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WOMEN'S BUREAU

MARY ANDERSON, DIRECTOR



The Industrial Nurse and The Woman Worker

By

JENNIE MOHR



SPECIAL BULLETIN No. 19 OF THE WOMEN'S BUREAU

UNITED STATES
GOVERNMENT PRINTING OFFICE
WASHINGTON : 1944

For sale by the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.
Price 10 cents

L13.10 : 19

LETTER OF TRANSMITTAL

UNITED STATES DEPARTMENT OF LABOR,
WOMEN'S BUREAU,
Washington, May 24, 1944.

MADAM: I have the honor to transmit a report analyzing both broadly and in detail the widening field of responsibility on the part of the industrial nurse and the vital importance of her being informed as to working conditions, actual and desirable; occupational hazards and accident prevention; plant service and food facilities; the personal problems that lower women's efficiency on the job; and other developments of the war years.

It is being increasingly recognized by employers, industrial physicians, industrial nurses, and workers that the nurse has a great opportunity to help in the solution of such problems and in the education of workers in matters of health and safety. This report is directed particularly, therefore, to nurses in industrial plants; but it is hoped that the presentation of some of the factors involved in the employment of women will be of use also to those in such departments as personnel, safety, and training.

The report is the work of Jennie Mohr, of the Bureau's Research Division.

Respectfully submitted.

MARY ANDERSON, *Director.*

HON. FRANCES PERKINS,
Secretary of Labor.

CONTENTS

	Page
Letter of transmittal.....	II
I. The Women Come to the Nurse.....	1
II. Getting Tired Out.....	5
Long hours of work.....	6
Posture.....	6
Home responsibilities.....	7
Monotony.....	7
Physical environment.....	8
Lighting.....	8
Noise.....	8
Ventilation and heating.....	8
Night work.....	9
Personality factors in fatigue.....	9
III. Everyday Good Health Habits.....	11
We are what we eat.....	13
Nutrition education.....	13
Existing facilities in the plant.....	15
Personal hygiene.....	16
Cleanliness.....	16
Care of the feet.....	17
Care of the teeth.....	18
Care of the eyes.....	18
Health in the home.....	19
Mental hygiene.....	19
IV. Health and Safety on the Job.....	21
Health Problems in the Plant.....	21
General health factors that carry over into the job.....	21
The common cold.....	21
Good food.....	22
Service facilities.....	22
Health factors having to do with the job itself.....	23
Physical strains.....	23
Posture.....	25
The tools and the lay-out of the job.....	25
Special health problems of women.....	26
Menstruation.....	26
A maternity policy in industry.....	27
The menopause.....	29
Occupational diseases.....	30
Safety on the Job.....	33
The need to be aware of safety problems.....	33
The kinds of accidents that women have.....	33
Helping the women to be safe.....	36
Safety clothing.....	36
Hazardous jobs.....	36
An open eye for bad spots.....	37
V. Taking Part in a Health and Safety Program in the Plant.....	38
Health committees.....	40
The plant paper.....	41
Leaflets, posters, pamphlets, and films.....	41
List of industrial nursing consultant services.....	42
Sources Referred to in Text.....	44
Additional Suggested Readings.....	45
General.....	45
The nurse's part in a health and safety program.....	46
Fatigue.....	46
Special health problems of women.....	47
Nutrition.....	47

