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OCCUPATIONAL BOREDOM AND WORKER PRODUCTIVITY AS RELATED TO SOCIAL FACTORS, PERSONALITY TRAITS, AND TASK MONOTONY

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TO JO

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CHAPTER I

INTRODUCTION

The topic of boredom received and still holds an important place in modern psychological literature through its connection with a broader problem of contemporary civilization. Many popular writers (e.g., 28, 34) in the recent past have protested that mass-production techniques were de-humanizing the industrial worker, reducing him to little more than an extension of the machine he operated. In support of this protest were heard many complaints from workers themselves regarding the monotony of their jobs and its effect upon them. For example, Davies wrote in the British Medical Journal:

> These girls realized that their full powers were not being used. By way of reaction many of them said that though they once read books, they had ceased to do so now. They seemed resentful that this should be so, and projected the responsibility on to the job. They felt, as one of them said, as if they were becoming 'turnips,' that they were not as intelligent as they used to be (7, p.474).

Substantial interest was thus generated in the effect of increasingly simple and repetitious labor on the factory worker, particularly with reference to the production of boredom. German psychologists initiated the investigation after the turn of the century and were joined by their British and American colleagues during the second and third decades until, today, a considerable wealth of theoretical and empirical material has accumulated.

Frequency of occupational boredom. That boredom has been reported with significant frequency in the job situation is indicated not only by everyday experience but also by a variety of research. In 1929, for example, Wyatt et al. (43) found the majority of forty-nine female factory workers to be either moderately, severely, or always bored. Wyatt and Langdon (44), in an expanded study of four factories, found that two-thirds of 355 operatives were at least moderately bored with their work, while one-quarter complained of severe and chronic boredom. Jahoda (15), after several months of personal job experience, reported that boredom was a constant problem for most of the girls throughout the work week. Cain (6) found that she could classify 20 of 72 female factory workers as "monotony-susceptible" or significantly bored.[1]

Further evidence of the importance of the problem is the fact that it is included in almost all textbooks and manuals of industrial psychology. In addition, it has been discussed editorially in one of the leading journals of vocational psychology (25).

Varieties of boredom. That boredom is not exclusively a matter of simplicity and repetitiveness of work was early pointed out by Munsterberg (23). Writing in 1913, he cited the boredom complaints of various professional groups whose work units or cycles were measured not in seconds but in hours, days, and weeks. Boredom, therefore, although perhaps more common in the simpler jobs, is not restricted to them.

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[1]Some authors have used the terms boredom and monotony synonymously. In the present paper, monotony shall be used in the objective sense of sameness of stimulation while boredom shall refer to the subjective state of the individual.

Nor, as is common knowledge, is boredom restricted to the work situation; it may develop at many times and in many places in no way connected with work. In other words, although the psychological literature has dealt with the problem of boredom as manifested in the job situation, and more specifically, in the simplified job situation, the problem might well be one which could be studied in and of itself. It is entirely possible that boredom is a discrete psychological phenomenon, that it is etiologically the same from situation to situation, and that one general theory can unify what presently appears to be a mixed picture. The psychodynamics of the bored worker may turn out to be no different from those of the bored reader, the bored listener, or the bored traveler.

However, in the absence of such an integrating theory, the present study shall confine itself to the treatment of occupational boredom as a separate problem. Whether or not the findings of this circumscribed approach will fit into a broader conception of boredom must await future developments.

Boredom and fatigue. Where fatigue is defined in terms of physiological impairment, differentiation from boredom is simple. Physiological fatigue is essentially a biochemical affair, being concerned with the accumulation of metabolic products following continuous or intensive energy consumption. The physiologically fatigued person desires and needs rest from all activity. In boredom, there is no tissue impairment for which rest is the only remedy; the desire for activity, albeit a different one, is at least as strong as ever.

Where fatigue is defined subjectively--as in "industrial" fatigue, "occupational" fatigue, or "nervous" fatigue--differentiation from boredom becomes slightly more involved. Meyer Brown distinguishes industrial from physiological fatigue in the following manner:

> Physiological fatigue is a chemical process occurring mainly in the muscles affected, whereas industrial fatigue is a condition of the entire worker in which mental attitude is more important than muscle or blood chemistry...We now know that in men who have engaged in gruelling physical exertion that there are actual chemical changes,...but this does not apply to the average worker who is weary after a day's work in a factory (4, p.3).

Ryan sheds light on this "average worker" who is weary after a day's work:

> A man who is continually irritated by his working mate or his superior, who is in fear of discharge or of serious accident, who feels that he is doing unimportant work which stamps him as a failure, or who actively dislikes the tasks he is required to perform--such a man is likely to be exceedingly weary at the end of the working day, and indeed may feel 'worn out' most of the time (31, p.188).

The absence of organic change in industrial fatigue has been emphasized by the work of the Harvard Fatigue Laboratory. Forbes (10) writes that although it was one of their ambitions to study industrial fatigue, they failed in their organic approach. Nothing they measured (blood, urine, sweat, etc.) changed significantly even though the worker said he was now tired.

Although boredom and industrial fatigue have in common an intact physical picture, one major distinction between them is in the initiation of activity. The industrially fatigued worker often behaves as if physiologically fatigued, complaining of being "tired," "weary," "sluggish," "lethargic," or "exhausted," completely lacking in "pep"

and "energy." He passes much of his time away from work in idle fashion, sitting and lying down a great deal (32). Although he forgets about his complaints once someone has propelled him into an activity he enjoys, he seems unable to get started in such activities under his own power. This finding contrasts sharply with the hyper-suggestibility of the bored individual who craves something (else) to do. The weakest invitation will often arouse immediate, intense, and grateful response.

A second difference between the two consists in their descriptive language; boredom is more often a matter of sleepiness, drowsiness, and dullness than it is of weariness and exhaustion. Finally, mention may be made of some features manifested in acute or advanced states of occupational fatigue which rarely occur in boredom: tension, insomnia, anorexia, depression, irritability, nausea, sweating, palpitation, breathlessness, headaches, and sexual disorder (26). Just as in the early stages there is tiredness without impairment, so later there is illness without an organic syndrome. It is apparent from this list that severe occupational fatigue is essentially a neurotic condition.

Boredom and monotony. Some authors (cf., p.84) have used the terms boredom and monotony synonymously. The present writer, however, distinguishes between the two. Whenever he uses boredom, he will be referring to the subjective state of the individual while monotony will be used to refer to objective features of the stimulus situation.

CHAPTER II

BACKGROUND

The empirical and theoretical literature of occupational boredom may be conveniently divided into the areas of task monotony, intelligence, task demands on attention, conflict, personality, and interpersonal relations. Each area will be briefly summarized in the following paragraphs.

Task monotony. The first major opposition to the romantic notion that task monotony must lead to acute boredom and eventually to personality blunting came from Munsterberg (23) in 1913. He secured his data by visiting the factory scene and personally interviewing those workers whose jobs seemed to reign supreme in monotony. His study of the lamp-packer has become a classic in boredom literature:

> In an electrical factory with many thousands of employees I gained the impression that the prize for monotonous work belonged to a woman who packs incandescent lamps in tissue paper. She wraps them from morning until night, from the first day of the year to the last, and has been doing that for the last twelve years. She performs this packing process at an average rate of 13,000 lamps a day. The woman has reached about fifty million times for the next lamp with one hand and with the other to the little pile of tissue sheets and then performs the packing...She evidently took pleasure in expressing herself fully about her occupation. She assured me that she found the work really interesting, and that she constantly felt an inner tension, thinking about how many boxes she will be able to fill before the next pause. Above all, she told me that there is continuous variation. Sometimes she grasps the lamp or paper in a different way, sometimes the packing itself does not run smoothly, sometimes she feels fresher, sometimes less in the mood for work, and there is always something to observe and something to talk about (23, p.195).

The lamp-packer's reaction, moreover, was typical of his findings.

On the other hand, he found many workers occupied in much more complex activity who complained bitterly of boredom. He pointed out that even professionals--teachers, physicians, judges, actors--may voice the same complaints while their colleagues, engaged in the same pursuits, find great diversity and satisfaction. His research convinced him that boredom "depends much less upon the particular kind of work than upon the special disposition of the individual" (23, p.197). Munsterberg's own hypothesis, that boredom is correlated with the ability to perceive similarity of stimuli, failed to stand up under test.

Intelligence. Perhaps the first explanation to occur upon hearing of Munsterberg's lamp-packer would be couched in terms of low intelligence. Much research has been performed on this factor. Kornhauser (17), Viteles (39), Burnett (5), Wyatt et al. (43), Pond and Bills (29), and Wyatt and Langdon (44) all found evidence of positive relationship between intelligence and job boredom. At least two investigators, however, failed to find any significant relationship (6, 36). Ryan (31) criticizes two of the studies yielding positive results, one (43) for its failure to demonstrate predictive value, the other (29) for what he believes to be an unwarranted assumption (turnover is primarily a function of boredom). He feels that "the value of intelligence as a predictor of boredom is therefore left in doubt" (31, p.203). Ghiselli and Brown (11), after reviewing the literature, express similar skepticism.

Task demands on attention. During the early 1920's, Winkler (40) and Wunderlich (41) stressed the importance of being able to either completely absorb oneself in or divorce oneself from the repetitive task. If the work is of such nature that the attention is never entirely free nor entirely absorbed, i.e., if it is "semi-automatic," boredom is more likely to result. Workers who divorce themselves are said to "automatize" the task and to thus be free to daydream or talk of more pleasant experiences than that before them. Some confirmation of this hypothesis came out of the Wyatt et al. studies (43, 44) in 1929 and 1936 where they found boredom associated with inability to mechanize simple manual processes.

Conflict. The first conflict theory was submitted by C. S. Meyers (20) in 1920, and is closely related to the problem of attention. Reasoning by analogy, he saw boredom serving a protective function similar to that served by fatigue. Impressed with the guardian nature of "work inhibition" in his ergographic study of simple muscular activity, he likewise regarded boredom as a warning symptom--this time, with reference to central nervous exhaustion, brought about by the continuous suppression of tendencies incompatible with maintenance of the task set or attitude. Basic to his approach is the assumption of constant competition of stimuli for attention, with selection of one stimulus necessarily accompanied by inhibition of all others:

> There comes a time when they break through into consciousness, and, by their tendency to inhibit rival processes, make the continuance of the first process impossible. If it is necessary for any reason to keep these distractions out of the mind, feelings of monotony arise (7, p.474.)

Both Wyatt et al. (43) and, in this country, Poffenberger (27) essentially agreed with Meyers, although with slightly different emphases. Poffenberger accentuated the influence of "distractions" at a time when the individual is obliged to attend to a routine task; "the wants must be inhibited in favor of the needs," eventuating in fatigue of the "attention mechanism" and producing boredom (27, p.222). Wyatt et al. elaborated the need for greater volitional effort in both the performance of an unpleasant or unappealing task and in the concomitant repression of intruding ideas and desires.

A second conflict theory was submitted by Barmack (1) in 1937. He differentiated feeling of boredom from attitude of boredom. The boredom attitude has two aspects, one concerned with inadequate motivation, the other with conflicting tendencies to remain in and to depart from the monotonous situation. Boredom feeling consists in the "appreciation of the sleepiness, dullness, 'pseudo-fatigue' associated with depressed or inadequate vital activity" (1, p.68). The physiological inadequacy, in turn, is rooted in inadequate motivation. In sum, boredom according to Barmack involves a conflict between the desire to remain in and the desire to leave an unpleasant situation, the situation having become unpleasant when low motivation resulted in either actual or iminent inadequacy of physiological adjustment to the work being done. In partial support of his theory, he did find qualitative tendencies for depressed blood pressure, pulse rate, and oxygen consumption to be obtained with a report of boredom while heightened indices tended to accompany a report of interest.

A third conflict theory, and the most recent theory of occupational boredom, was offered by Priscilla Meyers (21) in 1950. She conceives boredom as a state of conflict between the "whole worker and the whole job, rather than isolated aspects of either" (21, p.12). From this conception it follows that the more one knows about the worker and his job, the more accurately one can predict any boredom which might arise out of their interaction. In her research she chose the following six areas to represent the degree of "fit" or failure of fitness between worker and job: physical activity, flexibility and rigidity, automatism and reflective thought, job complexity and worker intelligence, social relations, and job opportunity and worker aspirations. The scores for each area were conceived as measures of conflict between worker and job; the total score represented a measure of the total conflict in worker-job interrelation. The resultant correlation of these scores with boredom scores made possible a prediction 16% more accurate than chance. The data supported her contention, then, that boredom is a "reflection of conflict between the needs and desires of the worker and the demands of his job" (21, p.38). It might be mentioned that this formulation was anticipated by Poffenberger a quarter-century before when he wrote: "Where needs and desires coincide, monotony should be entirely absent" (27, p.222).

Personality. At least as far back as Winkler (40) in 1922, fantasy or mind-wandering has been mentioned as an asset in monotonous work. As indicated earlier (cf., p.8), the "automatizing" group or type allegedly find their attention free for more interesting and pleasant

preoccupations and consequently experience little or no boredom. Wyatt et al. (43) in 1929 demonstrated an inverse relationship between boredom and mind-wandering. In another article the same year, Wyatt wrote:

> Mind-wandering (or day-dreaming) appears to compensate for the deficiencies of life in general and industrial conditions in particular. The worker who is able to day-dream becomes oblivious to unpleasant realities and remains comparatively undisturbed by the unsatisfying features of repetitive work (42, p.168).

Wyatt and Langdon (44) allied day-dreaming in 1937 to the personality typology of introversion-extroversion. They found that boredom was more common amongst the extroverts since, presumably, the introvert could find relief in reverie. However, they did note that the extrovert's equivalent pasttime, talking, served equally well in alleviating boredom--when it was permitted by the task and by the management. A soap-wrapper told the Wyatt group, for instance: "I used to like the old method of work because we could talk more and get to know each other better. Now we have to stop work to talk. The conditions do not allow us to be very sociable" (43, p.47). When talking was not allowed and when the nature of the task thwarted automatization, introvert and extrovert alike became bored.

Disputing the thesis that day-dreaming or introversion correlates negatively with job boredom is a considerable line of evidence beginning with Mayo's (19) report in 1925 on "pessimistic reverie." Combining the role of observer, mental hygienist, and medical therapist, a special nurse working in a spinning mill revealed to him that:

> The reflections or reveries of the workers...were uniformly pessimistic. If any of them was permitted to talk at length...the preoccupations he expressed, whether about himself, his life, his home, or the work, appeared to be almost invariably morbid (19, p.47).

A chocolate-packer in the Wyatt et al. study illustrates this point in her interview material: "I don't like the work, it is too dull and tedious and makes one morbid because there is so much time to think" (43, p.47). In Thompson's (36) research a few years later, a modification of Freyd's Introvert Extrovert Scale proved to be of little value in discriminating the monotony-susceptible. Cain (6) in 1942 not only found no negative correlation but actually found an insignificant positive link between introversion and boredom. Meyers (21) in 1950 found that her prediction battery actually improved slightly when she removed the factor, "automatism in work and preference for reflective thought."

Thompson (36) was the first to suggest that job boredom might be the reaction of an unhealthy personality. Sharing Munsterberg's conviction that the answer lay more in the workman than in the work, and impressed with the British investigators' clues regarding the role of personality, Thompson devised a battery of twelve tests to be correlated with his boredom criterion. The one item of the twelve which best predicted "susceptibility to uniformity" (36, p.173) was the Emotional History Record of Chassel and Watson, an unpublished test of emotional instability. Thompson believed his analysis gave evidence that workers differ to some extent in their boredom susceptibility from situation to situation, a specificity conception to which Wyatt et al. (43) were giving tentative support around the same period.

Ryan (31), influenced by Cain's results (about to be described), suggests there are both general and specific factors involved and that prediction, therefore, should not aim for unrealistic precision. To be able to say that certain types of individuals are likely to be bored by certain types of jobs is all that Ryan believes should be expected from the psychologist.

Cain (6), following Thompson's lead, divided her group of factory workers into the boredom-susceptible and the non-susceptible, and then proceeded to analyze each sub-group with respect to personal adjustment. She found that the bored workers tended to be young, maladjusted at home, unhappy in their general emotional adjustment, and averse to following a strict routine in their daily lives. A combination of these four factors differentiated sharply between the two subgroups. She also found that the bored workers were dissatisfied with their jobs and made many more complaints about them, thus confirming a previous finding of Wyatt and Langdon (44). According to Cain, boredom-susceptibility is therefore only one part of the total personality pattern. The boredom-prone individual does not like his work, is dissatisfied with his home life, and is discontented with his personal adjustment; he seeks change in his daily routine; he has many complaints to make about the working conditions in the factory; "in short, he is an individual who is dissatisfied with his status in life" (6, p.151).

Interpersonal relations. In their summary of job satisfaction research of 1951, Hoppock and Robinson state the following as the current trend:

> Many researchers in the area of job satisfaction appear now to accept the thesis that such factors as job security, wages, physical working conditions, etc., serve as symptoms of job satisfaction or dissatisfaction but are not the causes in themselves. The trend seems to be in the direction of a probing for individual-adjustment and group-adjustment causes (14, p.594).

This trend toward the incorporation of personal and social variables into the analysis of job satisfaction could well have had its origin in the boredom field. As early as 1926, the British psychologist May Smith was insisting that the monotonous task is only one part of the relevant stimulus situation, other parts of which are the "opinion of fellow workers. . .and the collective life of the factory" (33, p.29). Davies observed during the same year that "a good factory atmosphere seemed to be associated with fewer boredom complaints," even though other conditions were familiarly monotonous. He concluded that boredom is "conditioned, not only by the industrial environment, but by personal relations of all kinds" (7, p.475). Wyatt, publishing several years later, claimed that "Loyal and enthusiastic operatives, surrounded by a sympathetic and friendly atmosphere, will experience a satisfaction which reduces boredom to comparative insignificance" (42, p.169). In the 1920's, then, at least three British psychologists introduced the social factor, at the group level, into boredom treatises. In addition, there was the Wyatt et al. (43) finding that boredom was reduced when operatives worked in small groups rather than in isolation.

In the following decade, Hoppock (13) personalized or individualized the social factor by focussing on the interpersonal adjustment of particular workers. He concluded from his research that a major factor in job satisfaction:

> ...is the facility with which the worker adjusts himself to other persons both on and off the job, his ability to find in them things which he can like and respect, and so to conduct himself that they will like him (13, p.280).

In that part of his research which involved comparisons of 100 satisfied and 100 dissatisfied teachers, two of the thirteen factors which significantly differentiated the two groups were emotional adjustment and monotony (boredom). Under emotional adjustment, the item yielding the greatest difference was, "Do you often feel lonesome, even when you are with people?" Hoppock emphasizes the connection between personal and social adjustment: "Closely related to emotional adjustment is the problem of human relationships. These appear with remarkable consistency to be related to job satisfaction" (13, p.29). Out of the 258 items in his questionnaire, the two monotony items ("Is your work too monotonous?", "Are you satisfied with the amount of variety in your work?") discriminated at a level of significance exceeded by only seven other items.

In presenting the report of the Committee on Work and Industry of the National Research Council, George Homans (24) declared that the social development of the Hawthorne experimental group must be considered an important factor in its unprecedented production rise. Whereas too often social contacts in industry are marked by discomfort and conflict, in this case the girls made friends in the test room and went

together after hours. Demonstrative of the existence of a "sympathetic and friendly atmosphere" (cf., p.14) was the girls' practice of helping one another when the laggard had good reason for falling behind. "Then the others would 'carry' her. That is, they would agree to work especially fast to make up for the low output expected from her" (24, p.64). Needless to remark, boredom complaints are not reported for this group during the course of the experiment.

