for the purpose of showing how much the average computed from the family answer differ from those computed from answers given by outside sources. They will also throw some light on the differences between pending and settled cases on this study.

<table>
<thead>
<tr>
<th>Median Averages as Based on Replies Given by the Family and</th>
<th>by the Outside Source</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Median Average</strong></td>
<td><strong>Family</strong></td>
</tr>
<tr>
<td>Length of time in hospital</td>
<td>9 days</td>
</tr>
<tr>
<td>Time under doctor</td>
<td>9 days</td>
</tr>
<tr>
<td>Time out of school</td>
<td>5 days</td>
</tr>
<tr>
<td>Time out of work</td>
<td>2 weeks</td>
</tr>
<tr>
<td>Amount of hospital bill</td>
<td>$34.88</td>
</tr>
<tr>
<td>Amount of doctor bill</td>
<td>$19</td>
</tr>
<tr>
<td>Average pay per week</td>
<td>$21</td>
</tr>
<tr>
<td>Total lost pay</td>
<td>$40</td>
</tr>
</tbody>
</table>
The significance of these medians can easily be explained. They are, of course, based upon the cases in which the interviewed person actually gave numerical answers to questions, and in which checks were secured from the outside sources. They do not, therefore, mirror the truth telling intentions and the recall abilities of the entire group of persons interviewed, but only of those who gave numerical answers at one of the visits of the Yale investigator. This statement becomes very important when one knows that in "Total lost pay" and "Time out of work" the number of persons refusing or giving non-numerical answers amounted to only 11 per cent and 4 per cent as many as the number of cases who gave numerical answers which could be included in the medians. While in "Amount of hospital bill" and "Amount of doctor bill," whose medians changed very little when the outside source was consulted, the number of persons refusing or giving non-numerical answers amounted to 34 per cent and 24.6 per cent as many as the number of persons who could be included in the medians. There are too many of these to make the median a good mirror of the recall abilities and the reactions of the interviewed persons as a whole to these questions. The medians for "Time in hospital" and "Time out of school" are good mirrors, because no persons refused or gave non-numerical answers. It is possible, therefore that the medians for doctor bill and hospital bill change as little as they do because the groups of cases upon which they are based do not comprise the entire sample of persons who received such medical care. If everyone had given a numerical answer to these questions there might have been enough prevarications or cases of serious error in recall to effect the medians seriously.

These facts give a clue to one reason why there does not seem to be any relation between the legal status of the case and the accuracy of numerical answers; the fact is that more persons whose cases are pending refuse to answer or do not give a numerical answer than persons whose cases are settled. This was not true of "Length of time in the hospital," "Length of time out of school," and "Length of time out of work," and only three persons refused to tell the amount of their average pay for the eight weeks before the accident date. However, the number of non-numerical answers given to the questions "Amount of hospital bill," "Amount of doctor bill," and "Length of time under the doctor's care" in pending cases seemed significant. There was an overloading of non-numerical answers in pending cases.

One reason for this is that in some pending cases persons were still under a doctor's care; another is that some of the persons whose cases were pending had actually forgotten when their medical care ceased. They had medical care for a long time and it ceased so gradually that it was hard to recall the precise end of it. And of course some persons exaggerated by saying that they were still under the doctor's care long after the care had actually ceased. And when cases were pending many people who might otherwise tell the amount of a bill said that they did not know it because it had been sent to the insurance company or to the lawyer. A check of such statements showed that they had been told the amount of the bill. Persons who hoped to recover accident compensation probably felt that it was wise to claim no responsibility for bills—not even to the extent of knowing the amount of them. For these reasons, therefore, the problem of securing information to some questions when pending compensation cases are being studied, is primarily one of securing numerical answers.
A discussion of answers to specific questions will reveal some interesting things:

The answers to the question of how long it was after the accident before pre-school children were able to play around as usual were given promptly. Three mothers said that their children had not been incapacitated at all; others gave such answers as: "Was kept in the house for one week;" "Was all right in one week;" "Was allowed out of the house in one week for one hour daily;" "The doctor still orders quiet;" "Three weeks before he played as usual." The descriptions sounded as though the mother remembered definitely. However, the questions with regard to the length of time before the housewife started to wash dishes, clean house, go shopping and carry on her usual social life, were much less satisfactory and the investigator frequently felt that the answer was worth nothing. In nine cases out of twenty-two an indefinite or a mixed-up answer was given which could not be straightened out. None of the answers inspired confidence. A woman starts to do housework after an illness gradually and it is impossible to set a date.