CONTENTS

1. Introduction 1

2. The History of the 2

3. The Geography of the 3

4. The Climate of the 4

5. The Flora and Fauna of the 5

6. The People of the 6

7. The Government of the 7

8. The Education of the 8

9. The Religion of the 9

10. The Arts and Crafts of the 10

11. The Music of the 11

12. The Dance of the 12

13. The Games of the 13

14. The Sports of the 14

15. The Festivals of the 15

16. The Holidays of the 16

17. The Customs of the 17

18. The Traditions of the 18

19. The Superstitions of the 19

20. The Fables of the 20

21. The Legends of the 21

22. The Myths of the 22

23. The Folklore of the 23

24. The Proverbs of the 24

25. The Sayings of the 25

26. The Riddles of the 26

27. The Songs of the 27

28. The Poems of the 28

29. The Stories of the 29

30. The Plays of the 30

31. The Dramas of the 31

32. The Novels of the 32

33. The Short Stories of the 33

34. The Essays of the 34

35. The Speeches of the 35

36. The Letters of the 36

37. The Diaries of the 37

38. The Journals of the 38

39. The Memoirs of the 39

40. The Autobiographies of the 40

41. The Histories of the 41

42. The Biographies of the 42

43. The Lives of the 43

44. The Portraits of the 44

45. The Statues of the 45

46. The Paintings of the 46

47. The Sculptures of the 47

48. The Carvings of the 48

49. The Engravings of the 49

50. The Prints of the 50

51. The Books of the 51

52. The Manuscripts of the 52

53. The Archives of the 53

54. The Libraries of the 54

55. The Museums of the 55

56. The Galleries of the 56

57. The Parks of the 57

58. The Gardens of the 58

59. The Parks of the 59

60. The Gardens of the 60

61. The Parks of the 61

62. The Gardens of the 62

63. The Parks of the 63

64. The Gardens of the 64

65. The Parks of the 65

66. The Gardens of the 66

67. The Parks of the 67

68. The Gardens of the 68

69. The Parks of the 69

70. The Gardens of the 70

71. The Parks of the 71

72. The Gardens of the 72

73. The Parks of the 73

74. The Gardens of the 74

75. The Parks of the 75

76. The Gardens of the 76

77. The Parks of the 77

78. The Gardens of the 78

79. The Parks of the 79

80. The Gardens of the 80

81. The Parks of the 81

82. The Gardens of the 82

83. The Parks of the 83

84. The Gardens of the 84

85. The Parks of the 85

86. The Gardens of the 86

87. The Parks of the 87

88. The Gardens of the 88

89. The Parks of the 89

90. The Gardens of the 90

91. The Parks of the 91

92. The Gardens of the 92

93. The Parks of the 93

94. The Gardens of the 94

95. The Parks of the 95

96. The Gardens of the 96

97. The Parks of the 97

98. The Gardens of the 98

99. The Parks of the 99

100. The Gardens of the 100

The Industrial Nurse and the Woman Worker

I. THE WOMEN COME TO THE NURSE

From the towns and from the farms, from homes and shops and offices, women are coming into war plants to make the machinery of war. They are building tanks and planes and ships and guns. Much of the work is strange to them, but there is no question about the effectiveness with which they are doing it. As men are being transferred to military service, women are filling the gaps in industry in increasing numbers. They are spreading into jobs that a few years ago no one would have expected them to fill. Some of these jobs are fairly light and obviously suited to women's physical abilities and experiences. Others are heavy, dirty, and sometimes dangerous. All of them, if war production schedules are to be maintained, require regular attendance and efficient performance.

At the same time, for the sake of the women themselves, their safety must be preserved and their health guarded. Thus the need for careful consideration of the well-being of women workers is twofold. It arises from the demands of war and from the need to protect the lives and the health of workers. These two needs are really one and the same; good performance cannot be given by sick or injured workers.

When women come into industry, new problems arise that were not there before. Some of these problems always arise among women workers, regardless of where they work. Others are peculiar to the job or the industry and, in cases of occupations unusual for women, are arising now for the first time. Here are a few of them:

1. Most of the women now coming into the plants are inexperienced, particularly inexperienced in the kind of work they are to do. Two factors make this a special problem: First, because most women have had not even casual experience with machines and tools and are unfamiliar with mechanical things and terminology, they are likely to feel greatly at a loss, at the outset, in dealing with such matters. Second, they find the factory environment strange and difficult to become adapted to. The size, noise, movement, confusion, often are overwhelming. Especially for the housewife coming into a factory for the first time, the importance of such things looms large. She has been used to working hard and steadily, but it has been independent work, at her own pace, according to her own plan, and in the security of her own home.

2. When women first came into war jobs they were carefully selected. Especially, age limits were set; often 18 to 35 years, or 20 to 40, was considered not only the most desirable but the only suitable age group. Gradually this idea was given up, partly because there were not

enough women of these ages, partly because it was discovered that a woman past 40 is able to hold her own on many jobs. Now in many places there are no age limits at all. This change not only opens opportunity to older women; it places more responsibility on management in the selection of women, responsibility to see that in employing older women they still preserve good health standards. At the other end of the age scale, the introduction of young girls into factories also brings new problems. These girls, many of whom are now undertaking their first job, have no experience to guide them in handling themselves and their work. They have little or no maturity of judgment that might help them to adjust to the environment; they have no knowledge of what is to be expected of them or what they may expect of others.

3. Many of the women are married, have homes and children. Frequently they have no relief from their home responsibilities when they start in on a factory job. Consequently, they are doing two jobs at once. On top of a full day's work in industry, they must run the home, prepare meals, care for children, do the shopping and the mending and the innumerable other household tasks. What does this double burden do to their efficiency on the job? How does it affect their health and their staying ability? To what extent should the plant nurse undertake to aid them in dealing with these questions?

4. An obvious problem is that of the physical capacities and requirements of women. Though of course there are wide differences among women, they have on the average a little over half the physical strength of men. This means that generally they cannot do, unaided, the heavy lifting, carrying, pushing, and pulling that some jobs require. Their structure is different—on the average their height is less than men's, their hands and feet are smaller, their muscles, especially of the feet and legs, are quicker to tire. Therefore, the suitability of equipment that ordinarily is used by men must be considered. Are tools too large to grasp or too heavy to wield?

5. It is sometimes as much of a problem to get the factory adjusted to the women as to get the women adjusted to the factory. There is scarcely a corner of "man's world" that is not being invaded by women. And naturally enough this is hard on the men. Consequently, they are likely often to resist the invasion—resist it by means of hostility and refusal to accept the women workers. Natural though such an attitude may be, it has of course no place in the present scheme of things; and the men—workers, supervisors, sometimes top management too—must be helped to understand that fact. In the meantime, the women are faced with this situation, and it is obvious that, on top of their general industrial inexperience, it adds another problem to be considered.