Cain (6), as Thompson before her, found bored workers scoring significantly low in the area of emotional adjustment. Analysis of her small group of items under that heading reveals that most contain a large social component. Thus: "Do you have a lot of friends?", "Are you troubled with shyness?", "Do you often feel lonesome?", and "How does it affect you to have people watch you?" (6, p.92). Similarly, most of the home-adjustment items--another category in which the bored workers scored significantly low--dealt with interpersonal relations. In sum, then, although Cain spoke of boredworkers' unhappy emotional and home adjustments, she could just as accurately have spoken of faulty interpersonal relationships.

Meyers' (21) contribution to the growing material on the social factor in occupational boredom was to show that its inclusion in a group of five factors helped to achieve boredom prediction 18% better than chance. It must be pointed out, however, that the social factor as represented in Meyers' research is more a matter of introversion-extroversion than of quality of human relationships. She was more interested in learning whether social stimulation on the job was of the

correct amount in terms of the worker's social interest than she was in ascertaining strength or solidity of interpersonal relationships.

Amongst the recent textbook authors in industrial psychology, only Ghiselli and Brown have dealt explicitly with social relations in the deeper sense of quality rather than quantity (introversion-extroversion). Their statement is so pertinent that it is offered in full:

> The interest value that an individual's job has for him does not arise solely from the nature of the industrial task itself but arises in part from the social features of the situation in which he works. The character of the group with which the individual works, the relationships between the persons who comprise the group, and the relations with supervisors and management are powerful factors in determining the individual's adjustment to his work, his attitudes, and his performance. In many instances these factors are far more important than the nature of the work and working conditions. It is apparent, therefore, that with an unfavorable social situation, boredom is more likely to occur. On the other hand, when the relationships with other workers and the management are favorable, the job may not appear to be monotonous to him even if the work itself has no great appeal to him (11, p.429).

CHAPTER III

AN INTERPRETATION OF OCCUPATIONAL BOREDOM

In most job situations, there are two major areas from which may spring satisfaction and dissatisfaction. One area, to be called the inner job area, comprises all those factors directly involved in the position itself--its remuneration, status, challenge, meaning, enjoyment, etc. The second area, to be called the outer job area, comprises the interpersonal or social environment in which the position is situated--one's coworkers, supervisors, customers, etc. These areas overlap at many points, yet appear to be sufficiently homogeneous to serve as conceptual tools in an interpretation of occupational boredom.

Turning to the psychology of personality for additional concepts, one may say that the worker's adjustment in the two areas may be characterized by either gratification or deprivation--gratification when needs are fulfilled, deprivation when they are not. Overall job satisfaction is postulated to be a function of the total gratification or need-fulfillment occurring in both areas. A worker may be satisfied despite meager gratification in one area provided the other area balances or compensates for the deficiency. Thus, the gregarious wife of a graduate student regrets that she works in a small, quiet office but is satisfied with her job since, as bookkeeper, she finds her position remunerative and challenging. If, however, this same job were held by an equally gregarious but unattached woman of superior economic and intellectual background, the inner job factors would be insufficient to compensate for deprivation in the outer, social area.

Where such an analysis departs from the obvious and assumes theoretical value is in its application to the boredom problem. From its inception, the inquiry into occupational boredom has dealt largely with the mass-production, assembly-line job. The aspect of such jobs singled out as being most responsible for dissatisfaction and boredom was its monotony, i.e., the repetitive, homogeneous nature of the task. The gratification yield from this one aspect of the inner job was very low. However, superficial observation quickly reveals that other inner aspects were equally sparse in their gratification offering. Remuneration, status, challenge, meaning, enjoyment, etc., all offered little need-fulfillment. Similarly, in the outer job sphere, deprivation was the rule. For the most part, worker toiled either in isolation, or if in close physical proximity, in silence. Whatever compensation the outer sphere could have offered was effectively blocked. In such depriving work settings, only those whose needs were minimal or who through their own devices circumvented gratification-barriers could achieve any substantial degree of job satisfaction. An example of such circumvention is provided by Jahoda from her on-the-job experience:

> Another means of escaping boredom (was) eating sweets... Sweets were either brought by one or the other of the girls and offered to her immediate neighbors, or--what happened more frequently--were bought during the afternoon in the factory. This involved one girl getting pennies from the others secretly without the foreman or any other person in charge being able to see what was going on; going over to the canteen or to a girl in another department who maintained a secret trade in sweets; in both cases pretending to fetch new material or being sent for an errand; coming back and distributing the purchases secretly; offering them to one another and then sucking them with great satisfaction... (It was) thrilling in itself even apart from the actual treat (15, p.201).

With the passage of time and research, steps were taken to effect improvements in both job areas. The British group, led by Wyatt, recommended various changes (e.g., rest periods, working in compact groups, talking, piecework pay, talks to workers about the meaning of their work) which helped to reduce the frequency of boredom complaints. It is apparent, however, that under ordinary conditions, the amount of improvement possible within the inner area of an unskilled factory job is limited. Salary, status, challenge, meaning, enjoyment, etc., can rarely reach the point where inner area gratification is enough to support overall job satisfaction--as happens frequently, for instance, in the professions, where challenge and meaning are often primary, and in business, where remuneration and status are of first importance. As Ryan states, "The worker whose task is simple and not very taxing, and whose specific ambitions do not go much beyond his present status, may find that the work is neutral in interest. Much more of his attention is occupied with. . .social factors in the work setting" (31, p.184). If this be true, then it follows that the bulk of gratification must come from the outer job sphere, the interpersonal or social environment of the position.[2]

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[2]The Battle of Britain provided a vivid exception to this suggested principle. In the summer of 1940, following Dunkirk, British labor patriotically insisted on working a 12-hour 7-day week. They continued at this gruelling pace until later in the fall when the cumulative effects of fatigue and blackout accidents began taking a considerable toll in output and absences. Management was then obliged to reduce the work week--succeeding, however, only over the workers' protests (4).

Before proceeding, one must freely admit that many exceptions are possible and undoubtedly do exist. Where need for inner gratification is low, meager gratification does not result in inner area deficiency and its concomitant necessity for outer area compensation. For example, the average housewife whose sole purpose in going to work is to supplement her husband's income is probably easily satisfied. Likewise, a woman of dull intelligence and sixth-grade training will most likely have little cause for complaint. In these and other instances, low gratification is matched by low need, producing little or no discrepancy between the two. From a dynamic viewpoint of job satisfaction, such cases have much in common with their seeming antithesis, wherein high gratification is matched by high need. It is the existence of discrepancy which, as Meyers (21) has insisted, is crucial in boredom. Mayo was also much impressed with this factor and, in fact, assigned it a key role in his definition. He wrote in 1933:

> Monotony (boredom), like fatigue, is a word which is used to denote any sort of induced imbalance in the worker such that he cannot continue work, or can continue only at a lower level of activity. There are many possibilities of such unbalance--different individuals and different situations. Inquiry into such situations looks for some contributing factor or factors in external conditions, something also in the worker himself (19, p.52).

The question now arises as to how one should interpret the appearance of occupational boredom in today's factories. The first step in evaluating the boredom of any individual worker is to discover the frequency with which boredom is reported in his milieu. If it is widespread, then one suspects that the situation is depriving, that through commission and omission, it is rigged with gratification-barriers. There may or may not be individual factors in the boredom response, but

until the situational defects are remedied, such factors would be exceedingly difficult to evaluate. However, once it is established that general morale and interest are good, and that only a small minority is complaining of boredom, then the investigator may act on the assumption that individual, personal factors are primary in producing the boredom,

These individual, personal factors may be classified as healthy and unhealthy. An example of the first would be the ambitious, well-liked young man whose boredom on the assembly line is traceable to deficiencies of the inner area; though low salary and low status are acceptable on a temporary basis, his thwarted efforts to learn more and to anticipate advancement are not. His job, quite palatable as a means to an end, is indigestible as an end in itself. If he stays, he stagnates, and perhaps develops neurotic trends. There are probably just as many workers, on the other hand, whose boredom stems from inability to share fully in the social gratifications available to the entire group. Whatever the particular personality defect, it does much or most of its damage in the outer job area, i.e., in the area of human relations. This reasoning is based on the preceding analysis which assumes that most of the gratification offered by the average unskilled factory job, unlike the professional and business positions, resides in the outer job area. According to this interpretation, many bored workers are socially deprived individuals whose interpersonal needs fail of sufficient fulfillment--despite the facts that improved working conditions and personnel policies make such fulfillment possible and that many of their coworkers face no such problem. This improvement

is so marked, in fact, that Blum, in recommending that social and recreational activities be used to combat monotony, remarks: "Some organizations carry this to such an extreme that a man's job seems merely a fill-in between one bowling contest and the next" (3, p.242).

CHAPTER IV

PURPOSE AND HYPOTHESES

The purpose of the present research was to explore the role of the social factor in occupational boredom as well as to shed further light on several inconclusive or controversial boredom variables.

Although the social factor had been amply mentioned through the years (cf., pp.14-17), nobody had empirically demonstrated its relation to occupational boredom. An attempt was made in the present research to fill this gap through the use of an experimental approach. In addition, the writer's contention (cf., p.20) that the social factor looms larger in occupational boredom as inner satisfactions decrease was subjected to experimental test.

Three personality factors were examined for their value in predicting job boredom: emotional stability, with its prior support from Thompson (36) and Cain (6); reflectiveness, with its welter of contradictory findings; and sociability, which had never been investigated directly although the related trait of extroversion had been studied frequently (for distinction between sociability and extroversion, see pages16-17). The importance of boredom prediction had often been stated by other writers (6, 21, 31, 43, 44). It was felt that if the present study could contribute some useful data to the personnel psychologists so that they might better screen applicants for the myriads of simple jobs abounding in our culture, a worthy purpose would have been served.

Another issue to which the present study was directed was whether or not boredom manifests itself in the output of the bored worker.

The Wyatt studies (43, 44) indicated that boredom is associated with a particular kind of work curve. At first, the U-shaped curve, which is the reverse of the typical work curve, was publicized (43). Later, a steadily rising curve was added, the rationale being that with fatigue at a minimum and with practice ruled out, the improvement must be due to the approach of quitting time (44). In the Hawthorne research, however, Roethlisberger and Dickson (30) failed to find such curves. Cain (6), who deliberately kept complete output records, also found no correlation; in fact, few such curves appeared at all, regardless of whether the worker was bored or not. Ryan (31) cites an early study of Link's (18) as illustrative of the influence on the work curve of factors other than boredom. Link had observed a steadily rising curve through each work period but attributed it to the desire of each worker to reach a certain goal by the end of the day or to anticipated bonuses for reaching certain output levels. Similarly, in Cain's factory, the workers had determined what they considered to be a normal day's work. If they were behind near the day's end, they might spurt to catch up; if they were ahead, they might cease work altogether, cleaning the machine or just puttering around until quitting time. The attempted contribution of the present study was to see whether boredom would be manifested in rate of improvement, variability of work rate, and gross output.

Hypotheses. In view of the exploratory nature of the present study with reference to the social factor, six alternative outcomes

were hypothesized. The first and obvious one was that the popular worker is less bored than his unpopular coworker. It was also thought possible that a worker's impression of his popularity is more important than his actual popularity. The possibility also occurred that a worker's enjoyment of his coworkers is important. In addition, it seemed worthwhile to test combinations of the foregoing three variables (popularity, conceived popularity, enjoyment) in the event that no single variable reached significance. It should be noted that the combination hypotheses, each giving prime consideration to a different variable, are mutually exclusive; the success of one necessarily involves failure of the other two. All hypotheses were phrased in the null form.

1. The response of occupational boredom is unrelated to social factors in the work situation.

    (a) Occupational boredom bears no significant relation to a worker's popularity with his coworkers.

    (b) Occupational boredom bears no significant relation to a worker's conception of his popularity with his coworkers.

    (c) Occupational boredom bears no significant relation to a worker's enjoyment of his coworkers.

    (d) Occupational boredom bears no significant relation to a combination of a worker's conception of his popularity with his coworkers, his enjoyment of them, and, above all, his popularity with them.

    (e) Occupational boredom bears no significant relation to a combination of a worker's popularity with his coworkers, his enjoyment of them, and, above all, to his conception of his popularity with them.

    (f) Occupational boredom bears no significant relation to a combination of a worker's popularity with his coworkers, his conception of his popularity with them, and, above all, to his enjoyment of them.

2. The degree of task monotony bears no significant relation to the correlation of occupational boredom with social factors in the work situation.

3. Occupational boredom bears no significant relation to the following personality traits: sociability, reflectiveness, and emotional stability.

4. Bored workers do not differ significantly from non-bored workers in rate of improvement, variability of work rate, and gross output.

CHAPTER V

EXPERIMENTAL DESIGN

To test the various hypotheses, it was necessary to (a) secure and collect boredom, sociometric, and personality measures on the same subjects, (b) secure and correlate the same data as it arises out of work situations of greater and lesser monotony and then test the difference between the two sets of correlations, and (c) secure output data from groups of more and less bored and then test the difference between the group means.

Procedure. The experiment was conducted on three consecutive Saturdays, beginning at approximately 10 a.m. As the subjects, all female (cf., p.36), appeared, they were ushered into a large classroom where they filled in the Thurstone Temperament Schedule. Upon completion of the schedule, the 24 subjects on each morning were given nameplates and assignments to one of the two experimental conditions--twelve to each condition. The assignments had been prepared in advance on an informal, semi-random basis. Except for making some effort to separate very close friends, the writer simply assigned subjects alternately to each condition as they made their availability known for particular Saturdays.

The two groups of subjects were escorted to separate rooms and did not see one another for the remainder of the experimental day. Each group was escorted by an experimenter and his or her assistant. Four such staff individuals were involved, two for each condition: the writer, another male psychologist, a female high school teacher, and a

senior female psychology major. They worked in pairs with the writer always serving as experimenter on his team while the other was supervised by a different one of the remaining three each day. The staff was rotated on different days to the extent that each male worked with each female at least once and each of the four individuals worked each condition at least once.

Condition A, as will be elaborated later in this chapter, was an assembly-line condition. Each of the twelve subjects had a very small operation to perform on a toy paper cube as it made its way, from worker to worker, around a large, square-shaped table arrangement as shown in Figure 1. Single operations, randomly assigned, were demonstrated to individual girls in Experimental Room A by the experimenter while his or her assistant waited outside with the remainder of the girls in this particular group. After all the girls had been individually briefed and returned outside, they re-entered the room together, went to their assigned seats around the table where they found whatever materials their specific operation required, and prepared to function as soon as the first cube reached them. The major raw material of their product, mimeograph paper, was placed in a pile next to operator No. 1.

Condition B, also to be elaborated later in this chapter, was a craft condition in which each subject constructed her own cubes from start to finish. The girls assigned to this condition were brought into Experimental Room B after finishing the Thurstone Temperament Schedule, were assigned randomly to seats around the same table arrangement as described under Condition A (see Figure 2), and were spectators to a

Figure 1. Experimental Condition A

Figure 2. Experimental Condition B.

demonstration of the task by the experimenter. At each work place, there was a (cigar-box) kit containing all the materials needed to produce the complete cube, together with a small pile of mimeograph paper. Each kit contained the following: two pencils, a straight-edge, three stencils--one of Masonite and two of plywood, six wax color crayons, a pair of scissors, a three-inch needle and string, and either a pencil-sharpener or a small bottle of glue. As the experimenter demonstrated, he was careful to point out and number the specific operations involved. This was important because the subjects in this condition were asked to keep their own output records while working. An output record consisted in the notation on a string marker of the number of operations completed within each of the nine 20-minute subdivisions of the total three-hour work period. When the experimenter concluded his demonstration, he gave the signal for work to begin. Further details of the procedure are given in the Appendix.

After work had begun in each experimental condition, the role of experimenter and assistant was to observe the workers (cf., p.44) and to keep them supplied with any materials they had exhausted. In Condition B, there was also the aforementioned call at 20-minute intervals for output recording. In both conditions, the experimental staff strove to avoid all conversation with the subjects, despite the latter's sometimes persistent efforts.

After 90 minutes of work, a 15-minute refreshment recess was introduced. Each experimental group retired to separate "lunch rooms" where they were served one sandwich and one Coca Cola per subject. They also took this opportunity to smoke and to make hasty visits to the rest room.

After recess, work was resumed for another 90 minutes.

Upon termination of work, the girls were orally directed to distribute themselves around their respective experimental rooms and were given boredom questionnaires (cf., p.43) to complete. These were shortly collected and replaced by sociometric questionnaires and name lists (cf., p.39). The lists contained the names of all girls working in that same experimental group. After the sociometric questionnaires and name lists had all been collected, the subjects were thanked and requested to maintain secrecy until the series of experiments had ended. This precaution was included since many of the subjects for different Saturdays were in contact with one another through the week.

The task. Since one of the hypotheses under test required manipulation of the monotony variable, the task chosen had to be one which lent itself to monotony variation. The null hypothesis predicted that boredom in a more monotonous task situation correlates no differently with social factors than does boredom in a less monotonous task situation.[3]

[3]It might have seemed clearer to speak of "monotonous" and "interesting" tasks or "monotonous" and non-monotonous" tasks. However, clarity would have been gained at the expense of accuracy. Although one can define monotony objectively in terms of homogeneity, continuity, and meaninglessness, interest cannot be defined independently of some individual. One may say of two tasks that task A has more monotony than task B; this is true because task A involves fewer movements, more repetitions, and no apparent purpose. However, to say that task B is interesting is to talk idly since, without specific person-task interaction, no pertinent evidence is available for a judgment regarding interest. Bills makes the same point in connection with ease and difficulty of work: "We seem to be forced to the conclusion that the work itself cannot be said to be intrinsically either easy or difficult. It is the manner in which the worker responds to it" (2, p.62). As for monotonous and non-monotonous, the objection would be couched in terms of the natural continuity of the monotony variable; to dichotomize it would be completely arbitrary at best.

Monotony in the present research was defined according to three of the criteria listed by Bills (2) in his discussion of mental fatigue: homogeneity, continuity, and meaninglessness. Homogeneity of "sameness," according to Bills, is the "quality of those tasks which involves repeating one operation or a limited number of different operations over and over again" (2, p.63). Continuity, according to the same author, is synonymous with repetition. Meaninglessness is explained as follows: "If a task is broken up into such small units that they cannot be reacted to as meaningful wholes, no tension is set up in the worker. Only by sheer voluntary effort can he hold himself to such a fragmented job. He is bored with it" (2, p.65). Bills describes other principles or criteria of a mentally fatiguing task but only the foregoing have been selected for the definition of a monotonous task.

Production of the toy paper cubes in Condition **A**, the condition of greater monotony, was broken down into twelve operations on an assembly-line basis. Each operation, before practice effect, required about 30-60 seconds. The subjects, once assigned, performed the same operation throughout the entire work period. The operations are listed as follows and may be seen diagrammed in Appendix F. Figures 3 and 4 illustrate operations Nos. 1 and 12 respectively.

1. Tracing a large stencil
2. Drawing connecting lines
3. Coloring in design #1
4. Coloring in background for design #1
5. Coloring in design #2
6. Coloring in background for design #2
7. Coloring red square
8. Coloring blue square
9. Coloring brown square
10. Coloring orange square
11. Cutting lower half of design
12. Cutting upper half of design

Figure 3. Condition B subject performing Operation No. 1

Figure 4. Condition A subject performing Operation No. 12

It is to be noted that work in Condition A ended without achieving completion of the toy cube.

In Condition B, the less monotonous condition, each subject performed not only operation 1 through 12 but also three final operations which served to complete the product. They were:

13. Folding
14. Gluing
15. Stringing

Thus, Condition B differed from Condition A in the greater variety of operations and in completion of the task. A third difference, previously discussed (cf., p.31), was the keeping of output records in the Condition B. Finally, Condition B subjects were told that the finished cubes were to be turned over to local orphanages and hospitals for use in children's birthday parties; no information relating to purpose was given to the Condition A subjects. Thus, not only was the work in Condition B less homogeneous and continuous than in Condition A, but also it possessed meaning through completion of the product, knowledge of its usefulness, and personal involvement in output.