An account of data on the amount of clothing damage sustained by the injured persons is interesting because 143 out of 193 persons who answered this question said that no damage had been done, that the clothes had been washed or repaired at home, that they were old and worth practically nothing, or that the only cost was that of sending an article to a tailor or cleaner, or of buying a new pair of stockings. Twenty other persons said that the damaged clothes had been a year or more old at the time of the accident. Most of the persons who said their clothes could not be worn again were in this group. Sixty-nine persons said that their clothes had not been damaged at all. These answers are especially interesting because on Motor Vehicle Accident Study No. 1 the interviewed persons were suspected of greatly exaggerating clothing damage.9

The answers to questions concerning age, length of time in the hospital, time out of work, amount spent on medicine, and how well the person finally became after the accident, have been discussed in the preceding chapters of this book and will not be repeated here.10

The percentage of agreement between the family answer and the outside source answer was low in "Length of time out of work" since the two sources agreed in only 42 per cent of the cases in which numerical answers were given. In addition to this few of the disagreements were within 10 per cent of the length of time involved. The length of time out of work was anchored definitely (eg., "I returned two weeks ago last Monday") in only nine out of fifty cases, a smaller proportion than in time out of school and time in hospital, and all of those answers were incorrect. More definite evidence of intentional exaggeration by the interviewed person exists here than in time out of school. Fairly definite evidence exists in nine out of twenty-nine cases in which the family answer disagreed with that of the

9. The reason for this difference is probably the fact that a much longer time had elapsed before the interview in Accident Study No. 1.
10. They have been discussed on pages 17-18, 31-33, 43, 46-47, 91, 92-93.
employer. Two examples of this evidence are as follows: One man said that he had been working on a certain job at the time of the accident, though he had been fired a long time before it; another said that he had been out of work ever since the accident, though both his mother and his employer said that he had not been disabled at the time of the accident and had been laid off several weeks later. Because of evidence of this type it seems probable that the largest errors found on this question were due to intentional exaggeration on the part of the injured person rather than to the failure of some employers to consult their records or to unintentional errors on the part of the injured person.\footnote{11}

Though some of the doctors did not consult their records when answering questions, just as large a proportion of answers given from memory agreed with answers given by the persons injured as those from records on the question concerning length of time under the doctor's care. In addition to this, when the two sources disagreed the disagreements were no larger in the cases given by the doctor from memory than in those read from records.

In the question on length of time under the doctor's care a much larger proportion of the seventy persons who gave the answer in terms of numbers of visits made to the doctor agreed with the answer given by the doctor than persons who answered in terms of day or weeks. These people probably remembered more definitely than those who answered in other terms.

Thirty-six persons out of the 147 for whom checks were secured on this question said at the time of the investigator's first visit to them that they were still under the doctor's care, but twelve of them had already at that time completed the medical treatment under those doctors, so that their answers were incorrect even at the time of the first interview. Only about one-half of those who originally gave a non-numerical answer of this type to this question ever gave a numerical answer to it; the others refused or could not recall the date when the agent revisited them. Evidence of conscious exaggeration on this question exists for the twelve cases cited above and for three in which the doctors knew the person injured and knew of the accident but had not treated it. This type of period of time can easily be used to bolster up a story of incomplete recovery. It, plus "time out of work" would seem to be the two questions most worth while exaggerating in this study. On the other hand one can see easily that it is more difficult to recall the exact day of a last visit to a doctor than it is to recall certain other dates.

The fact that none of the discrepancies were within 10 per cent of the length of time as given by the doctor, and that the percentage of agreeing cases increases only from 50.9 per cent to 53.7 per cent when all errors within 20 per cent are considered correct shows that something is seriously wrong with this question. This is the only one of the eight principal questions on which the investigator experienced difficulty in scoring the answers for agreement and disagreement. She never liked the question during her visits to persons injured and was never satisfied with their answers to it.

\footnote{11. However, one-third more of the employers who gave answers from memory disagreed with the family answer on this question than of the employers who consulted their records before answering the question.}
Probably no change in the phrasing of the question could produce more accurate replies.