All these factors affect the production of the women workers. It would be the height of unwisdom to ignore them—especially when, with understanding and vision, they can be handled. In the course of this study other questions that affect similarly the success of new women workers will be mentioned. In general, it may be asked at this point: What is to be done about these problems?

Particularly, the question is: What can be done by an industrial nurse who is concerned immediately with the health of the workers in the plant? How can she best help to assure the maximum effi-

ciency of these new women workers? Most obvious is her place in the medical service of the plant, her special concern for the injuries and illnesses that arise in the course of the day's work. But whatever the specific task, the nurse is in a position to give the women guidance. This does not mean assuming responsibility for their personal problems, or for their relationships within the plant, or for their difficulties on the job. But because of the nurse's role in the organization, women turn to her for help. It may be well to examine in some detail the particular places in which her help is asked, and how such requests fit in with her job in the plant.

Industrial nurses are different. The very fact that they function in the plant dispensary or hospital or first-aid station rather than in a hospital or private home is a major cause of the difference. This setting, and the immediacy of the sources of injury or illness, cannot be ignored. Industrial nurses are on the spot, in the plant. Right before their eyes are the sources of trouble; they are in a position to see what these sources are.

Again, the health problems that come to the nurse often are directly related to many factors, in both work and home. These factors, which will be discussed in some detail later, may have to do with the physical demands of the job or with the working environment; with the routine of factory regulations; or with health or other problems within the home. They are the matters on which women go to the nurse for guidance, and they affect very directly the performance of the women on the job. The nurse's function, then, is something in addition to that of a hospital nurse, because she is confronted with nonmedical problems that directly affect the health of the workers and their productivity.

Among employers, industrial physicians, and industrial nurses, it is becoming widely recognized that the nurses have this widening field of work. Industrial medical practice is developing increasingly a preventive program; it is designed to keep people well, not only to cure them after they become ill. Consequently, stress is being put on the part that the nurse can play in helping with this prevention program. At the end of this pamphlet is a list of references to articles by industrial physicians and nurses that clearly state this purpose.

The specific points at which guidance is needed, and can be given by the nurse, will be discussed in the pages following. Here are a few examples:

Margaret C. works on the graveyard shift. She is married, but has no children. She keeps house, which is not an excessive burden on her because it is in a small apartment and her mother lives near enough to come to the rescue in case of emergency. But Margaret C. is subject to severe headaches. She has had them for years and since she came to the plant they have increased in frequency and intensity. The doctor told her that she is not getting enough rest, not enough sleep, and that she is not eating the right food. But how can she? She has been on the job for 3 months but still has not learned to sleep well in the noise of the day; and she cannot get into proper eating habits in the topsy-turvy schedule of the night shift. She has been staying away from work—2 days this week, 1 last week, 3 days the week before.

Margaret goes to the medical department for some anacin, hoping that it will make her feel better able to stay the night through. She tells the nurse about the headaches, the irregular, sketchy, pick-up meals, the strain of working nights and trying fruitlessly to sleep days. "What shall I do?" she asks.

Frances R. operates a couple of grinders in the tool-grinding department. She sharpens drills: Small drills, sometimes no larger than an embroidery needle, on the rotary grinder; larger ones, perhaps two inches or more in diameter, on the rocker grinder. Frances stands at the job all day; and even though she is provided with a wooden platform to keep her feet off the cold cement floor, she gets pretty tired.

Frances finds her way to the nurse's office, too. "I've been menstruating twice as long as usual since I've been on this job," she says. "I've always suffered a good deal of pain, but now it seems worse than ever. I think standing all day has something to do with it. And besides, those tote boxes are pretty heavy when I have to return the drills and fetch new ones. I know I've been told not to lift too much; but on a day like this almost anything is too much. What can I do about it?"

Ruth M. is 35. She has been working in the plant for about 6 months, and has talked with the nurse—once when she had a slightly cut finger and once for a few minutes in the women's rest room. The nurse remembers thinking what a capable, sensible, attractive woman she seemed.

Now she goes in with a pass from her foreman and asks the nurse to countersign it. She is ill, and wants to go home. "No, nothing particularly wrong; I've just got a terrible headache, and I can't stay." She looks very distressed, and the nurse wonders if it is just a headache. And before long Ruth begins to talk. She really has a headache, but that is the effect, not the cause. "My mother simply can't be left alone in the house any more—she is too sick; I am always terribly afraid something will happen to her while I'm at work. She needs a doctor's care, and maybe she should be in a hospital—I just don't know. Most nights I am up taking care of her, and I'm all worn out and don't know what's best to do."

Mary C. goes storming into the dispensary. "Can you give me something for a cold—I'm getting a nasty one, the third I've had in the 2 months I've been here. I tell you, that room is so drafty and cold I don't see how anyone keeps well in it. And when I put on my sweater the safety inspector comes along and tells me it's dangerous to wear it around my machine. So I either freeze or get caught in the press. I don't know which would be worse."