It should be borne in mind that Condition B, although less monotonous than Condition A and thereby capable of offering more gratification to its subjects, might be considered more monotonous than hypothetical Conditions C, D, etc. Through further manipulation of the monotony factors, Condition B could have been made to look monotonous by comparison. Since Condition B was not too far removed from Condition A, some boredom was anticipated, though in lesser amount. As a matter of fact, if sufficient boredom had not developed out of Condition B, Hypotheses 2 and 4 (cf., p.27) could not have been tested.

The Subjects. Seventy-one female university undergraduates served in the experiment; a seventy-second became ill during the work period and had to withdraw. They were recruited by the writer, by several undergraduate liaison assistants, and through announcements in psychology classes. They came from six colleges on the University of Cincinnati campus, although only three--Arts and Science, Nursing and Health, and Teachers College--contributed 79% of the total. They ranged from freshman through senior, with the middle years contributing 66% of the total. Fifty-nine per cent of the students were sorority members, with a total of twelve sororities represented. Their intelligence as measured by the American Council on Education Psychological Examination was well above average for college students. The median and modal percentile ranks were 86.5 and 99, respectively. The distance Q_2-Q_1 was more than twice distance Q_3-Q_2, indicating considerable negative skewness in the distribution. In fact, eight subjects scored below the 59th percentile.

The personality test. In the interest both of objectivity and convenience, a questionnaire type of test was believed to be preferable to the projective type. A major advantage of the latter--its higher resistance to deliberate manipulation--is admittedly a factor of no small significance. However, it was hoped that through proper precaution, such manipulation on the paper-and-pencil test would be kept to a minimum. Also, the fact that their scores on this test would be unrelated to future events in the subjects' lives was expected to reduce likelihood of deliberate distortion. As for the projective test's advantage of depth (i.e., its ability to elicit psychodynamics), the need of this

investigation was not for such material. What was desired were simple measures of reflectiveness, stability, and sociability. Regarding sociability, care was taken to find a test measuring, not extroversion but, in Hoppock's words, a person's "ability to find in people things which he can like and respect, and so to conduct himself that they will like him" (13, p.260).

Of the various objective tests available, the recent Thurstone Temperament Schedule was selected as best combining relevance and convenience. The primary aim of the schedule, whose administration requires about fifteen minutes, is to evaluate an average individual in terms of the way he might be expected to act in academic or occupational situations. It is not an adjustment inventory in the sense that such inventories strive to measure success or failure of adjustment. In Thurstone's own words:

> Most tests describe a person in terms of psychotic or neurotic tendencies. Since, for practical purposes, most of us are reasonably well-adjusted, these clinical stereotypes do not seem to provide the best method for describing personality traits. We need a schedule that emphasizes important, stable traits which describe how normal, well-adjusted people differ from one another. The Thurstone Temperament Schedule was devised for this purpose. It... makes no attempt to appraise the degree of conflict, insecurity, or maladjustment (37, p.1).

The three test areas corresponding to the traits under investigation are Sociable, Reflective, and Stable. Sociable, which correlates .72 with Guilford's Cooperativeness and .66 with his Agreeableness, is defined as follows:

> Persons with high scores in this area enjoy the company of others, make friends easily, and are sympathetic, cooperative, and agreeable in their relations with people. Strangers readily tell them about their personal troubles (37, p.2).

It may be seen that with the possible exception of the phrase "make friends easily," this definition is harmonious with the Hoppock conception. The focus is not on introversion-extroversion but on the quality of an individual's rapport with his fellow man. Reflective, which correlates .76 with Guilford's Thinking Introversion, is defined as follows:

> High scores in this area indicate that a person likes meditative and reflective thinking and enjoys dealing with theoretical rather than practical problems. Self-examination is characteristic of reflective persons. These people are usually quiet, work alone, and enjoy work that requires accuracy and fine detail. They often take on more than they can finish and they would rather plan a job than carry it out (37, p.2).

Stable, which correlates .50 with each of Guilford's Emotional Stability and Freedom from Depression, is defined as follows:

> Persons who have high Stable scores usually are cheerful and have an even disposition. They can relax in a noisy room, and they remain calm in a crisis. They claim that they can disregard distractions while studying. They are not irritated if interrupted when concentrating, and they do not fret about daily chores. They are not annoyed by leaving a task unfinished or by having to finish it by a deadline (37, p.1).

Although the Thurstone test taps other personality areas, only the three under investigation were used in the boredom correlations.

Sociometry. The sociometry involved in the present research was of a limited variety. There was no attempt made to chart "atoms" or "networks," to evaluate groups in terms of members spontaneously accepting each other as collaborators, or to delve into the many fundamental issues of perception in interpersonal relations which are occupying more and more social scientists today (e.g., 35).

Strictly speaking, the particular test adopted for this research would probably not be called a sociometric test by leading exponents of the approach. Moreno (22) and Jennings (16) are emphatic in requiring that there be a criterion situation and that this situation be important and meaningful to the subjects in terms of the consequence of their choices. They claim that in the absence of such a real and specific situation, one cannot be sure what the expressed preferences mean, or that their reliability is adequate. Jennings bluntly states that "the sociometric test should primarily meet the felt needs of the members and not the research needs of someone studying their interactions" (16, p.42). In the questionnaire presently employed (cf., Appendix E), subjects were asked to place every other worker in their group in one of several categories of preference. The test, however, was administered upon the conclusion of work and did not form the basis, for instance, of a seating plan at the start of another experimental session. Although orthodox sociometry would have been preferable, it was not feasible within the framework of a one-day experiment. Rather than conduct the research with the reduced number of subjects who could volunteer two days, the writer took the calculated risk of diverging from strict procedure.

The social factor hypothesis called for data regarding three aspects of every possible pair or "diad" in each group: B's preference for A, A's conception of B's preference for A, and A's preference for B. Three scores were given to each relationship experienced by each girl with every other girl in her group. Since there were twelve girls to a group, each girl had listed in her name eleven sets of three scores each.

The scores, as stated, referred to incoming preference, conception of incoming preference, and outgoing preference. Choice values, arbitrarily established, were plus two for "Especially enjoyed her company," plus one for "Nice to have had her in the group," zero for "No particular opinion," and minus one for "Would rather she had not been in the group." Double weighting was given to the scores of neighbors sitting on either side of the subject being evaluated; the reason was their greater opportunity for interaction. The total popularity, conceived popularity, and enjoyment score for any subject, then, was the algebraic sum of all eleven ratings under each of these particular headings. An actual illustration of the scoring procedure as outlined thus far may be seen in Table 1.

The scoring system for the combination hypotheses (cf., pp.26-7) is slightly more complex, involving as it does all three sociometric factors in single composite scores. Each subject in the group of twelve could have entered into any one of eight possible sociometric patterns with every other subject in her group. The total of eight grows out of the fact that the three factors--being chosen, thinking one has been chosen, and choosing--may occur in various combinations. Each of these combinations or patterns was assigned a different score according to the system illustrated in Table 2. In the computation of these scores, items "a" and "b" of the sociometric questionnaire were both taken to represent selection while items "c" and "d" were both taken to represent rejection. A total score under each combination was established for each girl by adding, as before, the individual scores based on her sociometric pattern with every other girl. It was these total scores

TABLE 1

Scoring Procedure For Popularity, Conceived Popularity, And Enjoyment As Illustrated In The Actual Case of P. M.

Coworkers	Popularity Score	Conceived Popularity Score	Enjoyment Score
T. G.	2	1	1
Z. C.	1	1	2
M. L.*	2,2	2,2	2,2
W. W.	1	0	0
W. M.	0	0	0
S. M.*	2,2	2,2	2,2
P. E.	0	1	0
M. J.	0	0	1
S. J.	2	0	0
R. M.	1	2	2
E. B.	2	1	0
	Total 17	Total 14	Total 14

*M. L. and S. M. each sat beside P. M.; their scores under all heading, therefore, were doubled.

TABLE 2

Basis For Assignment Of Score Weightings For All Possible Sociometric Patterns In Testing Of Social Factor Combination Hypotheses

Subject						Score Weightings		
Is Chosen		Thinks Chosen		Chooses		1.Chosen 2.Thinks 3.Chooses	1.Thinks 2.Chooses 3.Chosen	1.Chooses 2.Chosen 3.Thinks
Yes	No	Yes	No	Yes	No			
x		x		x		7	7	7
x		x			x	6	5	3
x			x	x		5	3	6
x			x		x	4	1	2
	x	x		x		3	6	5
	x	x			x	2	4	1
	x		x	x		1	2	4
	x		x		x	0	0	0

and those described in the preceding paragraph which were used in the boredom correlations.

The criteria. Several early investigators in the boredom field--Munsterberg (23), Dunford (8), Thompson (36)--assumed without verification that dislike of uniformity in daily habits could be used as a criterion of boredom-susceptibility. Thompson, for instance, asked the subject how often he moved of his own accord, whether he sat in the same place every day when he read or studied, and whether he arose at the same time every morning. In addition to such questions, Thompson included ratings by associates who had known the subject for at least one year. The only support for the assumption that boredom-susceptibility is a matter of disliking uniformity came out of Cain's (6) study in 1942. Aversion to uniformity turned out to be one of several independent variables which correlated significantly with her boredom criterion. Some of her questions were: "Do you usually attend the same church?", "Do you like to eat the same time every day?", "Do you go to work exactly the same way every day?"

As for the use of output curves as a criterion, earlier discussion (cf., p.22) has pointed out their unreliable nature. In this connection, it may be significant that Wyatt et al., the foremost proponents of a boredom curve, did not use it as a criterion in their later research (44); instead, they employed a job questionnaire based on the interview content of their 1929 studies (43). Cain, after unsuccessfully correlating output with subjective reports of boredom, concluded:

> Attempts to obtain more objective measures which will indicate clearly the presence of monotony or boredom in the worker had been largely unsuccessful. It would seem, therefore, that the report of a worker would be the most dependable indication of his boredom, if such reports can be obtained under conditions which encourage honesty and frankness (6, p.24).

Meyers in 1950 used a questionnaire criterion, reasoning as follows:

> There is such disagreement over an 'objective' criterion for the presence of boredom that the use of workers' statements seems to be the most valid present criterion. This is highly defensible, since boredom is essentially a subjective state and its degree can only be inferred from the worker's report (21, p.12).

Ryan is of a similar opinion, stressing the susceptibility of various "objective" boredom indices (output curves, variability of performance, frequency of talking, frequency of voluntary rest pauses) to other influences besides boredom. Of these criteria, he states: "They certainly do not furnish us with trustworthy 'objective' indications of boredom. The only method of gauging the tendency to boredom in a given worker is to question him as carefully as possible" (31, p.202).

In keeping with these viewpoints, the present writer employed a job boredom questionnaire (cf., Appendix D) which was largely a composite of items adopted from or suggested by the previous criterion questionnaires of Wyatt (44), Cain (6), and Meyers (21). However, preliminary trial of the instrument revealed some weakness: a number of subjects who freely expressed boredom during the work period, either through conversation or restlessness, drowsiness, etc., failed to show up as equally bored or as bored at all on the questionnaire. It was therefore decided to supplement the questionnaire criterion with quantified observations of behavior during the work period. The observers were the

same individuals referred to earlier in the discussion of experimental administration (cf., p.28). The writer drew up instructions for observational procedure (cf., Appendix C) which were read by and discussed with his assistants before the first experiment; no other training was involved. In performing their observations, each pair of observers sat or stood in varying locations around the perimeter of the work group to which they had been assigned for that particular day. They attempted to note, as unobtrusively as possible, all pertinent boredom behavior, both verbal and nonverbal. As may be seen in the instructions, verbal behavior was scored for both frequency and intensity as it occurred, while nonverbal behavior was evaluated by subjective judgment at the end of the entire work period.

It should be stated at the outset that the observational system turned out to be relatively unreliable. Table 3 indicates the extent of agreement in each experimental group between each pair of observers. With a rho of .599 required for significance at the 5% level, it is apparent that a majority of the agreements fell short of significance at that level. When a rough estimate is gained of the mean rho's through conversion to Fisher z's, the means for verbal and nonverbal agreement are .48 and .52 respectively. Although such statistics indicate a trend in the right direction, they do not permit a desirable degree of confidence in this criterion.

TABLE 3

Rho Coefficients Of Agreement Between Each Pair Of Observers' Ratings Of The Verbal And Nonverbal Boredom Of Each Experimental Group

Group*	Verbal	Nonverbal	$Rho_{.05}$	$Rho_{.01}$
6A	.33	.62	.599	.736
13A	.42	.59	.599	.736
20A	.38	.16	.599	.736
6B	.78	.12	.599	.736
13B	.34	.84	.599	.736
20B	.46	.50	.599	.736

*Group number refer to day of experiment; group letters refer to experimental condition.

CHAPTER VI

RESULTS

In the tests of Hypothesis 1, three boredom criteria were used. One was the boredom questionnaire, administered upon the termination of work; the second was a behavioral index, based on the verbal and non-verbal activity of the subjects while working; while the third was a composite of the first two, with a double-weighting of the questionnaire so as to give it equal representation with the behavioral data.

With the Fisher *z* transformation, the total number of degrees of freedom available for testing correlational significance is N-3 for each of the six groups, five of which comprised twelve subjects and the sixth eleven.[4] For the resultant 53 degrees of freedom and two variables, interpolation within the Wallace-Snedecor table reveals that for a two-tailed test, a Pearson *r* of .267 is required for significance at the 5% level (12).

As may be seen in Tables 4, 5, and 6, none of the correlations achieved significance at the 5% level. In addition, the two highest coefficients (.238 and .185) approached it from the positive instead of the expected negative direction. Finally, of the 18 mean *r*'s involved, only one came close to statistical significance (.238).

For a more specific picture, attention should be directed to the three criterion variables and their separate results. Table 4 shows questionnaire correlations, Table 5 presents behavioral correlations

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[4]One subject became ill during the experiment and her results were discarded.

TABLE 4

r and Corresponding z Coefficients Between Boredom Questionnaire and Sociometric Factors, With Comparison of Reconverted Mean r's With r Required for Significance at 5% Level

Group*	Sociometric Factors**											
	a		b		c		d		e		f	
	r	z	r	z	r	z	r	z	r	z	r	z
6A	-.12	-.12	.37	.39	.01	.01	-.14	-.14	.24	.24	.00	.00
13A	-.46	-.50	-.18	-.18	.11	.11	-.27	-.28	-.17	-.17	-.15	-.15
20A	.03	.03	-.30	-.31	-.46	-.50	-.31	-.32	-.53	-.59	-.49	-.54
6B	.00	.00	-.10	-.10	.23	.23	.10	.10	.00	.00	.09	.09
13B	-.44	-.47	-.33	-.34	-.59	-.68	-.35	-.37	-.51	-.56	-.51	-.56
20B	.22	.22	.30	.31	.48	.52	.12	.12	.20	.20	.18	.18
Mean z		-.140		-.038		-.052		-.148		-.146		-.163
Mean r		-.139		-.038		-.052		-.147		-.145		-.162
$r_{.05}$***		.267		.267		.267		.267		.267		.267

*Groups bear the number of the day they met and the letter of their experimental condition.

**Letters a-f refer to social factors and their combinations described in the six parts of Hypothesis 1.

***53 degrees of freedom.

TABLE 5

r and Corresponding z Coefficients Between Observed Boredom and Sociometric Factors, With Comparison of Reconverted Mean r's With r Required for Significance at 5% Level

Group*	Sociometric Factors** a r	a z	b r	b z	c r	c z	d r	d z	e r	e z	f r	f z
6A	-.36	-.38	.12	.12	.24	.24	-.07	-.07	.06	.06	-.01	-.01
13A	.44	.47	.27	.28	.03	.03	.56	.63	.44	.47	.40	.42
20A	-.20	-.20	.21	.21	-.19	-.19	.06	.06	.16	.16	.06	.06
6B	.19	.19	.04	.04	.08	.08	.45	.48	.22	.22	.28	.29
13B	.08	.08	.13	.13	.06	.06	.33	.34	.17	.17	.16	.16
20B	.04	.04	.02	.02	.10	.10	.02	.02	.04	.04	.05	.05
Mean z		.033		.133		.053		.243		.187		.162
Mean r		.033		.132		.053		.238		.185		.161
$r_{.05}$***		.267		.267		.267		.267		.267		.267

*Groups bear the number of the day they met and the letter of their experimental condition.

**Letters a-f refer to social factors and their combinations described in the six parts of Hypothesis 1.

***53 degrees of freedom.

TABLE 6

r and Corresponding z Coefficients Between a Composite Boredom Criterion and Sociometric Factors, With Comparison of Reconverted Mean r's With r Required for Significance at 5% Level

Group*	Sociometric Factors**											
	a		b		c		d		e		f	
	r	z	r	z	r	z	r	z	r	z	r	z
6A	-.34	-.35	.45	.48	.22	.22	-.46	-.50	.28	.29	.03	.03
13A	-.10	-.10	-.04	-.04	.10	.10	.00	.00	.03	.03	.03	.03
20A	-.04	-.04	-.03	-.03	-.48	-.52	-.33	-.34	-.52	-.58	-.54	-.60
6B	.30	.31	-.06	-.06	.24	.24	.30	.31	.13	.13	.21	.21
13B	-.36	-.38	-.25	-.26	-.50	-.55	-.20	-.20	-.40	-.42	-.40	-.42
20B	.21	.21	.27	.28	.45	.48	.13	.13	.18	.18	.17	.18
Mean z		-.055		.057		.005		-.093		-.050		-.083
Mean r		-.055		.057		.005		-.093		-.050		-.083
$r_{.05}$***		.267		.267		.267		.267		.267		.267

*Groups bear the number of the day they met and the letter of their experimental condition.

**Letters a-f refer to social factors and their combinations described in the six parts of Hypothesis 1.

***53 degrees of freedom.

while Table 6 shows correlations with the composite criterion. As may be seen, the difference betweeen using the questionnaire to represent boredom and using verbal and non-verbal behavior is striking. Although neither criterion is much more effective than the other in reaching the 5% level, the direction of their results is consistently opposite. When the questionnaire is used, all correlations turn out to be negative; with the behavioral index, all correlations are positive.

The test of the second hypothesis consisted in determining whether the three groups under Condition A showed greater or lesser boredom-sociometric correlation than the three groups under Condition B--acknowledging the previously reported fact that the six groups taken together failed to yield significant correlations. Statistically, this involved deriving *t* tests of the difference between Fisher *z*'s (to which all *r*'s had been converted).

Tables 7, 8, and 9 reveal that regardless of the boredom criterion (the same three were used here as in testing the first hypothesis), no significant difference appeared between the two experimental conditions. The conjecture that greater monotony of working conditions results in more socially-rooted boredom failed to be supported by the data. *t* tests of the differences, almost without exception, did not even begin to approach the 5% significance level. Twelve of the eighteen did not rise above .50 while only one exceeded 1.00.

Another approach to the data of Hypothesis 2, however, does elicit some positive evidence. Although not specifically hypothesized, it had

TABLE 7

t Tests of z Differences Between Correlations of Sociometric Factors (a-f) With Boredom Questionnaire Under Condition A and Under Condition B

	Sociometric Factors*					
	a	b	c	d	e	f
Condition A	-.207	.027	.110	-.187	-.057	-.123
Condition B	-.083	-.043	.023	-.050	-.120	-.097
Difference	.124	.070	.087	.137	.063	.026
t	.45	.25	.32	.50	.23	.09

*Letters a-f refer to social factors and their combinations described in the six parts of Hypothesis 1.

TABLE 8

t Tests of z Differences Between Correlations of Sociometric Factors (a-f) With Observed Boredom Under Condition A and Under Condition B

	Sociometric Factors*					
	a	b	c	d	e	f
Condition A	-.037	.203	.027	.207	.230	.157
Condition B	.103	.063	.080	.280	.143	.167
Difference	.140	.140	.053	.073	.087	.010
t	.51	.51	.19	.26	.32	.06

*Letters a-f refer to social factors and their combinations described in the six parts of Hypothesis 1.