Since this is the last question on periods of time to be discussed here a tentative summary of these may be made in terms of the possible ease with which the various periods of time may be recalled. This ease probably depends upon the usualness of the experience, the degree of attention it is given by the person answering the question, and the importance it assumes in his life. Considered in this way "time in the hospital" may be the easiest to recall, time out of work next, then time under the doctor's care, time out of school, time before pre-school children could play around as usual, and time before the housewife could wash dishes, etc., in the order named. However, this order would not necessarily hold for every group and every study in which these questions were used; ability to recall may vary with variation of groups studied and the variation of the circumstances under which the experiences originally took place.

Thirty-two out of fifty-eight answers concerning the amount of hospital bill agreed with the hospital record. Three persons refused to tell the amount of their bills. One person said that a certain operation resulted from the accident, though it did not. In five cases persons said that they had been treated in certain accident rooms, though the hospital records contained no information about them. Eleven people said they did not remember the amount of the bill or that the bill had been sent to a lawyer or insurance company and they did not know how much it was. In six of these cases they must have known the amount of it since it was the policy of the hospital to inform every patient before discharging him. Since in these six cases the person injured was an adult male it is difficult to see how he could avoid knowing the amount of his bill. 12

Forty-nine out of ninety-six numerical answers given by the family to the question on amount of the doctor bill agreed with those given by the doctor. Since some of the doctors did not consult records the difference between this question and the question about the amount of the hospital bill in the proportion of cases in which answers secured from the family and from outside sources agreed within 20 per cent cannot be evaluated. People may recall the amount of a hospital bill more accurately than the amount of a doctor bill. This partly because it is a more unusual experience than having a doctor and partly because the doctor may have treated them for other ailments and the bill which they recall may cover more than the treatment of one specific ailment. However, the proportion of approximately accurate answers would almost certainly be larger if more of the doctors had consulted their records before answering the questions. Though the doctors who gave treatments seemed to recall just as accurately as though they had consulted their records the doctors who merely X-rayed the patients did not. 13

12. When persons gave non-numerical answers on the Yale Motor Vehicle Accident Study No. 1, the data were secured from the insurance company, lawyer, doctor or hospital. In an ordinary social study, therefore, this method may be used in order to complete in the information on each case.

13. These doctors did not consult their records because they said that X-ray costs for each part of the body were fixed and never varied. The investigators could never tell whether they were wrong or whether patients knew the amount of their X-ray bill less definitely than they did other doctor bills.
In asking questions on this subject the investigator was always worried by the number of cases in which the person answering the questions said that no bill had been received yet, or that the bill was sent to some one other than the family. These answers were given so often that the investigator became suspicious of them. It was possible to check this type of answer in fifty-four cases, thirty-six of them being correct; nine of the correct and nine of the incorrect ones were given by the wife of the family about her accident or an accident occurring to one of her children. In addition to the eighteen cases in which people said they did not know the amount of their doctor bill when they did know it, eight persons said they had known it but did not remember it, five refused to answer the question, six doctors did not recall the cases, and four doctors were tending patients for ills not due to the accident.

"Average pay per week" and "Total lost pay" may be considered together since the latter was computed on the basis of answers to time out of work and average pay. Since some employers gave information from memory the possibility of the error being made by the employer must be considered. On "average pay" when the two sources disagreed in their answers the disagreement was larger when the question was answered from the memory of the employer than when he consulted his record. Fewer of the "memory" cases, however, disagreed with the family answer than of the record cases. On "total lost pay" eight out of eleven cases in which the two sources disagreed by more than twenty-five dollars were given by the employer from his record.

Three persons refused to tell their average pay. Twenty-six out of forty-five persons for whom checks were secured on this question were paid by the day or week rather than by the piece and worked full time every week. The answers of these persons agreed with those of their employers on this question in fourteen out of the twenty-six cases. Answers about average pay agreed exactly with those of the employer in only one case in which the pay varied from week to week, and more of these disagreed by one dollar or more than the unvarying pay rates. Eight of the eleven cases in which answers given to "Total lost pay" disagreed by more than twenty-five dollars, however, were cases in which the pay rate did not vary from week to week.