Not only the health of the women but their performance in the plant depends in some measure on what the nurse does about these women who go to her for help. She can get at the reasons why they are absent, or quit their jobs. She, perhaps better than anyone else, can discover from them conditions within the plant that hamper their production, conditions that might well go unrecognized or ignored by the supervisors who are concerned with getting out the product of the plant. She can help these supervisors to increase that output by helping to remove some of the things that slow it up. This bulletin is the story of such opportunities in a nurse's job, and some of the ways in which she may take advantage of them.

II. GETTING TIRED OUT

Women come into the dispensary and complain of being "too tired to work." Or they show signs of "wearing out," and sometimes quit their jobs because they can no longer stand the strain. Still other women keep going but have to make more and more of an effort to do so; or their production slows down; or the number of their accidents or illnesses increases. These changes may be signs of fatigue. To help the women to remain well and be effective workers, the nurse must know what is the basis of their inability to carry on their work. The following paragraphs point out some of the causes she may discover. Some of them she can deal with directly; others can be removed only by winning the understanding and cooperation of supervisors, management, or other agencies. In all cases her first need is *to know why*.

A great many studies have been made of the fatigue of industrial workers. From them one significant fact has arisen clearly. This is, that there is no simple element, fatigue, that can be recognized and isolated and measured. Rather, fatigue is a word that is used to describe a whole group of conditions, both within the worker and in the environment. Some authorities hesitate to use the word at all, because it means too many things. But often it can be applied usefully to the situation in which a worker's ability to stay steadily on the job, and do a full day's work, becomes gradually lessened. The concern here is with some of the conditions in the environment and the job that might help to bring on this situation.

Dr. Alice Hamilton, an outstanding authority in the field of industrial medicine and formerly of the Harvard Medical School, puts it this way (1):¹

For a long time industrial fatigue was considered a rather simple problem, something for physiologists to determine by chemical or mechanical tests that could be applied to workers in the field just as well as to laboratory subjects, but the more the problem has been studied, the more complicated it has been found to be. Fatigue is influenced not only by hours of work but by other environmental factors, such as long or short periods of uninterrupted work; by heat, cold, humidity; by lighting; by posture; by the worker's skill or lack of skill; and by the worker's mental attitude toward his job and his pay, his fellow workers, and his supervisors.

Others have shown that still more factors are involved than those mentioned by Dr. Hamilton. These various causes act on the worker's mind as well as his body. Dr. R. R. Sayers, director of the Bureau of Mines, United States Department of the Interior, points out (2) that—

Environmental conditions and relations with management and fellow workers are more important factors in fatigue than physical activity except in the "heavy" industries that require hard physical labor.

It is neither necessary nor possible to explore here all the factors that create fatigue. But some of the more obvious reasons why women find themselves tired out may be indicated.

¹ References in parentheses throughout this report are to "Sources Referred to in Text," p. 44.

Long hours of work.

It is recognized generally that excessive hours of work, required over long periods of time, are a health hazard. It is not known how long a workday is the best for women, producing the most work of best quality with least exhaustion. But many studies that have been made indicate that fatigue arising from a long workday may be a serious obstacle to sustained and efficient work.

Dr. Isador Lubin, United States Commissioner of Labor Statistics, says (3):

It can be proven by medical evidence that the amount of fatigue increases at a more than proportional rate as you go beyond a certain number of hours a day * * *. There is evidence to show that the eighth, the ninth, and the tenth hours do not result, in many industries, in as much output per man as any of the first 6 or 7 hours.

There are other factors besides production that appear to be related to the length of the working day or working week. Among them are the amount of spoilage, lost time, rate of accidents, and turn-over. Of these, the factors that would most easily come to the nurse's attention are lost time—especially that due to illness—and the rate of accidents. One of the studies by Dr. H. M. Vernon, eminent British authority (4), indicates that increasing the hours of work produces a greater increase of accidents among women than among men. In a group of women workers in a munitions plant he found that the number of cuts suffered in a 12-hour day was nearly $2\frac{3}{4}$ times that in a 10-hour day, whereas among men the number was increased by only 14 percent. This cannot be taken as a certain measure of fatigue, however, as other elements may be involved. But if the nurse finds that any of these factors, such as absenteeism, accidents, or turn-over, are serious among the women in the plant, she should consider whether they may be due to long hours of work. Her records of the women coming in for attention will furnish useful evidence in showing the effects of a fatigue that may be caused by too long a working day or week. Standards recommended by government agencies (3) include an 8-hour day, 6-day week, adequate meal period, and vacations.

Posture.

That poor posture plays an important part in the development of fatigue has been shown by many who have studied the question (5). Correct posture depends on two things: Sitting well, and having the right kind of chair to sit on. Of course it is possible to sit correctly on anything—a box or boards, for example. But it takes a good deal more effort to do so than if one has a properly designed chair.

Dr. J. R. Garner, an authority on posture, describes (6) the close relation between posture and fatigue. He points out that a slouched posture impedes the action of the heart, the circulation of the blood, and the processes of elimination. It puts pressure on the abdominal organs and may help to bring about displacement of the generative organs.

The encouragement of proper seating, both by explaining to the women the need for good posture and by convincing management of the need for good seats, is one important way in which the plant nurse can contribute to the relief of fatigue of the women workers. It has been shown that continuous sitting, as well as continuous standing, is

tiring. Many jobs can be done in either position, but often it is found that the women in such jobs are always standing or always sitting. Alternation should be encouraged wherever it is possible.