TABLE 9

t Tests of z Differences Between Correlations of Sociometric Factors (a-f) With A Composite Boredom Criterion Under Condition A and Under Condition B

	Sociometric Factors*					
	a	b	c	d	e	f
Condition A	-.163	.137	-.067	-.280	-.087	-.180
Condition B	.047	-.013	.057	.080	-.037	-.013
Difference	.210	.150	.124	.360	.050	.167
t	.76	.54	.45	1.31	.18	.61

*Letters a-f refer to social factors and their combinations described in the six parts of Hypothesis 1.

been expected that the socially unsuccessful subjectsin Condition B would be less bored than their counterparts in Condition A because of the greater inner area gratification (lesser monotony) of Condition B. Lower sociometric scores in Condition A, in other words, should have been associated with more boredom than the same low scores in Condition B. To test this idea, those scoring lowest in popularity, conceived popularity, and enjoyment in Condition A were compared for amount of boredom with those scoring lowest in these same factors in Condition B. Boredom, as in previous analyses, was represented by three criteria: questionnaire, behavior, and a composite of the first two. Statistically, the procedure involved finding the significance of the difference between amounts of boredom, i.e., a *t* test.

The results of such analysis demonstrate a marked trend in the expected direction. Table 10 shows that regardless of the criterion and

TABLE 10

Boredom Scores of Sociometrically Low Subjects Arranged According to Experimental Condition, Low-Scoring Sociometric Factors, and Boredom Criterion

Experimental Condition	Sociometric Factor*	Boredom Criterion		
		Questionnaire	Behavior	Composite
A	a	115.02	106.63	221.65
B	a	96.63	94.77	191.39
A	b	108.58	104.54	213.12
B	b	95.77	94.67	190.44
A	c	113.05	106.29	219.24
B	c	93.23	97.34	191.04

*Sociometric factors a, b, and c represent, respectively, popularity, one's conception of one's popularity, and one's enjoyment of the group.

TABLE 11

t Tests of Differences in Amount of Boredom Between Subjects Scoring Low Sociometrically in Condition A and in Condition B

Criterion	Sociometric Factor*		
	a	b	c
Questionnaire	1.61	1.02	1.63
Behavior	2.33**	1.72	1.45
Composite	2.38**	1.51	2.06**

*Sociometric factors a, b, and c represent, respectively, one's popularity, one's conception of one's popularity, and one's enjoyment of the group.

**Significant at the 5% level.

of the particular social factor, low sociometric scores in Condition A are associated with greater boredom than low sociometric scores in Condition B. Table 11 shows that of the nine *t*'s involved, three are significant at the 5% level (2.03) while three others place at or near the 10% level (1.70). In no case does *t* fall below 1.00.

The testing of Hypothesis 3 involved correlation of the three Thurstone Temperament Schedule areas--Sociable, Reflective, and Stable--with the several boredom criteria (questionnaire, behavior, composite). The Pearson *r*'s derived for each group of twelve subjects were transformed to Fisher *z*'s, averaged, and then were reconverted to Pearson *r*'s for evaluation as to statistical significance.

Of the three Thurstone areas, Sociable yielded the least consistent and significant results. When correlated with the behavioral criterion, it produced a minor (and unexpected) positive relationship; when correlated with the questionnaire, its significance increased (though still considerably short of the 5% level) and the direction changed. Specifically, high behavioral boredom tended slightly to associate with high Sociable scores while high questionnaire boredom tended a little more to link with low Sociable scores. The composite criterion yielded a trifling negative correlation.

Correlations of boredom criteria with the Reflective area, though also short of the 5% level, came out substantially higher and in a consistently positive direction. A noticeable tendency emerged, in other words, for the more reflective, not the less, to be more bored. This tendency manifests itself regardless of the criterion. Of the nine

mean r's involved in correlating three Thurstone areas with three criterion variables, the correlation between Reflective and the composite criterion came closest to the 5% level.

The Stable area also correlated consistently and in some strength with the criterion variables, though falling short of statistical significance. In this instance, the trend was in the expected inverse direction: higher Stable scores tended to be associated with lower boredom scores, regardless of the criterion. Degree of correlation was roughly equal to that found in Reflective. The highest correlation for both was with the composite boredom criterion; where an r of -.267 or a t of 2.01 was required for 5% significance, Stable achieved an r of -.222 or a t of 1.87 while Reflective achieved an r of .232 or a t of 1.95. Tables 12, 13, and 14 summarize the data of the three foregoing analyses.

As earlier indicated (cf., p.31), it was only in Condition B that output records were maintained; the tests of Hypothesis 4, therefore, were confined to the data of that condition. Three analyses were performed comparing production features of more as against less bored workers. Boredom classification was based on the total distribution of Condition B boredom scores--those in the upper half being considered more bored, those in the lower half being considered less. The first analysis concerned gross output differences, the second, difference in variability of work rate, and the third, differences in rate increase (or practice effect) from the beginning to the end of the work period.

TABLE 12

r and z Coefficients Between Boredom Questionnaire and Three Thurstone Temperament Schedule Areas, With Comparison of Reconverted Mean r's With r Required for Significance at 5% Level

Group*	Sociable		Reflective		Stable	
	r	z	r	z	r	z
6A	.01	.01	-.18	-.18	.16	.16
13A	.00	.00	.12	.12	-.10	-.10
20A	-.07	-.07	.39	.41	-.12	-.12
6B	-.18	-.18	-.05	-.05	-.45	-.48
13B	-.64	-.76	.81	1.13	.22	.22
20B	.09	.09	-.12	-.12	-.67	-.81
Mean z		-.152		.219		-.188
Mean r		-.151		.216		-.186
$r_{.05}$**		.267		.267		.267

*Groups bear the number of the day they met and the letter of their experimental condition.

**53 degrees of freedom.

TABLE 13

r and z Coefficients Between Observed Boredom and Three Thurstone Temperament Schedule Areas, With Comparison of Reconverted Mean r's With r Required for Significance at 5% Level

Group*	Sociable		Reflective		Stable	
	r	z	r	z	r	z
6A	-.13	-.13	-.03	-.03	-.25	-.26
13A	-.20	-.20	.04	.04	-.01	-.01
20A	.50	.55	.59	.68	.08	.08
6B	.32	.33	-.19	-.19	-.13	-.13
13B	-.22	-.22	.32	.33	-.43	-.46
20B	.26	.27	.28	.29	-.43	-.46
Mean z		.100		.186		-.206
Mean r		.100		.184		-.203
$r_{.05}$**		-.267		-.267		-.267

*Groups bear the number of the day they met and the letter of their experimental condition.

**53 degrees of freedom.

TABLE 14

r and z Coefficients Between A Composite Boredom Criterion and Three Thurstone Temperament Schedule Areas, With Comparison of Reconverted Mean r's With r Required for Significance at 5% Level

Group*	Sociable		Reflective		Stable	
	r	z	r	z	r	z
6A	.00	.00	-.20	-.20	.03	.03
13A	-.09	-.09	.11	.11	-.08	-.08
20A	.07	.07	.49	.54	-.13	-.13
6B	.02	.02	-.13	-.13	-.43	-.46
13B	-.62	-.73	.81	1.13	.06	.06
20B	.31	.32	-.03	-.03	-.65	-.78
Mean z		-.052		.236		-.226
Mean r		-.052		.232		-.222
$r_{.05}$		-.267		-.267		-.267

*Groups bear the number of the day they met and the letter of their experimental condition.

**53 degrees of freedom.

In the first analysis, four boredom criteria were used: the questionnaire, verbal behavior, nonverbal behavior, and a composite of the preceding three. The verbal and nonverbal variables are not new but represent rather a division of the behavioral criterion into its component parts. The division was made because of the noticeable difference between them where output was concerned.

As may be seen in Table 15, there is a decided trend toward greater output by the less bored workers. Both the composite and the verbal criteria yield significant differences, the latter beyond the 1% level, while the nonverbal criterion almost attains the 5% level. Even the questionnaire, which falls short of the 10% level, evidences a tendency in the same direction.

TABLE 15

t Tests of Differences Between Total Output of Condition B Subgroups Classified As More and Less Bored According to Four Boredom Criteria

Criterion	Total Output*		Difference	t	p
	More Bored	Less Bored			
Questionnaire	5,323	5,851	528	1.38	$<.20>.10$
Verbal	5,004	6,162	1,158	3.38	$<.01$
Nonverbal	5,285	6,032	747	2.01	$<.10>.05$
Composite	5,130	6,026	896	2.45	$<.05>.02$

*Output measured in number of operations completed.

In the second analysis, the F test of homogeneity of variance was employed to learn whether the more bored subjects showed greater variability or fluctuation in their rate of work. The same four boredom criteria were used as in the preceding analysis. In no case did the F ratio begin to approach significance at the 5% level. Furthermore, the very slight trend which did appear occurred in an unexpected direction: the more bored showed less variability.

TABLE 16

F Tests of Differences Between Output Sums of Squares of Condition B Subgroups Classified as More and Less Bored According to Four Boredom Criteria

Criterion	Sums of Squares		F	$F_{.05}$*
	More Bored	Less Bored		
Questionnaire	15,049	21,285	1.41	2.39
Verbal	15,659	21,095	1.35	2.39
Nonverbal	18,075	19,097	1.06	2.39
Composite	15,492	19,566	1.26	2.39

*15 degrees of freedom for both greater and lesser variances.

In the third analysis, a percentage improvement was calculated for each subject based upon her output during the last three 20-minute intervals divided by output during the first three 20-minute intervals. No subject failed to make some improvement; the range was from 8% to 139% with a mean gain of 69%. When a breakdown is made according to amount of boredom, the results are inconsistent. Use of the same four criteria

as in the preceding production analyses reveals that the questionnaire diverges from the behavioral criteria. (This divergence appeared in previous analyses and will be discussed in the next chapter.) Although none of the *t* ratios attain statistical significance, the questionnaire shows a moderate trend toward greater improvement by the more bored subjects while, on the other hand, both the verbal and nonverbal indices show slight trends favoring the less bored.

TABLE 17

t Tests of Differences Between Percentage Improvement of Condition B Subgroups Classified as More and Less Bored According to Four Boredom Criteria

Criterion	Total %age Improvement* More Bored	Less Bored	Difference	t	p
Questionnaire	1,235	958	277	1.44	.20 .10
Verbal	1,065	1,153	88	.45	.70 .60
Nonverbal	1,028	1,184	156	.78	.50 .40
Composite	1,050	1,099	49	.26	.80 .70

*Based on sum of all individual percentage increases within each subgroup.

CHAPTER VII

DISCUSSION

An unexpected development was the divergence between the questionnaire and the behavioral criteria. As explained earlier, the reason for innovating a behavioral criterion was the preliminary finding that a number of subjects who freely expressed boredom during the work period were not coming out with high boredom scores on the questionnaire. It was expected, therefore, that overall questionnaire and behavioral scores would contribute moderately independent shares to a composite criterion. However, when the two criteria were intercorrelated, it became apparent that their contributions were more than moderately independent. The actual statistics were: r .215, SE_r .119, t 1.81. These figures suggest the presence of correlation but of a rather low order. It was therefore not surprising that several correlations in the main analysis had turned out positive or negative, depending on which boredom criterion was adopted. Three such instances worth citing are: (1) In the test of Hypothesis 1, the questionnaire criterion yielded six insignificantly positive correlations out of six;[5] (2) In the test of Hypothesis 3, the questionnaire criterion gave an r of -.15 for Sociable while an r of .10 came out of the behavioral correlation; (3) In a test of Hypothesis 4, the questionnaire criterion reflected greater improvement by the more bored while the behavioral data correlated in favor of greater improvement by the less bored.

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[5]Six refers to mean r's; each one summarized a series of six, making a total of 36 correlations for each criterion. Of the 36 questionnaire r's, 19 were negative; the corresponding number for the behavioral criterion was 5 (see Tables 4 and 5).

Although these results and some of their refinements offer grounds for speculation, the fact remains that in none of the three situations is one dealing with significant statistics. There is no good reason to believe that anything more than coincidence underlies the observed data --particularly when it is realized that the two criteria correlate at such a low level. If any speculation is justified at all, it might be with reference to the mild negative correlation of the questionnaire with both popularity and Sociable at the same time that the behavioral criterion correlates slightly positive with Sociable. The interpretation could be offered that the "sociable thing to do" in the monotonous work situation was to overtly express boredom, particularly through verbalization--even though one did not feel it keenly. Some illustrative comments would be the following: "Why don't we go on strike!", "If this is an endurance test, I sure don't have any endurance!", "If the guy who devised this is still living, may he drop dead!" Support for this conception could be read into the fact that two-thirds of all the subjects volunteered to return at a later date for a repetition of the same experiment--a response which was the exact opposite of that anticipated by the writer.

Hypothesis 1. The present experiment was better designed to prove the role of social factors in job boredom than it was to disprove it. If the null hypothesis could have been rejected in this miniature replica of a life situation, there would have been little hesitation in generalizing the findings. However, if inability to reject can be

explained with some adequacy on grounds of methodological deficiencies, acceptance of the null hypothesis would not necessarily follow.

One major weakness has been indicated in a previous chapter, namely, the sociometric instrument was not a true sociometric test. Another flaw in the sociometry was the difficulty subjects experienced in trying to limit their judgments to the experimental period. A considerable number indicated to the writer in later conversations that they were not able to follow the instructions. Consequently, many sociometric ratings reflected the uncontrolled variable of prior opinion.

Another major weakness stemmed from the brevity of social interaction. Many of the girls who rated one another did not get to know one another. Although there is evidence in the sociometric literature citing the immediacy of social judgments, the subjects involved in this research were reluctant to express themselves on the basis of such superficial acquaintance. A substantial proportion became casually familiar with one another but often not to the point where definite feelings had been formed. Consequently, abundant use was made of the choice, "No particular opinion."

A third source of error, related to the second, was the widespread ignorance of the subjects regarding their actual social status--due to the same brevity of social interaction. It turned out to have been asking too much to expect them to sense acceptance and rejection on the basis of a half day's contact in a novel, firmly-structured situation. Without such knowledge on the part of the subject, there could be no fair test of the popularity-boredom hypothesis. For example, when the

writer conversed several weeks after with a young lady whose popularity and boredom scores (on all criteria) were highest in her group, he learned she had little or no idea of her popularity and furthermore, she was sure the knowledge would have affected her attitude and behavior during the experiment. It might be mentioned that she was the kind of socially insecure person the writer had in mind when he framed the hypothesis.

A fourth error source consisted, as earlier stated, in the relative unreliability of the observational scoring system. To begin with, the observers could note only those boredom verbalizations which were loud enough to be heard from their stations around the perimeter of the work group; much of the talk went unheard and hence unscored. Secondly, the presence of the observers and the act of their note-taking at times exerted a perceptible influence on the group conversation and activity; whether this influence served to increase or decrease verbal and nonverbal boredom scores is not known. Thirdly, the observers' evaluation of nonverbal boredom was unavoidably subjective. Although they were specifically instructed in how to make their judgments, the decision as to how much nonverbal boredom should be assigned a particular individual was solely their own.

Hypothesis 2. It was here that the data of Table 11 appeared to support rejection of the null hypothesis after it had passed its major test in Table 10. After it was shown that Conditions A and B did not differ significantly in the sociometric-boredom correlations, evidence was presented indicating that those scoring low sociometrically in

Condition A were more bored than those scoring correspondingly low in Condition B. This evidence fit the underlying assumption that socially unsuccessful individuals could find gratification in an inner job area which had something to offer and would therefore not show up as bored; or, the more sterile the inner job area, the greater the number of socially unsuccessful who would be bored.

Investigation reveals, however, that there is something spurious about the support rendered by the data of Table 11. If the socially unsuccessful of Condition A were more bored than their counterparts in Condition B, perhaps this was also true of the socially successful--in which case the former finding means nothing more than that Condition A produced more boredom than Condition B. Rebuttal could also come from the discovery that Conditions A and B did not differ significantly in the amount of boredom they produced. If this is true, then it must also be true that the socially successful of Condition B were more bored than the socially successful of Condition A. The reason is that with total boredom equal for the two conditions and with Condition A holding an edge amongst its socially unsuccessful, Condition B must make up the difference with a surplus amongst its socially successful.

Statistical analysis bears out the suggestion that the two conditions did not differ significantly in their production of boredom. Regardless of the criterion, none of the differences between the total boredom of the two conditions attains significance at the 5% level, although they all do show greater boredom for Condition A. Depending on the criterion, mean boredom ratings for Condition A are 6.34, 3.03, and 3.23 while the corresponding statistics for Condition B are 5.66, 2.97,

and 2.79. The largest difference--between 6.34 and 5.66--was in the questionnaire criterion and yielded a *t* ratio of 1.49. Since there is no significant difference in the total boredom elicited by each condition, it follows that the socially successful of Condition B must have been more bored than their counterparts in Condition A. Why this should be so is difficult to explain. Certainly it would tend to represent as much grounds for accepting the null hypothesis as its twin finding represents grounds for rejection.

One discovery made during the experiment which may bear on the statistically insignificant difference in boredom discussed above concerns the factor of meaninglessness. As will be recalled, this factor was one of three involved in the creation of more and less monotonous conditions. In Condition B, the subjects were told that the product of their labor (the toy cube) was to be used in birthday parties in local orphanages and hospitals. From the nature of various remarks made during the experiment and some questions addressed to him afterwards, the writer concluded that the subjects were skeptical as to the fate of the cubes. This undoubtedly resulted in some closing of the monotony gap between the two conditions.

Hypothesis 3. The trend toward significant positive correlation between reflectiveness and boredom represents another instance of conflict between the findings of American investigators on this issue and those of their European colleagues. Mayo in 1925, Thompson in 1929, Cain in 1942, Meyers in 1950, and now the present investigator have all produced results which dispute the belief that fantasy inclination is

an ally against boredom. However, this writer feels that to claim the opposite, i.e., that reflectiveness in a simple job makes one boredom-prone, might be just as much in error. The fallacy in both instances would seem to be one of oversimplification.

The issue is not merely whether a particular trait exists, but also, it is a matter of the context of its existence. Thurstone (37) reports an intercorrelation in his schedule of -.23 between Stable and Reflective, thus ranking it as the third highest of eleven such negative intercorrelations. Such a finding is consistent with the present study which saw these two factors correlating from opposite directions with boredom. If it is true that a prominent meditative propensity is correlated with some degree of personality disturbance and if personality disturbance is correlated with boredom, then, if it must be used, a single-trait approach to personnel screening would err less by rejecting highly reflective individuals who apply for monotonous work. However, the correlation is apparently of such a low order that many reflective people would be turned away who actually are in good mental health and who most likely are not boredom-prone. In other words, it is being suggested that much of the basis for positive correlation between reflectiveness (or introversion) and boredom lies in the negative correlation of reflectivenss with mental health. The more basic question would then be one of general stability and not whether an individual tends to live within himself.

An alternative explanation for the positive relation between reflectiveness and boredom in the present study may be derived from Thurstone's statement that such individuals would rather plan a job

than carry it out (37, p.2). It could well be that reflective people have particular need for creative expression and that jobs offering no outlet for such expression are reacted to unfavorably, regardless of general stability.

Hypothesis 4. The definite trend toward gross output being adversely affected by boredom represents a somewhat new principle in boredom research. Although Wyatt et al. (43) noted lesser production in 1929, it was in connection with their investigation of the effects of uniform versus varied task assignments. When their interest was in the behavior of the bored worker, they stressed only work curve shape and variability of work rate. The bored worker has been charged with irregular work habits but little has been made of his lesser productivity. One might think that the jobs studied required fixed output quotas; however, in the Wyatt et al. (43) experimental and industrial investigations, which contributed more than any other research to the notion of a boredom work curve, this does not appear to have been the case. The chocolate-packers and tobacco-weighers they studied were paid according to time worked while piece-rate payment prevailed in the two electric-lamp operations and in soap-wrapping.