In addition to the forty-two numerical answers to "Total Lost Pay" there were five non-numerical answers (persons who were still unable to work at the end of the field work period). In addition to these cases in which total lost pay could not be computed there were four persons who changed jobs at the end of their illnesses, three who refused to say whether or not they had lost their pay and two who had never worked for the employer whose name they gave. Seven of the forty-two persons who gave numerical answers to this question admitted that they had lost no pay while ill; ten others claimed to have lost pay though their employers said they had lost none. Eight of the largest disagreements in answers given by the employer and employee on this question seemed to be intentional attempts of the injured person to mislead the investigator.

In discussing the answers to questions with regard to time out of work, average pay per week, and total lost pay, it is important to indicate that
The accuracy of answers concerning the type of injury sustained by the injured person will be discussed next. In classifying the answers given by the outside source and by the family the code sheet classification of major injury was used which had been worked out for Motor Vehicle Accident Study No. 1. (Medical School doctors had been consulted in formulating it.) The code is as follows:

x—not stated
y—other, not classified
0—fractured skull
1—fractured spine
2—fractures, other
3—brain
4—spinal cord, nerves
5—internal injury, thoracic
6—internal injury, pelvic
7—skin-muscle, severe
8—skin-muscle, slight
9—psychic trauma, severe
10—psychic trauma, slight

Some of the most difficult employed groups, from the point of view of securing answers on these questions, were not checked up in this study, and other difficult groups formed a smaller proportion of the cases than would sometimes be the case (building tradesmen and other seasonal trades). Domestic service women were not checked. Another difficult group is that of persons who are in business for themselves. Anyone who has ever attempted to get an estimate of total yearly income from the owner of a small grocery store or tailor shop realizes the possibilities of error involved here. Answers of this group could not be checked. The two most numerous types of employees whose records were checked were factory workers and persons whose work took them out on the street (taxi men, delivery men and boys, etc.). Among the 45 persons whose pay rates were checked, the lowest full-time (as distinguished from part-time jobs) average pay was $10.50 per week and the highest was $75; only two received over $50 and only eight over $30.

It was especially hard to distinguish between slight and severe skin muscle injuries; in cases receiving hospital treatment accident room cases were called severe skin-muscle when sutures were required or when the body was described as abraded or contused in five or six places. In the admitted cases the skin-muscle injury was considered severe if the patient was in the hospital two days or more. Doctors usually stated the severity of the skin-muscle injury. The family answer concerning skin-muscle injuries was classed as severe when the interviewed person called it that, or when the person was out of work or out of school one week or more. Injuries were classed as "slight" when no time was lost from work or school. The data concerning length of time in bed, time when bandages were removed, etc., also aided in the classification of injuries.
The accident room diagnosis was incorrect in four cases; broken bones or concussion were discovered later. The hospital and doctor or two different doctors disagreed on the diagnosis in fourteen cases, in eight the disagreement being between a skin-muscle diagnosis and a more serious diagnosis (y, 1, 2, 3, 4, 5, 6) or between two kinds of serious injuries. In sixty-eight out of eighty-two non-hospital cases the family and the doctor agreed on chief injury, while they agreed in fifty-seven out of eighty-three hospital cases. In cases in which both the hospital and the doctor checked the family answer the answers of the family and of the outside source agreed in twenty-nine out of forty-three cases.

A larger proportion of non-hospital injuries were skin muscle injuries than of hospital injuries and a larger proportion of the disagreements in the former were between slight and severe skin-muscle than among the hospital cases. Changes to more serious injuries were usually to fractured rib or jaw, concussion, or bone and joint injuries; the families seldom knew the difference between skin-muscle and bone and joint injuries and they did not understand or had not been told of concussion. When more serious injuries were claimed by the family than the outside source indicated, the claims made were fractures other than fractured skull, nervous breakdown (psychic trauma), or internal injuries.

A few words may be said about the ability of the persons injured to give names and addresses of doctors and lawyers accurately enough so that they could be located. Very few of the persons injured belonged to the highest social class or to the fairly well-to-do families of New Haven. Most of them belonged to the middle and lower classes. The families interviewed frequently did not know how to spell the name of the doctor or lawyer and sometimes pronounced it very incorrectly. By diligent searching of street and telephone directories these were located. The interviewer was surprised at the difficulties which she encountered in this respect. Any of the persons interviewed gave incorrect descriptions of the location of the offices of these professional persons.