In a study of the fatigue of 325 workers Dr. Vernon (7) says:

* * * Of the 325 workers * * * half complained of bodily fatigue. A quarter of the complainants said that they "felt tired all over," whilst a third of them felt tired in the back, neck, and shoulders. This seemed to be due to their working continuously in a sitting posture, for the operatives who had to stand whilst working frequently complained of fatigue in the legs. The fatigue felt by the two groups of workers would have been considerably reduced if they had sat and stood alternately at their work, for 86 percent of them stated that they preferred such an arrangement to a fixed posture.

Home responsibilities.

It is an oft-repeated story that women with homes and children to care for face a double responsibility when they take an outside job in addition. Indeed, a large part of the difficulty that women have in keeping going, day after day, may be explained by the fact that their hours away from work are filled with duties that allow insufficient time for recreation, rest, and sleep. This is true not only of married women with children, but of others who also have home duties and perhaps have dependents as well.

In most communities there are various agencies established to provide services for residents of the community. A nurse can inform herself as to what these agencies are in her own region and help the harassed worker to get aid from them.

Monotony.

One of the features of the large-scale employment of women in industry today is that many of their jobs are of an extremely simple and repetitive nature. In fact, to be able to use these inexperienced workers quickly it has been necessary to break down many of the more skilled jobs into very simple parts, and to train the women to do only one or a few of these parts.

The extent to which the monotony of such work tires the women depends largely on the individual; one man's meat is another man's poison, and the job that seems completely satisfactory to one woman may build up in another a restlessness or a tension that results in extreme fatigue. One writer points out (8) that boredom is experienced less when a job is fully automatic than when it is only semi-automatic. If it is such as to demand practically no concentration or attention, the worker can do it and keep her mind (and perhaps her conversation) on other things. But when it takes enough concentration to prevent this mental relaxation, and at the same time not enough to catch and hold the interest, then it is truly monotonous. The same situation is described by Dr. Hamilton (9):

Unskilled work is on the whole more fatiguing than skilled, because it does not occupy the worker's mind. A man who has to think about his work is less susceptible to fatigue. With the introduction of the machine there often comes a loss of initiative on the part of the employee, who is, it is true, expected to work faster and to control more and more complicated machinery but whose work, even to individual motions, is planned in detail for him. His interest in it is apt to be lost very soon in boredom. On the other hand, if work is so completely automatic as to require almost no attention, it may not be boring because the worker can talk or day-dream as he pleases. It is in semiautomatic work, of a repetitive kind, that fatigue from boredom is most common.

The answer to the question of fatigue caused by monotony is frequently found to be in short rest periods. A number of plants introducing rest periods found that they were helpful not only to those workers who needed the time because of the heavy work they were doing, but also to those who needed a change from light, repetitive work. Dr. Hamilton remarks (10) that—

The effect of too long hours on repetitive work is shown most clearly in the mental attitude of the worker, which is one of bitter, pessimistic pre-occupation, and by irregular attention to the work. This attitude was found to disappear in the majority of cases by the simple expedient of breaking the monotony and lessening fatigue by rest periods.

Physical environment.

The physical conditions of work play a large part in preserving or diminishing a worker's staying-power on the job. Some of the important factors are these:

Lighting.—Thirty-nine percent of all workers of 30 years of age are handicapped visually (11). This means that not only the older worker, whose vision may fail with his years, needs the protection of good lighting, but others as well. The American Standards Association Recommended Practices bulletin points out that even those with perfect vision "find, under good lighting, a noticeable improvement in eye comfort which results in reduced fatigue." (12)

The advantages of good lighting listed by Allen D. Brandt and Harry E. Seifert (13) include, among others: Greater ease of seeing, especially among older employees, thus making them more efficient; less eyestrain; and improved morale.

Noise.—It is well known that a noisy environment is conducive to fatigue. A study of "Noise and Its Effect on Human Beings" (14) indicates that there is also danger of actually impairing the hearing, and that the efficiency of workers may be diminished in a noisy environment. The Bureau of Women in Industry of the New York Department of Labor has studied the effects of noise on the hearing of industrial workers (15), and recommends that tests of hearing and periodic examinations be made where workers are exposed to excessive noise.

Dr. Vernon points out (16) that individuals vary greatly in the way they react to excessive noise, and that some attempt should be made to discover which workers are particularly susceptible and likely to develop nervous symptoms when so exposed.

Brandt and Seifert (17) list four ways of reducing or eliminating the hazards of noise: (1) Elimination of noise at its source, (2) isolation of noisy operations, (3) reduction of noise by sound insulation, and (4) the use of personal protective devices against noise.

An awareness of these possibilities, and knowledge of the apparent effects of noise on individual workers, will help the nurse to encourage the proper steps to be taken against this hazard.