It could be that workers whose boredom manifested itself in decreased output were soon dismissed from their jobs. The fact that the behavioral criteria correlate higher with output than the questionnaire suggests that there might be an overt boredom syndrome, several aspects of which are talking boredom, acting bored, and producing less.

If such a syndrome exists, it would certainly constitute a handicap to continued employment--in which case the "afflicted" would be inadequately represented in research samples.

Another possible explanation is that the bored workers of the Wyatt et al. (43) study responded self-consciously to the attention they received and did not allow themselves to lag in their total daily production. The research procedure was to observe each worker on an individual basis with frequent questioning as to their subjective state. From the employer's viewpoint, which the workers may have kept in mind, it is one thing to work at a variable rate and another to finish the day with insufficient output.

Although the idea of boredom resulting in less production appeals to common sense, the finding will not be broadly generalized because of the fundamental differences obtaining between laboratory and actual job conditions. However, it does seem to be sufficiently cautious to suggest that bored workers, where they are free to do so, produce less than their non-bored coworkers.

As for the finding of insignificant variability between the more and less bored, this study supports Cain (6) and Ryan (31) in their opposition to the British (43, 44) and German (40, 41) groups. Cain's procedure was to compare work curves; the present investigator repeated the Wyatt et al. (43) statistical approach of using standard deviations. It might be mentioned that in their two analyses relevant to this issue, their samples were extremely small (twelve in one group, three in the other) and they rarely applied tests of significance. These two shortcomings characterized much of their research; it is not surprising,

then, that subsequent and more rigorous investigators have upset some of their conclusions.

The present finding means not that variability of work rate is insignificant, but only that in this study it was not significant of boredom. It might well be related to some more basic personality factor. Clinicians today make much of the concepts of rigidity and flexibility; perhaps an analysis in these terms would reveal interesting data regarding not only excessive variability but also excessive uniformity. Such an approach would probably endorse an optimal level of variability; substantial deviations in either direction might signal a particular kind of personality formation with its latent capacity for particular unfavorable reaction patterns. The weakness in previous attempts at interpreting output data may reside less in the fundamental meaninglessness of such data than in the fact that correct meanings have not yet been discovered for them.

Regarding improvement, the questionnaire criterion reveals an interesting relationship. Mean difference favoring greater improvement by the more bored yields a t of 1.44 while mean difference favoring greater output by the less bored yields a t of 1.38. For this to have come about, the more bored must have started work at a much lower level than the less bored, and then spent the remainder of the work period in closing the distance. Since the task was well within the ability of all subjects, interpretation of the deduced slower start and the empirically greater improvement of the more bored may be sought in their attitude toward the work. It is possible that their boredom was an instantaneous response to seeing what the activity was to be and that, perhaps as an

antidote, they later "poured" themselves into the work. This interpretation, if true, would suggest that boredom is not always an emotional experience growing out of prolonged immersion in a monotonous activity but that it may also be an easily evoked attitude, i.e., a readiness to respond negatively on the basis of past experience. Boredom develops, in other words, as fast or as slow as a stimulus is appraised for its interest value. Where it is new and strange, boredom will take time to develop; to the degree that familiarity exists, it will take less time--until a point is reached where immediate identification induces immediate boredom. In the latter instance, the mental hygiene question then becomes a matter of how well the individual deals with his negative attitude. In the present experiment, the more bored evidently dealt constructively with their boredom by accelerating an initially listless work pace.

CHAPTER VIII

SUGGESTIONS FOR FURTHER RESEARCH

The writer remains convinced, despite the generally inconclusive results of his experiment, that there is something to the social factor approach to job boredom. It is obvious, however, that research methodology will have to be improved before the hypothesis can be given fair and unequivocal test.

The first suggestion for further research concerns the advantage of moving the investigation to the real job scene. At least one good reason for so doing is the practical difficulty of securing sufficient time from volunteer student subjects for relationships to form all through the group and for their nature to become fairly well manifest. Although the reaction of rejection is usually masked (35), opportunity must be provided for it to develop and for its cues to become available. In the present experiment, this happened in only a few isolated cases. If the girls met several more times and if their neighbors were different each time, they might begin to gain some idea of who their preferences were and were not, and whose preference they were and were not. On the job scene, of course, all this social patterning has been laid down before the investigator arrives. Similarly, the boredom reactions are there waiting for him; no experiment is needed to create them.

The criterion, however, will still be a problem. If the present study accomplished anything on this score, it was to introduce new complication. To what extent are behavioral and interrogational indices measuring the same thing? The present results suggest it is less than

was supposed at the outset. The finding was unexpected that boredom talk on the job is only narrowly related to what is reported on a boredom questionnaire. If the writer repeats this study, he plans to use an interview technique--as Wyatt et al. (43) did originally and as Ryan (31) presently advocates--together with a questionnaire. In this way, the boredom of each worker will be evaluated both by himself and by an interviewer. It is also possible that coworkers' opinions should be given some weight. Such opinions would indirectly help to bring behavioral data into the criterion without requiring special observers, thus dispensing with a knotty practical problem. Besides, if the opinions are solicited skillfully, they might well be of greater validity and reliability than the ratings of the present observers.

A final advantage of moving the study to the factory scene would be the relative ease of devising a true sociometric test. The activity selected for choosing associates could concern the daily job or something of a more purely social nature, e.g., dating or a bridge club.

A second suggestion concerns some laboratory tests which would tend to support or refute the social factors hypothesis. One procedure would be to make data available regarding popularity and unpopularity. For example, if the present subjects had all been informed after the experiment how they stood as to social status and then were recalled several days later for a repetition of the experiment, the relationship between popularity and boredom, if it exists at all, would be expected to appear rather clearly.

Another and related procedure would involve the use of false information; this would facilitate completing the experiment within one

session. After, say, two hours, boredom and sociometric data would be collected; shortly thereafter, maybe fifteen minutes, sociometric ratings would be returned to all the subjects. These ratings, however, would have been fixed in advance and would bear only accidental relation to the true results. Half of the group would have been selected in advance for false popular ranks and the other half for false unpopular ranks. After the total work period had ended, boredom data would again be collected and analyzed for differences from the previous boredom data. If the null hypothesis is incorrect, differences should appear according to popularity and unpopularity assignment: those assigned popular should be less bored, those assigned unpopular should be more bored.

A third suggestion stems from the implication that "socializing" the boredom through abundant conversation--often humorous, not seldom hostile--is in itself a remedy. It was the writer's impression from personal observation that the subject mentioned on page 66 capitalized on her ability to cleverly and humorously express the group's resentment of the task. She mixed these light jibes with equally entertaining expressions of her own discomfort. It will be recalled that the highest Sociable scores tended toward low questionnaire boredom but high behavioral boredom. If the interpretation be accepted that the questionnaire criterion tapped a deeper level of response than the behavioral criterion, then it might be true that ample and pleasant verbalization of the experience at the time of its occurrence results in less negative residue--which is, after all, a basic principle of mental hygiene. The issue, of course, may not be so simply drawn. It

is conceivable, for example, that even if the high Sociable individuals could not "behave" much boredom--for example, if the rules forbade boredom discussion--they still would have scored low on the questionnaire. But this is a matter for further research. Is there a mental hygiene of boredom, and, if so, what are its principles? Sheer talk can bore one to death; can sheer talk be the death of boredom? If the hypothesis is borne out that cheerful chatter, banter, and protest help to alleviate boredom, what would be the explanation? Would it be the cathartic benefit of hostility release in a controlled, acceptable fashion? Would it be the kinship feeling of shared discomfort, a feeling which to some might well matter more than the discomfort? Would it be nothing more than the entertainment value of the humor involved? These are some of the questions which seem to be worth exploring.

A fourth suggestion concerns the failure to find differences in sociometric-boredom correlation between more and less monotonous jobs. The test was not a good one because of insufficient monotony difference between the two experimental conditions. A problem here which would impede most experimentation with students is the much greater meaning they assign to the experimental aspect of the situation than to the particular work in which they are engaged. Perhaps they are too sophisticated psychologically. A way of avoiding this problem and also of extending validity would be to select two occupational groups located far apart on an objective monotony scale. Would the correlation differ significantly between, say, a punch-press operator and an accountant? According to the present theory of occupational boredom, the correlation in accounting should be less since the socially unsuccessful can find

more gratifications in the inner area of their job and thus be less bored. However, it might be aptly contended that since gratification depends as much on the size of the need as on the size of the fulfiller, and since the needs of most unskilled labor for economic, social, and intellectual status are less than those of the middle and upper class, the correlation in accounting would not be less. Perhaps the present theory has overlooked the relativity of the problem. Only competent research can decide the issue.

A fifth suggestion for further study is the suggestion of the preceding chapter that reflectiveness correlates positively with boredom because of its negative correlation with emotional stability. According to this suggestion, reflective individuals are no more prone to boredom than non-reflective individuals; instability, however, can make either of them prone. The research task, then, is to test whether maladjusted reflective individuals are more susceptible to job boredom than are well-adjusted reflective individuals. The same might be done with non-reflective individuals. If a large enough sample could be taken from the factory scene, a possible procedure would be to select all those workers with a Reflective percentile rating of more than 75 and less than 25.[6] This would give a Reflective and a Non-Reflective group. (One might think in terms of impulsivity in naming this second group; however,

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[6]Thurstone (37) writes: "You should not consider a person 'high' in an area unless his score is above the 75 percentile. Using this standard, you will be right in saying the person is above average approximately nine out of ten times...Using the same logic, you should not consider a score 'low' unless it is below the 25 percentile..."

Thurstone's Impulsive area intercorrelates only -.01 with Reflective, indicating the existence of two totally independent factors.) Then each of the groups could be divided according to similarly high and low Stable scores, thus creating the following groups:

1. High Reflective, High Stable
2. High Reflective, Low Stable
3. Low Reflective, High Stable
4. Low Reflective, Low Stable

All individuals in all groups would then be evaluated for job boredom, with appropriate tests being employed to measure the significance of difference between groups. The present viewpoint would expect significantly less boredom for Group 1 as against Group 2 and for Group 3 as against Group 4. It would also be important to test for differences between Groups 1 and 3 and between Groups 2 and 4.

A sixth and final suggestion concerns the matter of the more bored producing less work. An effective on-the-scene technique--one which circumvents some of the earlier discussed obstacles (cf., p.70)--might be to secretly maintain output records in a situation where output is not customarily recorded. After a length of time sufficient to insure representativeness of the work sample, the workers concerned may be evaluated for their boredom, with subsequent statistical analysis to determine significance of correlation between boredom and output or of differences between output means of the more and less bored.

CHAPTER IX

SOME FINAL COMMENTS ABOUT BOREDOM

Although the present study was confined to occupational boredom, it seems fitting to close by commenting on some aspects of boredom in general.

First, the writer would like to remark upon the large subjective element in the usual usage of the concept of monotony. Although he attempted to define and manipulate monotony with precise objectivity in the present research, he suspects that the concept, like boredom, is rooted in a subjective frame of reference. Its use for the most part seems to be reserved for describing that which bores. Who, for instance, amongst those who are interested, is interested in that which is monotonous? Some workers may like conditions which add up to monotony for someone else but they are most unlikely to employ that term in telling of what they enjoy. Two of Wyatt et al.'s soap-wrappers, for instance, told their interviewers, "The work now is very nice because it is always the same" and""I like the work now because it is all one thing instead of many different kinds" (43, p.47). Also relevant is an editorial comment in the journal Occupations which states:

> Some persons actually prefer monotonous work...Any executive in a factory or business establishment can cite instances of capable workers who were offered positions as foremen but refused them because they preferred to stay in monotonous work that would not tax their higher brain centers and would leave them free of responsibility (25, p.360).

Though the individuals referred to in this editorial are often not respected for their rejection of advancement, only a few would think them queer. However, if they were to explain their decision on the grounds that the

proffered job was not as monotonous as their present work, they would receive many peculiar stares. Much more probable would be an explanation beginning, "I know my job gets monotonous at times but . . . ."

To reverse the argument, who is bored by that which is interesting? The bored individual might concede its interest value for somebody else, of course (though he may sometimes wonder whether the other isn't "kidding"), just as the interested individual might appreciate its monotony value for somebody else (though he may sometimes wonder whether there isn't something wrong with the other). But regardless of what it is for another person, for the bored fellow it is the same thing over and over again. Ask him about his work and he will not hesitate to talk about its monotony. To the writer, all of this suggests that monotony may be no more objective a concept than interest, that it may be nothing more than a perceptual judgment with all the personal involvement that such judgment possesses.

If monotony is regarded as a perceptual judgment, then it would seem fruitful to investigate those personality factors which affect it. For example, what factors operate to induce monotony judgments in two individuals, each perceiving a stimulus field of very different complexity? Though the jobs of an unskilled factory laborer and a physician are worlds apart in homogeneity and continuity, the two men may be equally overwhelmed by sameness and repetition. What is it in the physician which can so alter his vision that differences dissolve and likenesses multiply? In earlier years, his focus was sharp; the differences were many and challenging. Now, uniformity rules; one case after another seems stamped from the same mold. And then there is Munsterberg's

lamp-packer (cf., p.6) who daily saw such articulation in a field where he saw only one blob of monotony. What can her personality teach about the robust side of perceptual health, in contrast to the physician with his failing outlook? The problem seems one of perceptual dynamics rather than structure, although organic findings in connection with trauma and deterioration may afford some worthwhile leads.

A second comment concerns the relationship between boredom and personal insight. Zbranek, in the theoretical framework of his recent research on boredom and schizophrenia, writes as follows:

> Indeed at times we are unable to imagine anything that wouldn't be a bore--nothing in the world either available or imaginable strikes one as being at all interesting. This we recognize as some defection in ourself. We say, 'I guess I'm just bored,' much as we might say, 'I guess I'm just in a mood.' We are willing to degrade our consciousness before we are willing to degrade the world...Something should be interesting and we have the feeling that it lies outside... When, however, we are faced by the problem that this 'something interesting' does not lie outside either, it becomes an insistent, nagging demand that surely someplace something should be perceived as worthwhile, but we are unable to find it. The bored man waits for himself to change, so that the world will again be right (45, p.21).

In this passage, Zbranek describes a state of acute boredom accompanied by acute insight. The present writer is inclined to the view, however, that such insight is unusual amongst the frequently bored. He believes, in fact, that the boredom attitude itself is intimately linked to this lack of insight as well as to the associated tendency to project responsibility and blame. In contrast to Zbranek's model, the frequently bored are believed to be more willing to degrade the world than themselves. They are not ordinarily "faced by the problem that this 'something interesting' does not lie outside either;" their conscious burden in life

is much lighter. From Wyatt and Langdon (44) and Cain (6) data, it may be inferred that one of their main concerns in life is finding fault--and elsewhere than in themselves. Hoppock has something important to say here:

> His maladjustment...breeds within him dissatisfaction and thwarts him in his search for happiness and success. Inasmuch as feelings and emotions are inherent aspects of himself, he carries them with him, so to speak, into every situation which he enters. Now, since he does not usually know the reason for his dissatisfaction, does not understand the whyfor and nature of his maladjustment, it is not surprising that he very frequently attaches or attributes it (his dissatisfaction) to his work or his working situation (13, p.27).

It might be added that one's family and friends are always likely to fall victim to this need for scapegoats. Nor is this accusing limited to people in the environment. As Munsterberg (23), Dunford (8), and Thompson (36) assumed, and as Cain (6) learned, objects and practices come in for their share of rejection.

A persistent desire for change or variety, then, seems little more than the anxious dismissal of a proven failure in favor of an unproven one. Situations are rejected or fled in endless pursuit of a will-o'-the-wisp. Perhaps Cain's finding that job boredom decreases with age means that maturity consists partly in learning that the self may be at fault and that it is in the self that changes must be wrought.

A final comment regards the possibility that there are socioeconomic and educational correlates of boredom. The image of a stevedore, a garbage-collector, or a coal-miner complaining that he's bored strikes one as incongruous. Also suggestive is the familiar device of using boredom in an attempt to gain superiority or sophistication. Wyatt and Langdon noted in 1937:

> The more intelligent tend to have an educational history which leads them to consider themselves 'too good for the job.' There are also indications that a similar attitude may be produced by continued education, especially when combined with superior social status, in the absence of any marked degree of intelligence (44, p.66).

This observation suggests that boredom may be a psychodynamic adjustment more prevalent or more frequently indulged by those of the upper classes of society. The investigation of this relationship, as well as others previously discussed, would help toward the establishment of an adequate psychology of boredom. Although research has yielded many clues since Poffenberger wrote the following in 1927, the theoretical integration is yet to come which would provide the final nudge needed to retire it to the shelf of historical interest:

> Monotony offers one of the most puzzling problems that the applied psychologist has to face. Not only is there great difference of opinion as to what causes it but there is much confusion also as to what it really is (27, p.220).

CHAPTER X

SUMMARY AND CONCLUSIONS

In previous studies of occupational boredom, various factors, including intelligence, attention, and conflict, have been explored with varying degrees of success. The present research was primarily designed to inquire into another seemingly relevant variable, the social relationships of the worker on the job. Specifically, the question was asked whether occupational boredom might be partly rooted in a worker's popularity with his coworkers, in his conception of his popularity with them, or in his enjoyment of them.

Inquiry was also made into (a) whether the correlation between the preceding social factors and boredom is greater in more monotonous jobs, (b) whether there is correlation between job boredom and reflectiveness, sociability, and stability of personality, and (c) whether bored workers show different rate of improvement, variability of work rate, and gross output from non-bored workers.

The experimental design involved the devising of two work conditions, one more monotonous than the other, with monotony being defined in terms of high homogeneity and continuity, and low meaning. The more monotonous condition consisted in an assembly-line of twelve workers who produced, almost to completion, a toy cube. Each subject performed one very brief operation; none was told about the purpose of the work. In the less monotonous condition, each of the twelve subjects worked on her own cubes, from beginning to completion, with the understanding that the cubes were to be used in the decoration of children's parties in local orphanages and hospitals.

Subjects for the experiment were 71 female undergraduates. Before beginning work, they took the Thurstone Temperament Schedule; upon completing work, they filled in boredom and sociometric questionnaires. The latter involved their assigning a preference rank to every girl with whom they worked and also, guessing how they themselves had been ranked by every girl. In each condition, the subjects sat around an almost square work-table arrangement, permitting free communication all around the table while work was in progress.

Three criteria were employed to measure boredom. The first and conventional one was a questionnaire designed to elicit subjective experience while working and general attitude toward the interest value of the job. The second criterion was based on verbal and nonverbal behavioral data collected by observers while the subjects were working. The third criterion was a composite of the first two.

Conclusions

1. The results of this study are inadequate to establish a significant relationship between social factors in the work situation and occupational boredom.

2. The degree of task monotony does not significantly influence any possible relationships existing between social factors in the work situation and occupational boredom.

3. Of the three personality traits investigated,

    a. Reflectiveness correlates positively though not to a statistically significant degree with occupational boredom criteria,

b. Stability correlates negatively though not to a statistically significant degree with occupational boredom criteria, and

c. Sociability shows no correlation with occupational boredom criteria.

4. Bored workers show significantly less output than non-bored workers, but the rate of improvement and variability of work rate do not differ significantly from those of non-bored workers.