A statement may be made about the answers which interviewed persons qualified by using words such as "about." When the person interviewed qualified his answer it was less likely to be correct than if he gave a definite unqualified answer. This is to be expected. Interesting data on this point may be brought to light by comparing the per cent of cases in which someone qualified an answer with the percentage in which the answers given by the two sources agreed exactly, agreed within 10 per cent and within 20 per cent of the amount of money or time involved.
Qualifications of answers did not prevent 90 per cent of the estimates concerning amount of the hospital bill from being within 20 per cent of the actual amount as recorded by the hospital.

It is also interesting to study the variation of consistency of the answers with language handicap of the interviewed person. Twenty-nine of the interviewed persons spoke English with an accent which was neither British nor American; a member of the family or a neighbor was present as interpreter in sixteen cases; in four others no interpreter was present but one was needed. The answers given by these persons agreed with those secured from sources of information outside of the family in as many cases as did the answers of other questions.

**Conclusion**

If persons injured in motor vehicle accidents usually behave, when asked about their accidents, as the persons interviewed in this study behaved, the investigator is in something of a dilemma. If he conducts his interviews within the first six months after the accidents, information is likely to be somewhat incomplete or falsified. If he waits until the persons have completely recovered from their accidents and have settled their compensation cases the persons injured are likely to recall very inaccurately important facts concerning the accident. Data may be made more accurate, of course, by the consultation of sources of information outside of the family. This was done on Yale Motor Vehicle Accident Study No. 1 as well as in the study reported here. The study reported here seems to prove it indispensable. Less work is involved, however, when insurance companies are consulted rather than doctors and employers. On Motor Vehicle Accident Study No. 1 insurance companies, lawyers and hospitals were consulted. The work of checking these outside sources was not arduous.

<table>
<thead>
<tr>
<th></th>
<th>Percent of total answers correct:</th>
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<tbody>
<tr>
<td></td>
<td>Exactly</td>
</tr>
<tr>
<td>Time in hospital ...............</td>
<td>1.8</td>
</tr>
<tr>
<td>Time out of work ..............</td>
<td>21.0</td>
</tr>
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<td>Time under doctor .............</td>
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<td>Average pay per week ..........</td>
<td>6.6</td>
</tr>
<tr>
<td>Hospital bill ..................</td>
<td>20.6</td>
</tr>
<tr>
<td>Doctor bill ....................</td>
<td>28.1</td>
</tr>
</tbody>
</table>
In the preceding pages many statements have been made concerning the recall abilities and the reactions of interviewed persons. By way of summary it might be interesting to explain some of the techniques used in this study to make such statements possible:

1. The questions covered in the interview were chosen and arranged in such a way that a connected story could be secured of the injury, losses and disability duration. The accident situation was covered thoroughly from the time of injury to the time of complete recovery. This was done in order to make the interviewed person establish associations helpful to memory. This gave him a much better chance to recall correctly than if the questions had been asked in a haphazard order.

2. The detail of the questions and the logical order of the investigation afforded a possibility for checking the internal consistency of the story told. It also made it possible to secure a more substantial basis than would otherwise be possible, for formulating opinions of the extent to which the interviewed person was distorting the information.

3. During the interview notes were taken on scratch paper. These were transferred to the schedule in the office. This procedure made it possible to secure a more detailed account than could have been recorded in the small space which could be allotted to each entry on the face of the schedule. When the schedule was written up a narrative report was written in addition to the entries on the schedule. This report made the entries more understandable than they would have been alone. In this narrative report the interviewer recorded all of the interesting things which had occurred during the interview—-comments on the questions, on the organization which was making the study, etc.

4. In the notes about each schedule, the exact answer given to each question was recorded in quotation marks. These were useful when qualified answers had been given, and were useful in checking the answer against outside sources of information.

5. When the final answer to a question could not be obtained at the first visit to the family the date when each answer was obtained was entered on the schedule; in complicated cases several succeeding answers were given to questions relating to which doctors were being consulted, length of time under the care of each, diagnoses given, type of treatments received, and how the person was progressing. A careful record was kept of the date when the person gave the information about new doctors, as well as a record of the dates when the new treatments began and ended.

16. The interviewer very often suspected exaggeration during the interview because the details of the story contradicted one another despite her attempts to iron out the inconsistencies.
Only by the recording of such details as these could the answers given by the injured persons be compared justly with answers secured from sources of information outside of the family.
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