Ventilation and heating.—The importance of uncontaminated air and suitable temperatures in which to work is obvious. Not only is it necessary to protect the workers exposed to special hazards, such as dusts, fumes, gases, and vapors, or to extremes of cold and heat; steady efficiency and continued good health require for all workers surroundings that maintain recognized standards of ventilation and heating. Discovering what these standards are, and seeing that they

exist in the plant, are the responsibilities of both safety and medical departments. But when the women go to see the nurse because of a cold, or a sore throat, or because they find they have to spend time and energy fighting an uncomfortable environment, she can do a lot by discovering the extent to which unsuitable air or unhealthy temperature contributes to their special difficulties.

With respect to all the factors that make up the physical environment of the worker, the nurse can exercise a similar watchful control. She can call to the attention of the responsible officials the conditions she has reason to believe are causing discomfort or illness, and urge that they be remedied.

Night work.

The conviction is general that night work is undesirable for women. However, in view of the widespread use of three 8-hour shifts during the war, and the not uncommon system of shift rotation, it is not practicable to set up a standard that invariably excludes women from night work. What can be done is to keep an eye open for the evidences of fatigue or mental or physical disturbances appearing as a result of night work.

It should be remembered, when shifts are rotated, that sufficient time must be allowed on each shift to permit the women to make adjustment to it. Rotation in periods of less than one month are for this reason too frequent. Two or three months probably should be the minimum length of time on each shift.

The disadvantages of both shift rotation and continuous night work are discussed by Dr. Beatrice Mintz in the New York State Industrial Bulletin (18), in which the "evidence offered by physiologists on the difficulty of changing sleeping and eating habits, making shift rotation a hazard to health and a factor in reduced output," is balanced against "the well-known observations of increased fatigue on night work and the social isolation experienced by the night workers themselves."

It is especially important to keep in mind the fact that the women who are carrying on household duties are more subject to fatigue as a result of night work than are men or women without such duties; they are likely to run the household during the day when they should be sleeping. Consequently it is important for the nurse to know the conditions faced by the women on night shifts, to determine on an individual basis their ability to do night work, and to inform the supervisor assigning shifts about the women who, for such reasons, should be kept off night work. The health and efficiency of the individual, as well as such factors as equal distribution of night work, seniority, and the like, must be considered in determining a valid basis for working at night.

Personality factors in fatigue.

Pushing a button, manipulating a gage, winding wire—whatever the process on which a woman is engaged—is only a part of "the job." She is one of a group, often a very large and miscellaneous group. She spends 8 hours a day not only doing work but doing it with or among other people. And her relationship with these other people has a good deal to do with how tired she gets on the

job. The scientific study of fatigue made at a Western Electric Co. plant (19) gives much evidence showing that such factors may have as much or more to do with creating fatigue as the actual physical strain, or even the monotony, of the work itself.

A well-known British industrial physician, Howard E. Collier, has pointed out (20) that fatigue may develop when a good deal of energy must be expended to counteract the effects of the environment. He adds:

It is for this reason that a cold shop, a nagging foreman or unhappy group relations in a workshop are found to be fatiguing by the worker.

In protecting the worker against fatigue, it is important to know the psychological factors that produce fatigue. Collier points out that—

* * * it is just "conditions of work" that lessen *emotional* fatigue that are of special importance in preventing industrial fatigue. Lack of sleep or insufficient rest are powerful causes of fatigue because they prevent or delay the restoration of depleted reserves of emotional energy. Moreover, it is recognized that * * * a feeling of insecurity is more fatiguing than indifferent ventilation * * *.

In many cases help for the new woman worker in adjusting to her job must be continued throughout her work experience. The need for this arises largely from two facts. One is that her attitudes—toward supervision, training, discipline, and regularity of work habits—do not always fit in easily with the factory environment, and she must learn to make them do so; the second is that she is likely to carry with her to work the worries and problems that face her outside. It is easy to see that the added strain of these factors contributes in no small part to her fatigue. Therefore it is important to learn the extent to which the women coming into factory work are having to deal with such problems, and how much they affect their ability to work steadily and efficiently.

Whatever the causes of fatigue, the extent to which it occurs in a plant is measured by what happens to the workers. This practical test is the nurse's best means of discovering when factors, personal or environmental, are threatening the well-being and efficiency of the women in the plant. If she watches for the first signs of fatigue, the nurse can eliminate or diminish its causes before they lead to illness, absenteeism, and separations.

III. EVERYDAY GOOD HEALTH HABITS

The work of a nurse in a plant may be confined within the 8 hours of a working day and the gates of the plant property. But actually what she does finds its way into the lives and homes of the workers and their families.

She can help workers to guard against many of the health hazards that threaten to impair their usefulness on the job as well as their security outside. To the worker, the foresight of this nurse is of enormous value. It protects the worker's ability to stay on the job, to produce, and to maintain economic security. It means steady performance and steady wages; less to pay out for curing ills, because there are fewer ills to cure; freedom from the psychological and physical drag of ill health.

The benefit to the employer of such aid on the part of the nurse is equally obvious. It means a healthier and steadier working force; it means less absenteeism and turn-over, smoother flow of work, better production.