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APPENDICES

A. Boredom, sociometric, and Thurstone scores of all subjects

B. Directions for Conditions A and B

C. Instructions to observers

D. Boredom questionnaire

E. Sociometric questionnaire

F. The task illustrated

APPENDIX A

BOREDOM, SOCIOMETRIC, AND THURSTONE SCORES OF ALL SUBJECTS

Subject	Boredom*				Sociometry						Thurstone		
	Q	V	NV	C	a	b	c	d	e	f	S	ES	R
1. B.M.	8.78	2.82	3.26	14.86	17	3	12	63	42	63	4	10	2
2. D.M.	10.08	3.19	3.26	16.53	6	13	18	50	65	67	19	5	7
3. R.M.	4.14	4.01	3.54	11.69	13	7	15	65	53	71	18	11	11
4. P.E.	7.76	3.56	2.70	14.02	17	5	6	64	51	60	10	9	12
5. G.E.	9.64	2.64	3.26	15.54	14	12	11	60	57	58	12	12	9
6. T.D.	4.00	3.37	3.26	10.63	21	8	13	72	53	64	11	6	6
7. B.J.	5.74	4.29	4.10	14.13	1	5	7	35	35	35	2	4	12
8. L.M.	5.88	2.82	2.98	11.68	10	5	4	44	39	43	13	9	7
9. M.D.	8.34	3.65	3.54	15.53	10	8	9	53	50	51	16	12	6
10. W.R.	7.62	2.46	2.14	12.22	7	4	7	35	35	42	15	11	11
11. M.A.	6.74	4.47	3.26	14.47	3	8	17	47	59	62	17	13	2
12. R.S.	6.90	3.01	2.42	12.33	13	7	14	66	62	68	13	11	7
13. H.P.	8.04	3.10	4.10	15.24	10	1	10	42	28	49	11	13	8
14. L.L.	4.14	2.91	2.70	9.75	15	6	11	61	45	62	15	4	6
15. B.E.	6.90	2.73	2.70	12.33	10	11	15	57	58	60	15	6	9
16. W.M.	3.14	2.55	3.26	8.95	13	4	8	56	42	56	15	10	6
17. F.C.	4.00	2.73	3.26	9.99	13	11	10	64	58	53	9	10	7
18. B.M.	5.16	3.01	2.70	10.87	14	10	10	54	45	48	16	15	10
19. M.H.	6.32	2.55	2.42	11.29	7	2	16	44	39	64	14	11	9
20. M.E.	8.92	4.01	3.82	16.75	16	3	11	72	60	64	15	5	6
21. B.S.	6.90	2.82	3.54	13.26	12	14	17	58	60	64	18	15	7
22. B.M.	3.42	4.20	3.26	10.88	16	16	18	86	95	92	14	12	9
23. P.M.	6.46	2.64	4.10	13.20	9	13	13	71	86	81	5	7	16

Note.--Boredom subheadings represent the questionnaire, verbal, nonverbal, and composite criteria. Sociometry subheadings refer to social factors and their combinations described in Hypothesis 1. Thurstone subheadings represent Sociable, (emotionally) Stable, and Reflective.

*Standard scores

APPENDIX A (cont.)

Subject	Boredom*				Sociometry						Thurstone		
	Q	V	NV	C	a	b	c	d	e	f	S	ES	R
48. W.S.	8.20	2.91	3.82	14.93	8	0	3	39	15	30	9	8	12
49. T.J.	6.32	2.64	3.26	12.22	8	13	14	56	56	56	17	16	9
50. E.H.	7.48	2.46	2.14	12.08	4	2	4	19	17	20	13	16	15
51. K.K.	4.44	3.19	2.98	10.61	14	8	13	62	54	59	17	7	8
52. S.M.	4.58	2.91	2.14	9.63	9	4	10	49	42	56	17	9	5
53. R.R.	5.30	2.73	2.98	11.01	8	6	11	41	47	52	10	7	8
54. J.J.	3.28	3.28	2.42	8.98	14	9	13	56	56	56	17	7	8
55. B.B.	5.44	2.64	4.10	12.18	4	5	9	35	42	42	14	7	13
56. A.K.	6.32	3.01	2.42	11.75	8	2	8	31	27	40	10	7	8
57. M.P.	8.04	3.65	2.42	14.11	11	5	8	48	40	45	14	14	13
58. Y.I.	9.20	3.10	3.26	15.56	9	7	9	52	48	54	9	5	17
59. A.M.	4.58	2.82	2.70	10.10	12	5	8	50	44	53	13	10	7
60. H.B.	5.44	2.64	2.98	11.06	9	12	14	58	67	64	17	5	14
61. T.M.	4.00	2.46	1.86	8.32	14	7	8	59	55	61	18	11	7
62. S.G.	6.18	2.55	2.14	10.87	9	7	18	62	61	73	14	5	9
63. K.M.	4.14	2.64	2.70	9.48	10	11	13	71	79	81	17	12	7
64. S.G.	2.56	2.64	2.42	7.62	12	6	10	63	49	56	12	16	9
65. D.C.	5.30	2.55	2.42	10.27	18	6	8	68	52	62	17	11	8
66. C.C.	6.02	2.46	2.14	10.62	9	13	17	55	61	59	14	15	10
67. O.C.	6.46	3.10	2.98	12.54	12	4	11	48	40	52	17	8	12
68. R.D.	6.32	2.73	2.42	11.47	15	9	13	61	52	55	15	6	11
69. K.J.	6.74	2.73	2.42	11.89	17	14	14	73	69	68	18	10	3
70. M.M.	3.42	2.73	2.14	8.29	15	13	16	79	74	78	16	15	10
71. D.B.	0.68	2.46	1.86	5.00	9	5	8	45	41	47	15	11	11

Note.--Boredom subheadings represent the questionnaire, verbal, nonverbal, and composite criteria. Sociometry subheadings refer to social factors and their combinations described in Hypothesis 1. Thurstone subheadings represent Sociable, (emotionally) Stable, and Reflective.

*Standard scores

APPENDIX A (cont.)

Subject	Boredom*				Sociometry						Thurstone		
	Q	V	NV	C	a	b	c	d	e	f	S	ES	R
24. P.M.	8.04	2.64	2.98	13.66	17	14	14	66	62	61	11	9	9
25. S.M.	7.32	2.91	3.54	13.77	19	15	12	76	68	66	17	9	14
26. T.G.	5.60	2.73	3.26	11.59	15	12	17	66	62	68	16	9	14
27. M.J.	6.46	2.46	3.82	12.74	13	8	10	55	47	52	17	8	8
28. S.J.	6.60	2.46	2.98	12.04	7	7	18	48	54	59	13	5	11
29. Z.C.	3.86	2.64	2.70	9.20	20	5	7	64	44	53	11	10	7
30. R.M.	6.02	3.01	3.54	12.57	19	11	10	72	67	71	13	12	12
31. E.B.	3.72	2.73	3.54	9.99	12	6	18	65	74	71	14	1	10
32. W.M.	5.88	2.64	2.98	11.50	4	11	17	28	42	42	13	12	6
33. P.E.	9.64	2.46	4.10	16.20	4	2	1	18	15	16	14	9	16
34. W.W.	2.26	3.46	2.98	8.70	3	10	14	50	65	60	17	16	8
35. M.L.	7.90	2.46	2.98	13.34	12	6	7	50	44	46	16	11	6
36. J.P.	6.90	3.01	3.82	13.73	14	6	13	75	59	69	14	4	5
37. H.N.	6.90	3.01	3.26	13.17	13	1	7	44	25	43	17	7	9
38. W.C.	5.44	2.55	3.26	11.25	10	13	15	50	65	60	14	10	9
39. F.H.	9.50	4.75	4.10	18.35	14	8	13	64	58	60	15	5	13
40. S.G.	3.14	2.82	2.14	8.10	13	10	13	66	63	68	15	15	11
41. E.H.	7.04	2.91	2.70	12.65	10	19	17	72	81	71	17	14	8
42. W.J.	6.74	2.46	2.42	11.62	3	0	6	22	16	32	1	7	12
43. L.R.	3.14	4.29	2.98	10.41	11	6	4	47	38	41	16	9	9
44. H.L.	7.32	3.28	3.26	13.86	14	8	8	68	59	62	12	9	7
45. C.J.	8.62	2.82	3.54	14.98	9	7	12	55	54	59	17	15	7
46. J.M.	5.30	2.46	2.70	10.46	-2	6	5	17	34	33	19	11	14
47. D.P.	3.14	5.57	2.98	11.69	15	10	11	65	60	64	18	17	8

Note.--Boredom subheadings represent the questionnaire, verbal, nonverbal, and composite criteria. Sociometry subheadings refer to social factors and their combinations described in Hypothesis 1. Thurstone subheadings represent Sociable, (emotionally) Stable, and Reflective.

*Standard scores

APPENDIX B

DIRECTIONS FOR CONDITIONS A AND B

Condition A

Escort group to work room. Ask one subject to come into the room; she shall be Operator #1. Demonstrate to her the operation she shall perform through the entire work period. Before sending her out, request that she say nothing to the others about her instruction. Select a second subject, who then will become Operator #2. Repeat this procedure until all have been assigned particular operations and have seen them demonstrated in private. Then seat all the girls at their respective places along the assembly-line and give signal for Operator #1 to start production.

(NOTE: In giving demonstrations, experimenter should point out that his style or technique need not be followed; all that is important is that the end result be the same. Further, just before the subjects begin working, the experimenter tells them that he cannot reveal to them the nature or purpose of their work, only that they should work steadily and continuously and that they should keep the line moving at all times. Talking is permitted as long as it doesn't interfere with work.)

Lunch break one and a half hours from the time work began. Inform the subjects that they will have fifteen minutes before returning to work.

At the end of the second work period, instruct subjects to leave everything as is and scatter them around the room, widely separated, according to the sequence in which their names are listed on the name sheet. Distribute boredom questionnaires. Read aloud the introductory statement at the top of the questionnaire. Collect when finished.

Distribute sociometric questionnaire and name sheets. Inform subjects that they are seated in the same sequence that their names are listed, thus

making it easy to identify those girls whose names they may not remember. Explain this in some detail to make sure all understand. If any seem to still be in doubt, explain individually or give whatever names are needed.

After all have finished, call in Mr. Stark for confidence appeal and expression of appreciation, plus personal thanks to any last-minute subjects.

Condition B

Escort subjects to work room. Seat subjects around worktable and read the following instructions:

> Today you are to consider yourselves real workers on a real job. Just like on a real job in a factory, you will be engaged in manufacturing a product. The product today is a toy paper cube to be used in decoration of children's party rooms. The product will be turned over to local children's institutions, such as the Children's Hospital and the Child Guidance Home. I will give you all a demonstration of the job so you will know how to proceed.

Experimenter then demonstrates task, pointing out to subjects that they do not have to follow his particular techniques and sequence; they may perform the task however they like as long as the finished product is identical to that of the experimenter. The following instructions are then read:

> There will be a short break during the middle of the work day for a light lunch. Remember--think of yourselves as workers on a job with a job to do. Work steadily and continuously. You may talk as much as you want as long as it does not slow down your work. You may now begin.

(NOTE: When experimenter demonstrates task, he should point out that there are 14 operations before the stringing of the cube.)

After subjects have begun working, draw up list of four 20-minute intervals, starting from the time work began to ten minutes before the lunch break; then add five more, starting with ten minutes after the resumption of work after lunch to the end of the second work period. This list is a guide to the experimenter in announcing when string markers should be inserted. The first announcement comes twenty minutes after work has begun and shall be read as follows:

> Please stop your work for a moment. All cubes completed up to this point should be strung. If you have any completed cubes which are loose, please string them. Now take one of your string markers and write on it the number of operations you have completed on the cube on which you are presently working. If you had just strung a cube when I began talking, you will write a zero on the marker; if you had completed all operations except folding and gluing, you will write a twelve on the markers; etc. If you have any questions as to what number should be written, please ask for my assistance. When you have written your number, insert the marker on the string after the last cube, and continue working.

(NOTE: Some confusion may result from the factthat cutting is given credit for two operations. Point this out to the subjects, preferably during the initial demonstration.)

Later announcements at the 20-minute intervals may be more brief a
and informal.

Lunch break one and a half hours from the time work began. Inform the subjects that they will have fifteen minutes before returning to work.

Ten minutes after the resumption of work, call for string-markers; thereafter, as before, every twenty minutes.

At the end of the second work period, instruct subjects to leave everything as is and scatter them around the room, widely separated, according to the sequence in which their names are listed on the name sheets. Distribute boredom questionnaires. Read aloud the introductory statement at the top of the questionnaire. Collect when finished.

Distribute sociometric questionnaire and name sheets. Inform subjects that they are seated in the same sequence that their names are listed, thus making it easy to identify those girls whose names they may not remember. Explain this in some detail to make sure all understand. If any seem to still be in doubt, explain individually or give whatever names they need.

After all have finished, call in Mr. Stark for confidence appeal and expression of appreciation (plus personal thanks to any last-minute subjects).

APPENDIX C

INSTRUCTIONS TO OBSERVERS

You are asked to provide observational data covering both verbal and nonverbal manifestations of boredom behavior. Each subject in your group shall receive two observational ratings, the first a measure of verbally expressed boredom, the second a measure of nonverbal expression.

Verbal Behavior. All separate comments, exclamations, etc., relating to the boredom or monotony in the work situation shall be scored against the name of the verbalizer. For separate verbalizations, scores shall be either one or two, depending upon their intensity. Continuous verbalizations--at least two consecutive statements, either in conversation or impersonally spoken--shall receive a score of two in low intensity and four in high intensity.

Examples:

Separate Verbalizations

(low intensity: score one)

"This can get sort of monotonous"
"Is it only eleven o'clock?"
"This must be boring to do every day"

(high intensity: score two)

"How boring can it get!"
"Don't tell me it's only eleven!"
"Jeez, imagine going through this every day!"

Continuous Verbalizations

(low intensity: score two)

"You can get tired of it rather quickly. I'm glad we don't have to work at it too long. I don't think I'd like to make a living from it."

(high intensity: score four)

"Boy, this is a drag! I pity factory workers doing this day after day. I think I'd wind up in a straight-jacket! How they can keep it up is beyond me!"

Nonverbal Behavior. At the end of the entire work period, the observer shall rate each subject in his group on the following boredom scale, according to the general level of boredom expression:

Severe boredom
Marked boredom
Moderate boredom
Slight boredom
No observable boredom

The basis for these ratings shall be the following nonverbal actions and no others:

drowsiness
restlessness
aimless staring
watch-watching

NOTE: If a particular subject has talked endlessly of boredom but has never demonstrated drowsiness, restlessness, aimless staring, or watch-watching, her nonverbal boredom rating shall be "no observable boredom," despite the fact that she may have led the group in verbal boredom.

APPENDIX D

BOREDOM QUESTIONNAIRE

NAME_____ DATE_____

QUESTIONNAIRE

IMPORTANT: Do not allow your feelings about anything else to enter into your answers to these questions. The person who withholds any facts because they may seem impolite or unfavorable, for example, is doing serious damage to the experiment. The truth is immensely more important here than courtesy. Also, be sure to read all the choices before making your selection; then underline the correct answer.

1. How did the time seem to pass while you worked?
   a) very fast (1)
   b) about average (3)
   c) very slow (5)
   d) fast (2)
   e) slow (4)

2. Did you ever have the urge to work on something different, just for the change?
   a) many times (4)
   b) rarely (2)
   c) continually (5)
   d) sometimes (3)
   e) practically never (1)

3. Did you become drowsy while working?
   a) at times (3)
   b) most of the time (5)
   c) infrequently (2)
   d) often (4)
   e) hardly ever (1)

4. While you worked, were you distracted from your task by people and things around you?
   a) scarcely (2)
   b) a great deal (5)
   c) somewhat (3)
   d) not at all (1)
   e) quite a bit (4)

5. Did you become restless while working?
   a) constantly (5)
   b) seldom (2)
   c) often (4)
   d) practically never (1)
   e) occasionally (3)

6. Did you find that your mind wandered to the extent that it interfered with your work (for example, by slowing your pace or by causing mistakes)?
   a) almost never (1)
   b) frequently (4)
   c) rarely (2)
   d) repeatedly (5)
   e) once in a while (3)

7. Did you ever get bored with the job?
   a) now and then (9)
   b) almost all the time (15)
   c) hardly ever (3)
   d) often (12)
   e) seldom (6)

8. How much more time do you think you could have worked today before boredom became a very serious problem? (Assuming you are free until midnight, select an hour from three to twelve p.m.)

   _____p.m.

   (before 3:59 p.m.--15)
   (4-4:59 p.m.--12)
   (5-5:59 p.m.---9)
   (6-6:59 p.m.---6)
   (7-12:00 mid.--3)

9. Which of the following would best describe a factory job such as the one you performed today?
   a) very monotonous (15)
   b) not especially monotonous or interesting (6)
   c) rather interesting (3)
   d) very interesting (3)
   e) rather monotonous (9)

10. If you took a job like the one today, how long do you think it would be, if ever, before boredom would make you <u>think</u> about quitting. (Be sure to include in your answer a specific time estimate.)

    <u>(Less than 1 day--15; 1 day--12; more than 1 day, less than 1 week--9; 1 week--6; more than 1 week--3.)</u>

An extension of this research is being planned for some time during the coming Spring. The work will be the same type of thing you did today. Subjects will again be needed. Mutually convenient appointments will be arranged with all volunteers.

Please include me (0)
as a subject for the experiment later this term.
Please do not include me (10)

(Maximum boredom score--100.)

APPENDIX E

SOCIOMETRIC QUESTIONNAIRE

QUESTIONNAIRE

IMPORTANT: The information you are asked to provide in the following questions will be kept in the strictest confidence. If these questions are not answered with complete honesty and frankness, the entire experiment becomes worthless. If for any reason you cannot be completely honest and frank, please leave your paper blank and ask to see the person in charge.