That this responsibility of the industrial medical department is commonly recognized is reflected in the words of Dr. C. O. Sappington (21), widely known industrial-hygiene authority:

It has been repeatedly stated that the progress of the safety movement was greatly accelerated by "selling" every employee the idea that the safe way is the best way. This has its analogy in "selling health," and it is a fundamental principle that the employee must be convinced that good health or at least a fair degree of it is a basic principle upon which continuous earning capacity is founded. * * * the employer wants to continue his production as near the peak as possible; * * * the employee wants to continue to earn his wages without interruption. At the convergence of these two desires stands the field of industrial health through which these desires may be accomplished.

Dr. Sappington goes on to explain why it is important for the worker to acquire health information easily—which should mean, in large measure, to get it at her place of work. The industrial nurse in the plant is in a strategic position to give it. The worker who goes to the first-aid station or dispensary is, as one writer puts it, psychologically ready to receive instruction. The nurse can take advantage of the immediate concern—a cut finger or a skin eruption, for example—to direct the talk to general health care.

It is worth while to look at Dr. Sappington's reasons why it is important to give the workers health education (21):

It is impossible to entirely separate the personal health of the employee from the purely industrial phases of health. As a matter of fact, personal health is indeed a part of industrial health work. It is further evident that no matter what provisions are made for the protection of the health of the employee within his working hours, any individual can upset his program of protection within industry by what he does outside of his working hours. It therefore becomes necessary to provide some way by which the employee may be informed concerning his personal health.

It is surely fruitless and a waste of money and time to provide expensive equipment and extensive health service staff, unless the cooperation of employees can be secured in availing themselves of the opportunity of this service. This involves the continuous use of carefully gathered and widely disseminated health information.

Where health service has been inaugurated, it is necessary that a constant program of encouragement to make use of the facilities of the health service be promoted among the employees. This calls for constant reminders regarding the importance of health and the principles of keeping well, and the fundamentals of health training.

Good health certainly is of equal importance to men and to women. But in many of the practices that preserve and increase health, the attitude and the activity of a woman may be of more consequence. She is likely to be the one primarily responsible for running the home, preparing meals, looking out for the well-being of her family in terms of practical, everyday duties. She is in a position to apply at home, as well as on the job, the principles of good health which the nurse in the plant is able to give her.

These principles, if they are to be useful, must not be elaborate or difficult to follow out. The way in which they are presented should be, as one authority has said, "simple, direct, practical, and brief" (22). It must be in language easily understood, and must not involve more than a working woman with a family to care for can be expected to do.

Good health rests to a large extent on good everyday habits. Most people are likely not to bother about such things until something goes wrong. The idea of preventive health measures is not firmly rooted in the average person's mind. It is part of the nurse's job to make that idea become so constantly present in the minds of the women in the plant that they not only will get well but will stay well.

Ways and means for conveying this necessary health information to the workers, and for getting them to realize its importance to them, will depend on the plant's attitude toward health education, and will vary with the size of the force and the amount of work to be done. In some plants nurses remain constantly on duty in the dispensary; and as the women come in to have ills and injuries taken care of, or to ask advice or talk over some special problem, the nurse can take the occasion to interest them in questions of health. In other plants, one of the nurse's duties is to visit the places where the women are at work, or their rest or lunch rooms, to keep an eye on the conditions under which the work is done and the cleanliness and efficiency of the service facilities. Such occasions offer the nurse a chance to know the women, even those who do not come to the dispensary, and to arouse their interest.

Again, a plant may have an educational program, which begins with the introduction of new workers into the plant and continues after they are on the job. Such programs, which may stress special problems for women, must be the result of cooperation among various departments, such as safety, medical, cafeteria, personnel, industrial relations. (See pt. V.)

A few major points on which "selling health" to the women can be focused are these: Nutrition, personal hygiene, health in the home, and mental hygiene.

We are what we eat.

From the cradle to the grave, a person is to a large extent formed by the food he eats. Dr. H. M. Vernon puts it strongly when he says (23):

We have good reason to think that of all the environmental influences reacting upon the child before and after birth, upon the school child, the adolescent, and the adult, nutrition plays the largest part. It controls growth and physique, it largely determines physical and mental health, and the capacity for avoiding and overcoming disease.

That most of us have not been properly respectful of this power of food is recognized by the many health authorities who have become increasingly concerned with the health protection of workers, in normal times and especially now with the increased pressures that war has brought. For example, a report of the National Research Council (24) shows that among employed workers' families in various parts of the country, only 26 percent were classed as having good diets; 45 percent had fair and 26 percent had poor diets. The standards used in this study were lower than those of the Food and Nutrition Board of the National Research Council. If the latter had been used, the results would have been even less favorable.

As far as women themselves are concerned, it is recognized that the diets of women workers generally are poorer than those of men workers. It has been pointed out that this situation is of increasing significance as greater numbers of women go into industrial work. One manager of a chemical plant in England found that his women employees had much higher incidence of gastric complaints than the men but that this sex difference disappeared after the diets of the women were improved (25). Dr. Frank G. Boudreau, chairman of Food and Nutrition Board and Committee on Nutrition in Industry, National Research Council, points out (26) that there are three ways in which food deficiency can be dealt with: The first is education—workers cannot improve their health through proper eating unless they know what to eat; second, supplementing inadequate diets, a practice carried on in a number of plants; third, enriching staple foods so that one can get from them some added essential nutrition.