1. Rate every girl with whom you worked today in one of the following categories, keeping in mind the statements refer only to your experience today and not to any previous contact:

    a) Especially enjoyed her company

    b) Nice to have had her in the group

    c) No particular opinion

    d) Would rather she had not been in the group

2. Now reverse the procedure and show, for every girl with whom you worked today, in which category you think she placed you, keeping in mind again that these statements refer only to today's experience:

    a) Especially enjoyed your company

    b) Nice to have had you in the group

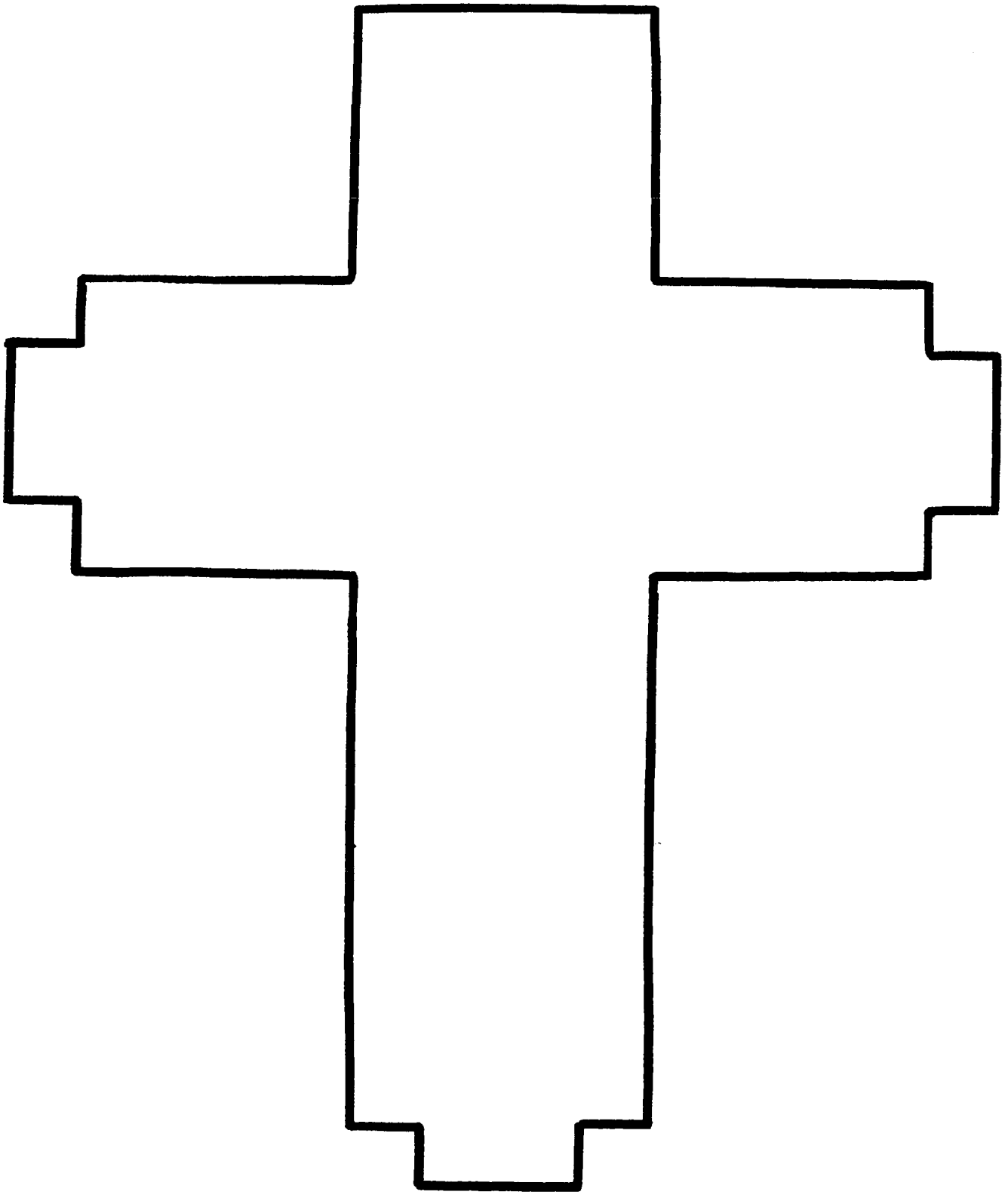
    c) No particular opinion

    d) Would rather you had not been in the group

APPENDIX F

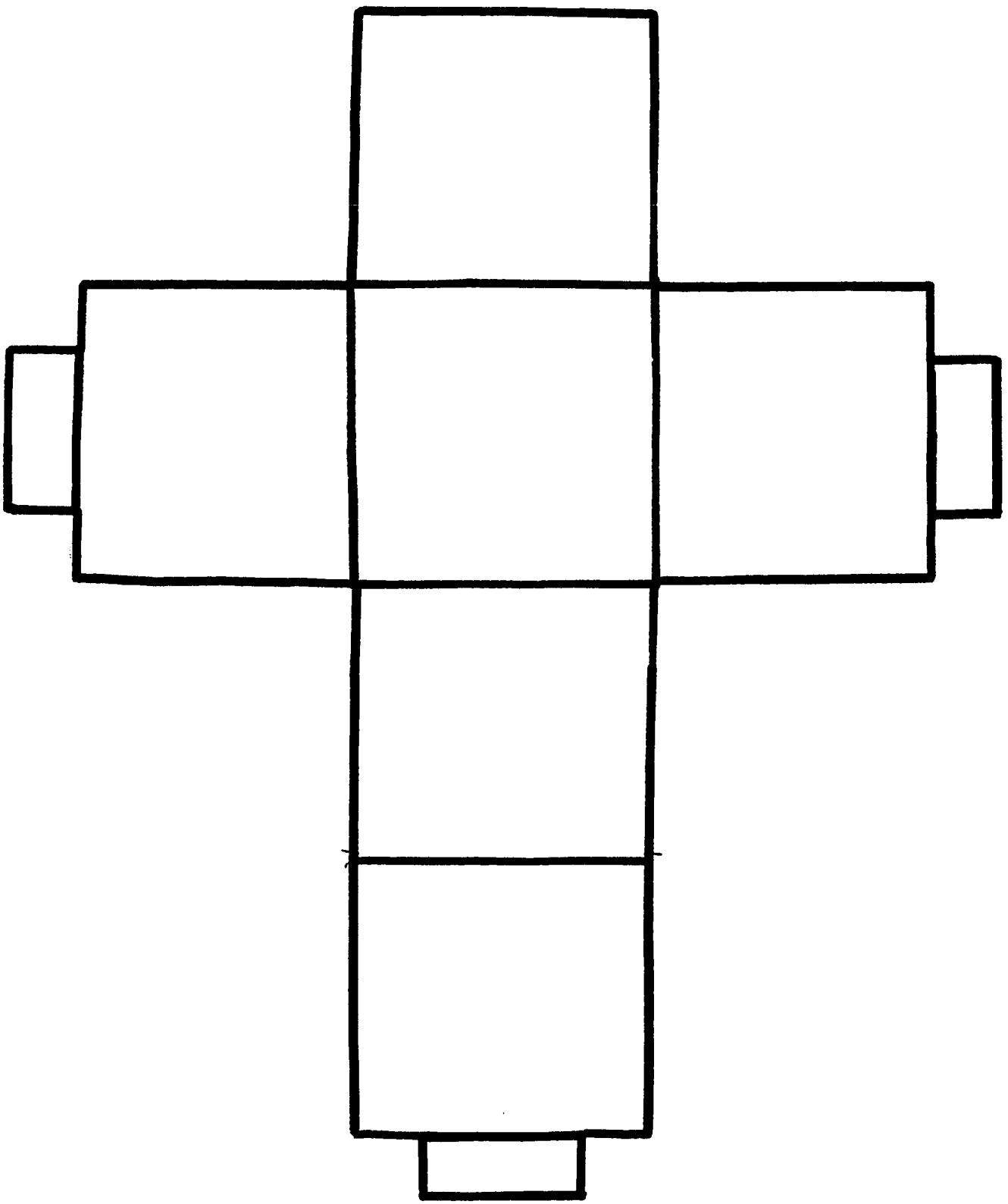
THE TASK ILLUSTRATED

Operation No. 1



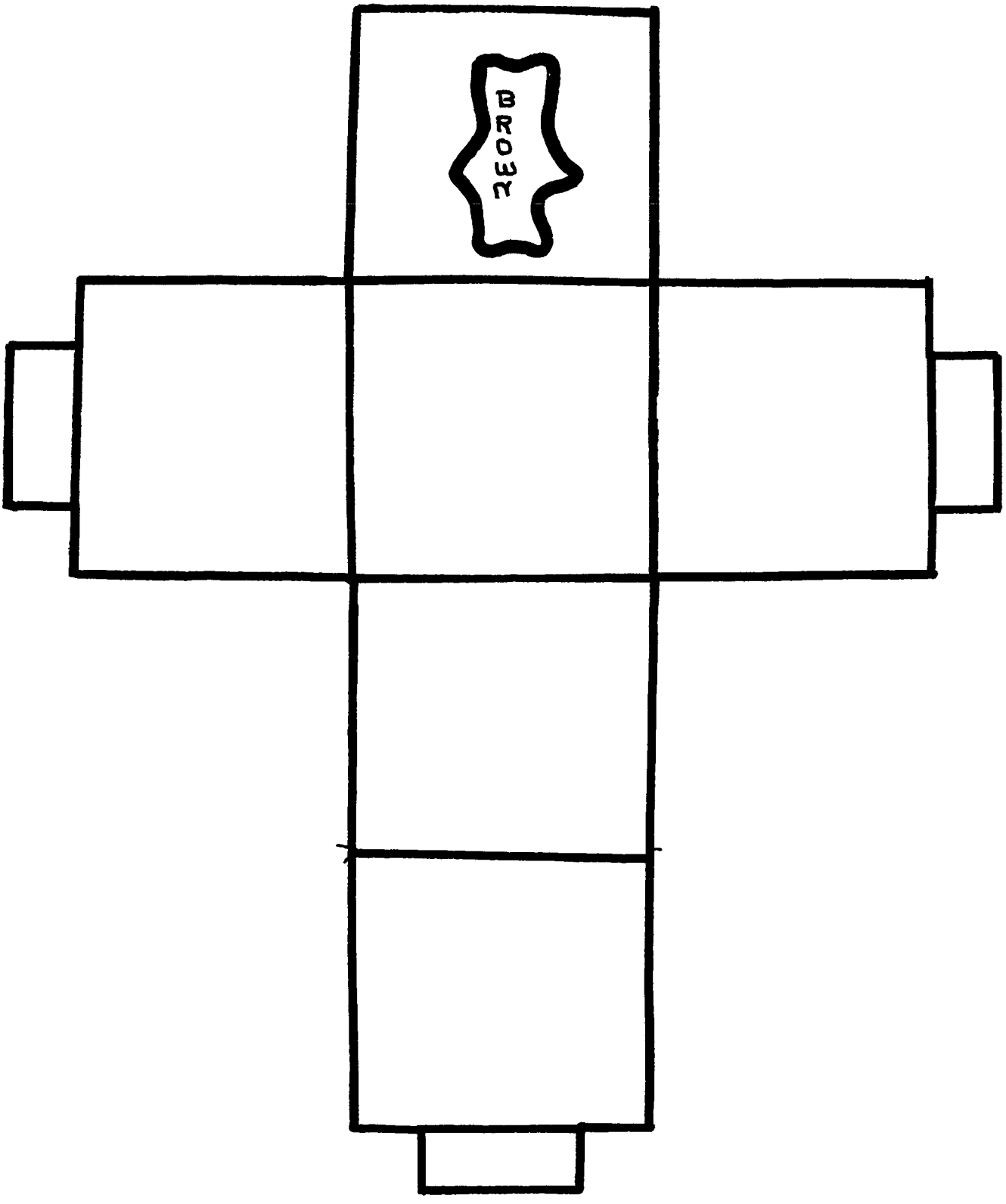
APPENDIX F (cont.)

Operation No. 2



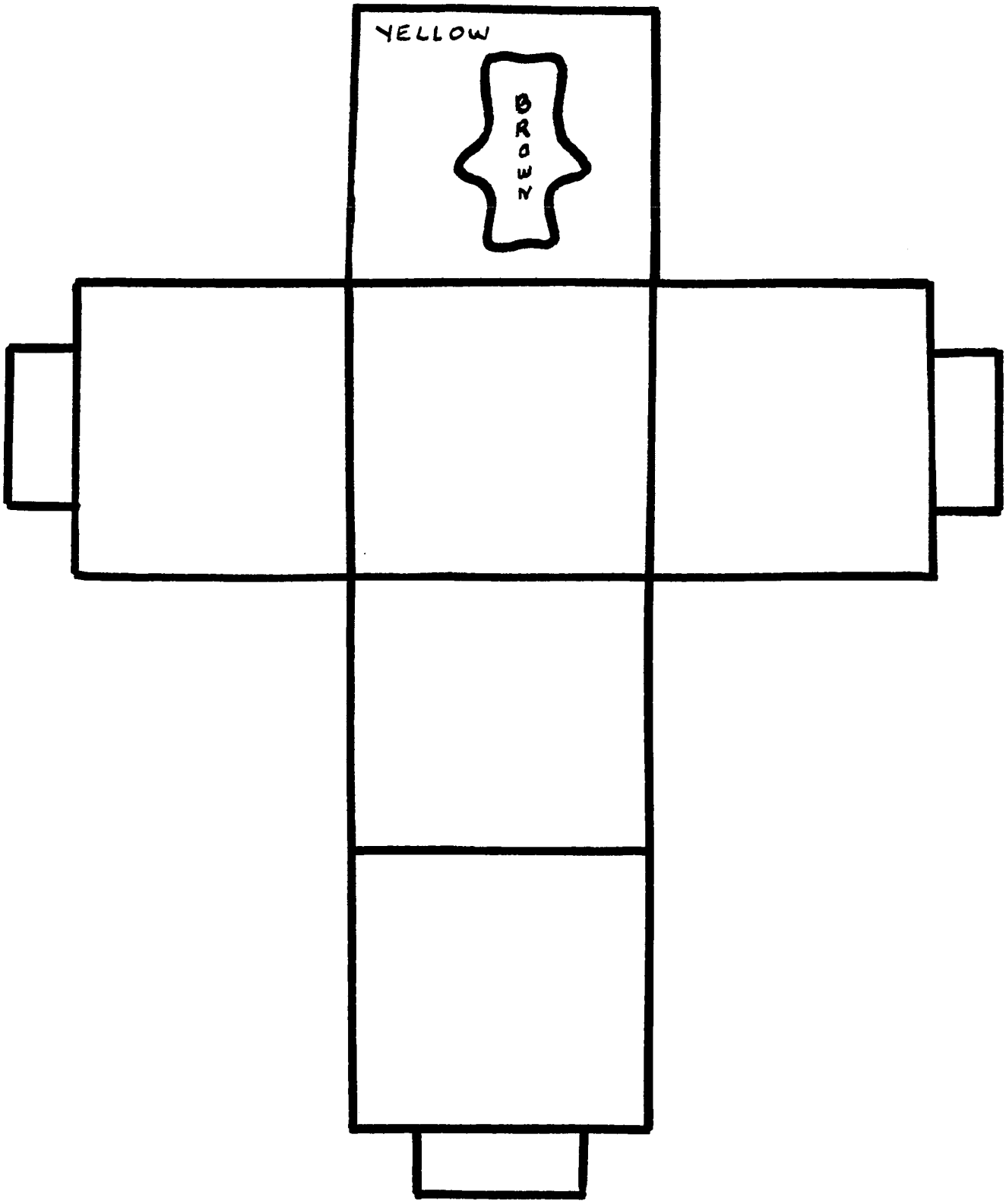
APPENDIX F (cont.)

Operation No. 3



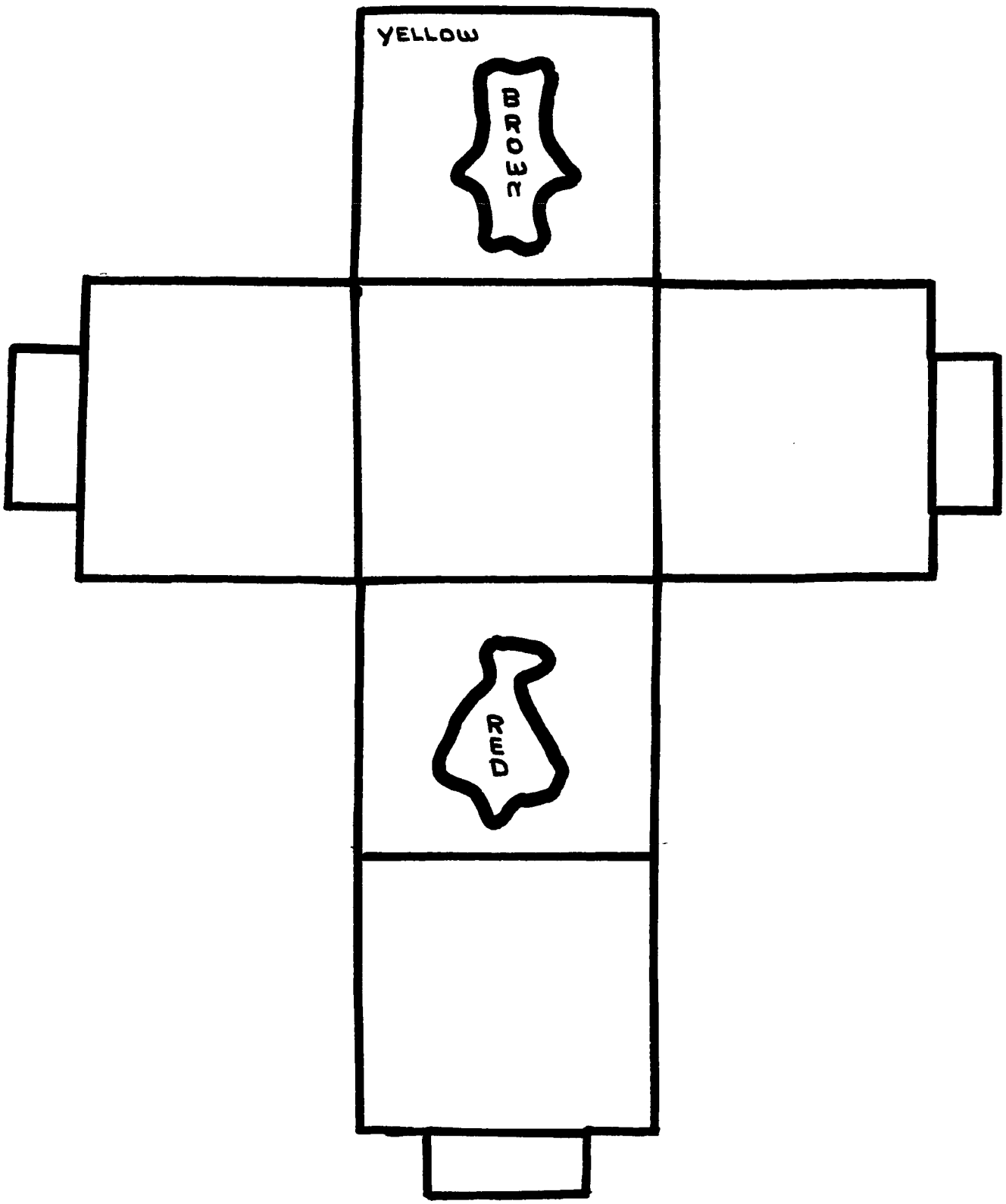
APPENDIX F (cont.)

Operation No. 4



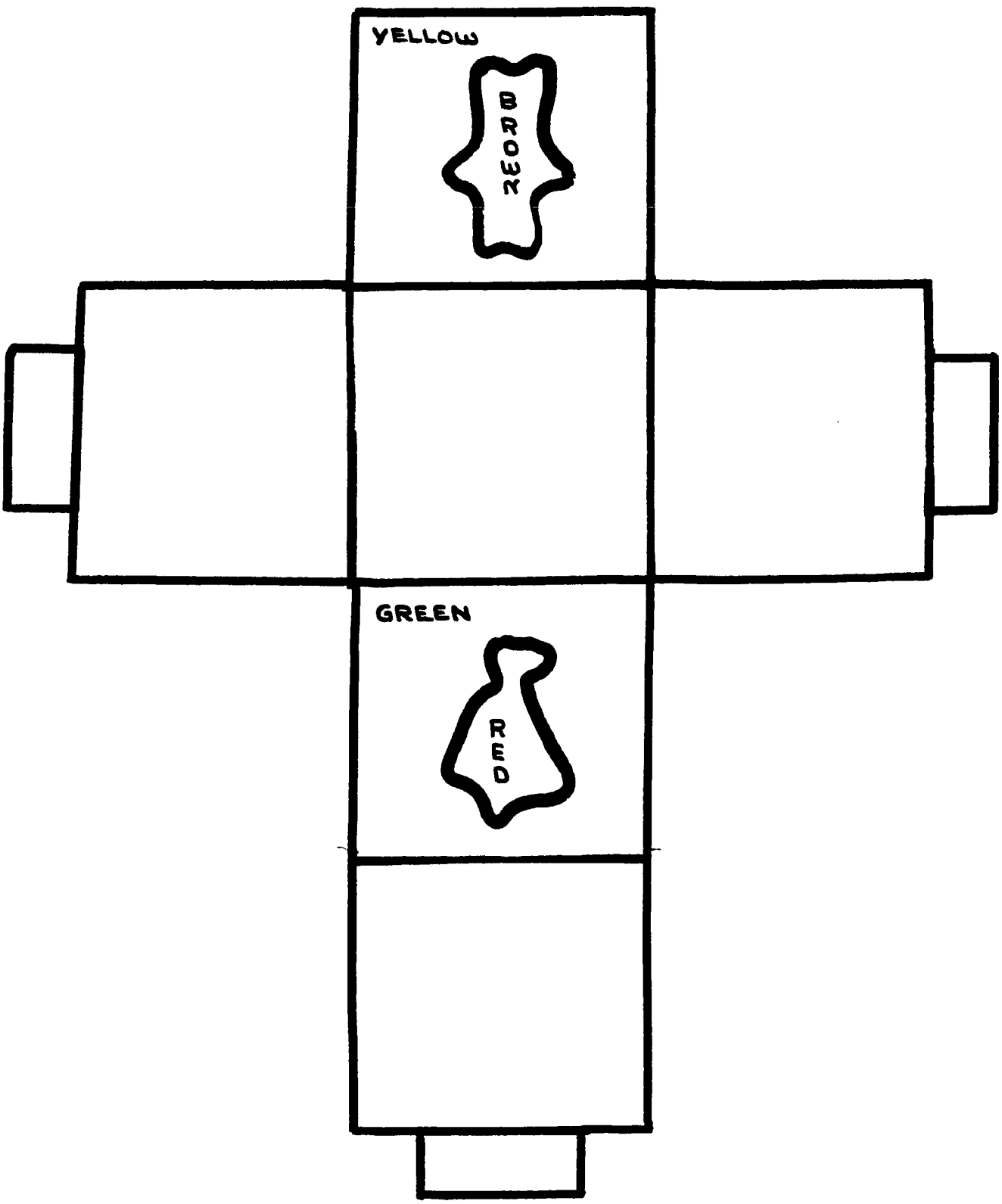
APPENDIX F (cont.)

Operation No. 5



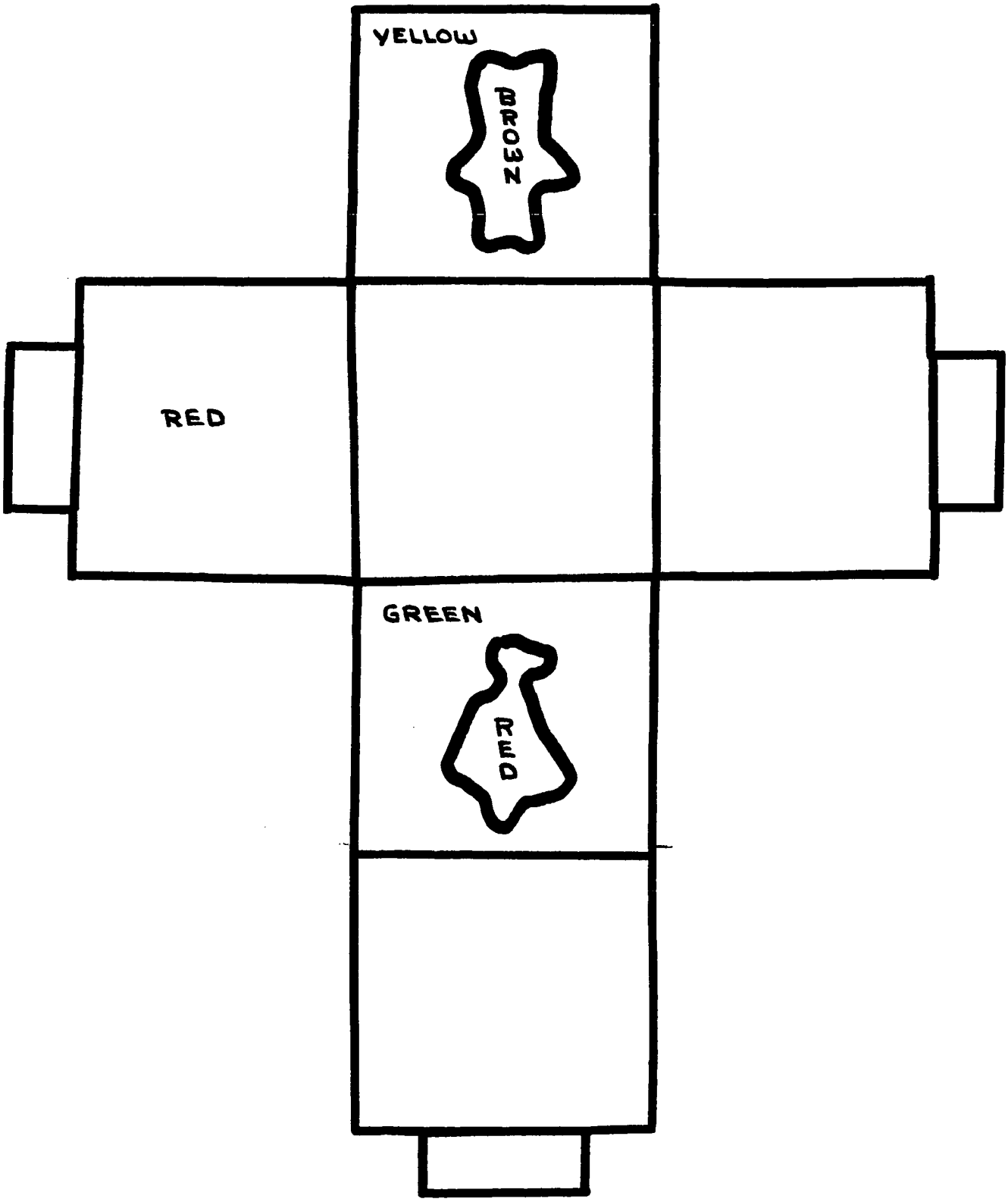
APPENDIX F (cont.)

Operation No. 6



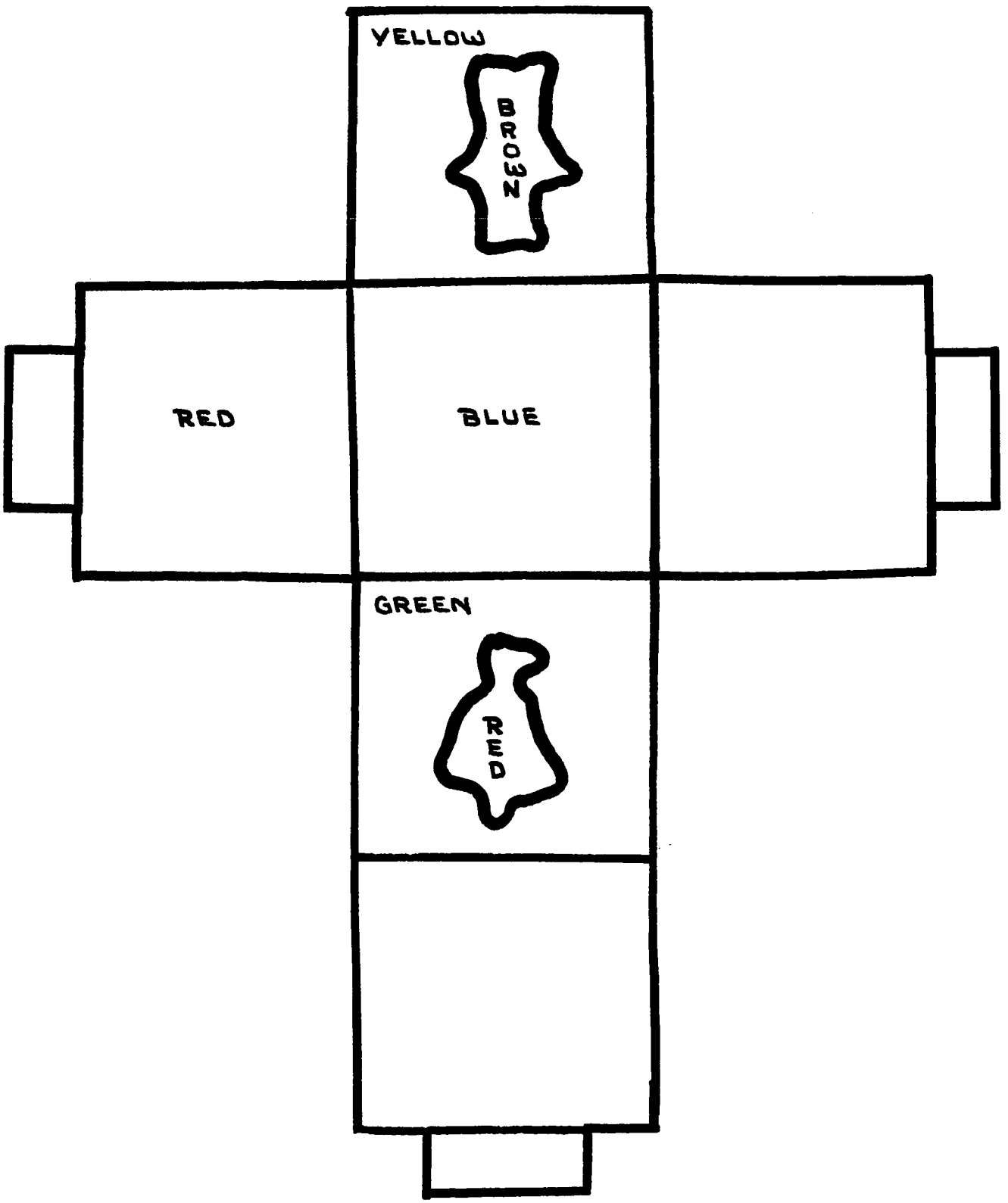
APPENDIX F (cont.)

Operation No. 7



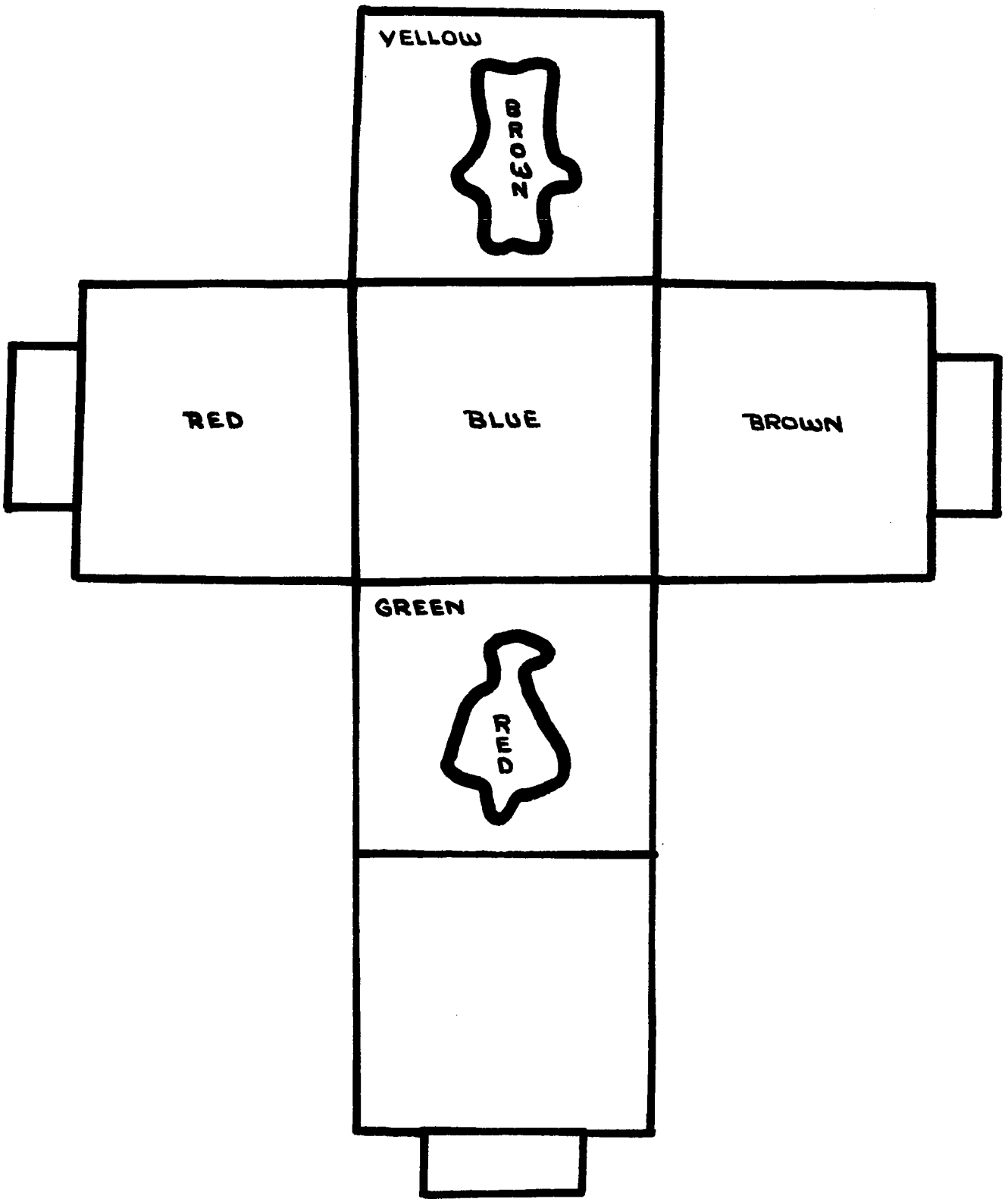
APPENDIX F (cont.)

Operation No. 8



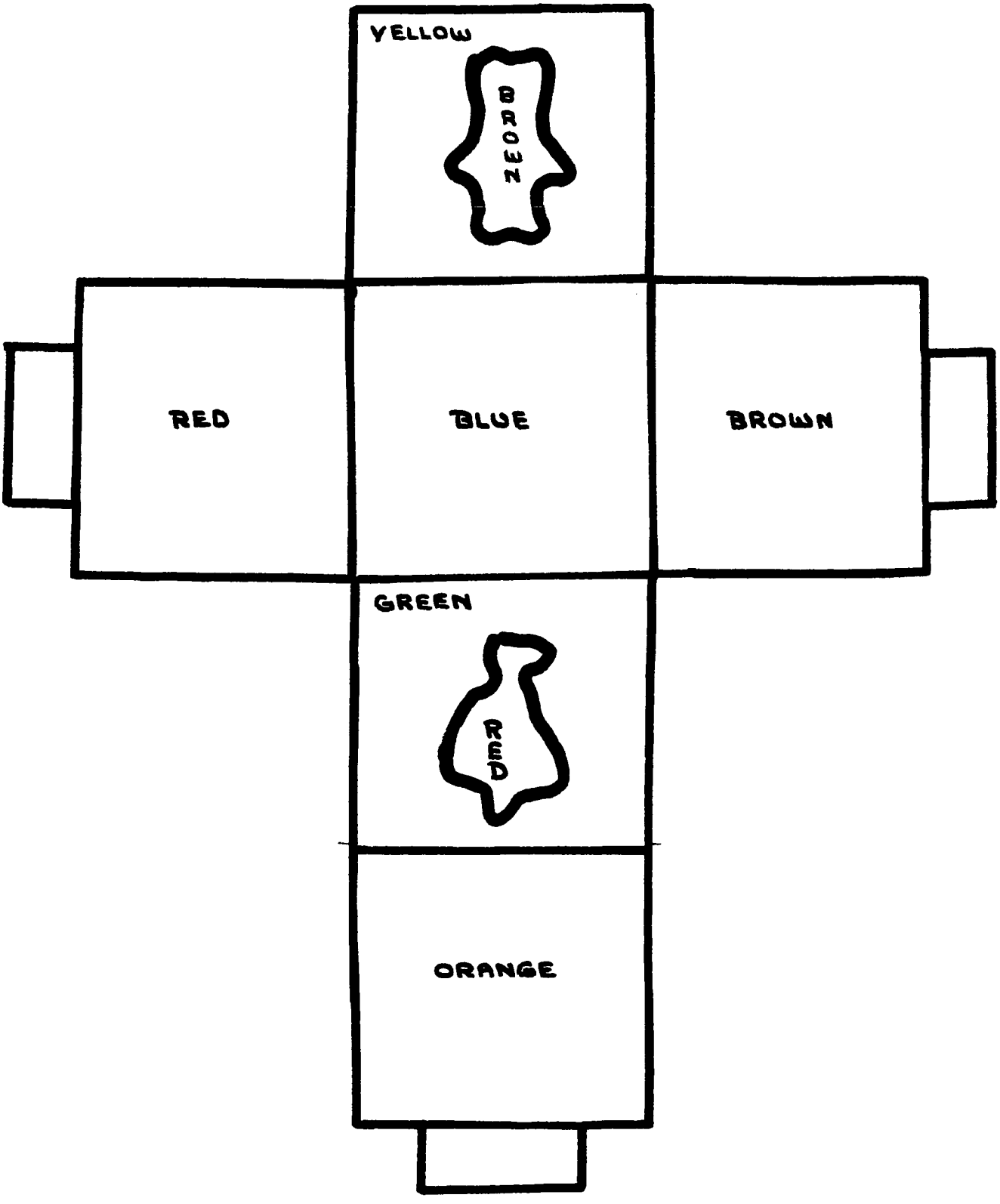
APPENDIX F (cont.)

Operation No. 9



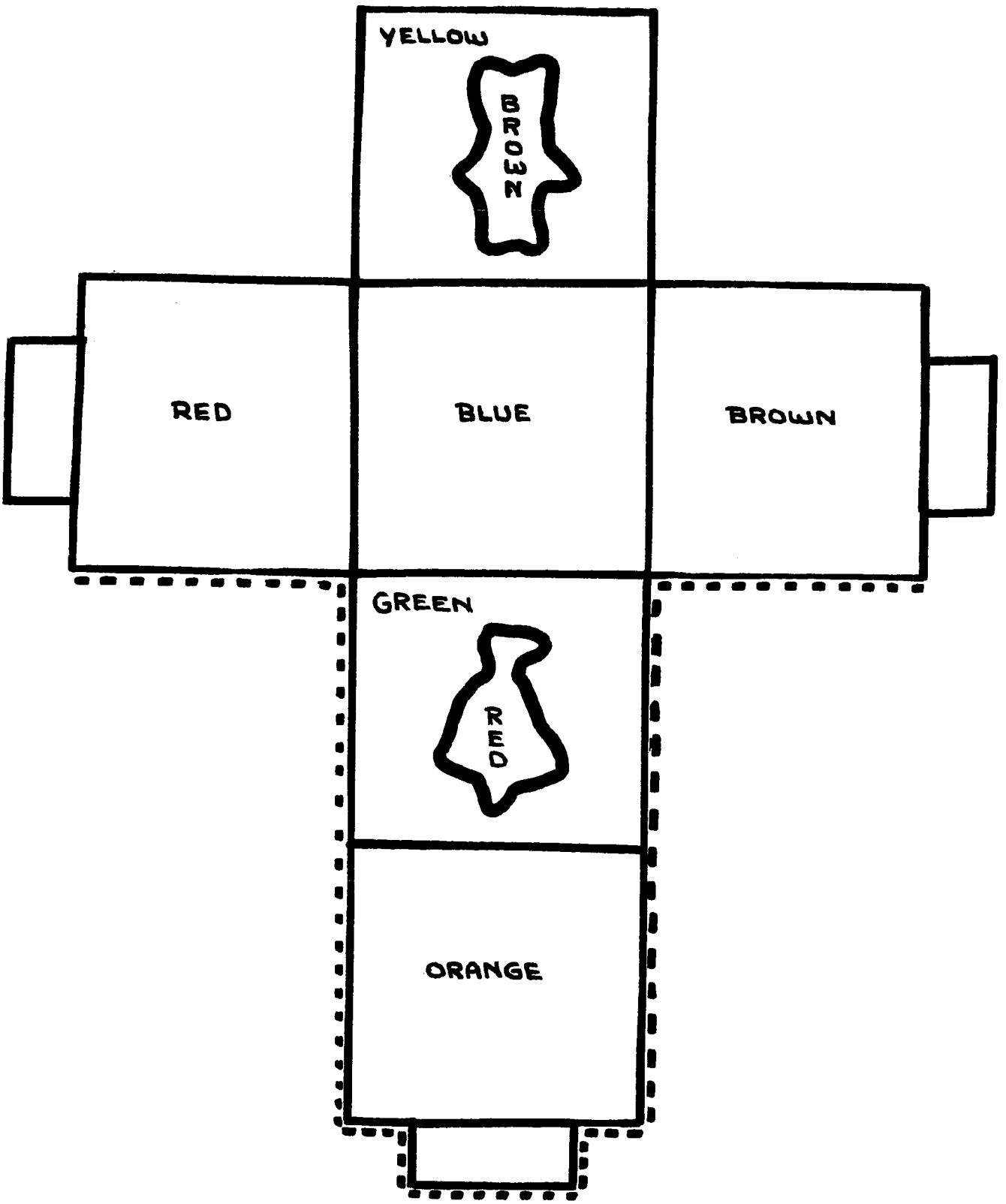
APPENDIX F (cont.)

Operation No. 10



APPENDIX F (cont.)

Operation No. 11



APPENDIX F (cont.)

Operation No. 12