Of these three ways, two are of immediate concern to an industrial nurse. First, through her personal and constant contact with the men and women, she can help in teaching them what they should know about food; and second, by cooperation with those responsible for food facilities of the plant she can see that necessary kinds of food are available to the workers.

Nutrition education.—As the National Research Council report points out (27), the most pressing need in the campaign to safeguard nutrition and promote health and efficiency is greater knowledge about food requirements on the part of every person. To aid in giving this knowledge, Government agencies, research foundations, and private concerns have done a great deal within the past few years to explore the nutritional needs of workers and to publish material that can be used in the fine art of persuasion.

The Civilian Food Requirements Branch of the Office of Distribution, War Food Administration, has developed material for health education programs for workers as well as programs for plant technicians in supplying food. This organization also has a field service,

which helps plants to establish food services and to secure food supplies, equipment, and personnel. Regional headquarters of the Office of Distribution from which such help can be obtained are these:

Northeast Region: 150 Broadway, New York 7, N. Y.

Connecticut, Delaware, District of Columbia, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, Vermont, West Virginia.

Southern Region: Marietta and Forsyth Streets, Atlanta 3, Ga.

Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee, Virginia.

Midwest Region: 5 South Wabash Avenue, Chicago 3, Ill.

Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, Wisconsin.

Southwest Region: 425 Wilson Building, Dallas 1, Tex.

Arkansas, Colorado, Kansas, Louisiana, New Mexico, Oklahoma, Texas.

Western Region: 821 Market Street, San Francisco 3, Calif.

Arizona, California, Idaho, Montana, Nevada, Oregon, Utah, Washington, Wyoming, Territory of Hawaii.

Pamphlets, posters, and leaflets can be secured on request from the Office of Distribution, War Food Administration, and other agencies and can be introduced into the plant program by the nurse. At the end of this bulletin is a list of such material, together with the names of the organizations from which it may be had.

How much can the plant nurse do to help the women learn to prepare adequate meals, and, what is more, to persuade them to eat them? How much can she do to awaken the interest of all the workers in better health through better eating?

Pamphlets, leaflets, and fliers should be made easily available to the women, to be taken home. They should give suggestions about meals, information about the kinds of food that are needed by the body, ways of preparing the food, and what constitutes a balanced diet. The extent to which the nurse should or can be responsible for seeing that these materials are distributed to the women will depend, again, on the kind of educational program the plant has. But it is important for her to urge their distribution and their use.

In talking to the women, whether individually or in groups, some primary facts about food can be given them. For instance, the nurse might explain:

—A good guide to follow in order to supply the body regularly with certain needed foods is the use of the "Basic 7" food groups. The Civilian Food Requirements Branch of the Office of Distribution, War Food Administration, lists these basic foods as follows, and suggests that foods from each group be included in the diet each day:

1. Green and yellow vegetables, raw, cooked, frozen, or canned.
2. Oranges, tomatoes, grapefruit, or raw cabbage or salad greens.
3. Potatoes and other vegetables and fruits.
4. Milk and milk products or cheese.
5. Meat, poultry, fish, or eggs, or dried beans, peas, nuts, or peanut butter.
6. Bread, flour, and cereals—natural, whole-grain, enriched, or restored.
7. Butter and fortified margarine.

—The right food can be ruined by the wrong preparation. The ways in which food should be prepared in order to preserve its value are not harder, and frequently are easier and quicker, than other ways. Easy guides to the busy woman worker are available and can be distributed.

—The woman who keeps an eye out for the foods that are in season, abundant, and on special sale can often plan a more nutritious and

less expensive meal than if she stuck to traditional menus without regard to limitations of supply.

—Above all, it is important to eat regularly and in sufficient amounts. All nurses who have worked in plants for any length of time know how generally women neglect or hurry their meals. Especially among those working on night shifts, there is a great tendency to be sketchy about eating. Adjustment to a regular way of living on the abnormal schedule of a graveyard shift is not always easy. Many women, fitting in household duties during the daytime, fail to have regularity in hours either of sleep or of meals. The necessity for regularizing their program cannot be too strongly stressed, since the failure to do this is the quickest and most likely way of failing to get the needed supply of the right kinds of food.

Eating facilities in the plant.—When the eating facilities of the plant come under the immediate supervision of the medical department, as they sometimes do, the nurse can keep an eye on them, with respect to both the kinds of food they offer and the cleanliness of the kitchen and the service. In any case she can urge the management of the cafeteria to offer the kinds of food the workers most need. At the same time she can point out to the workers themselves how important it is to make a proper selection of items as they go down the cafeteria counter. Details of the various problems of plant feeding should, of course, be in the hands of a trained nutritionist. When the size or organization of the plant does not permit the employment of a nutritionist, War Food Administration Office of Distribution industrial-feeding specialists should be called on to help with the problem. The nurse can encourage this practice by showing management its large part in protecting the efficiency and health of the workers.

There are a few points particularly relevant to the task of providing adequate food facilities. Among them are the following:

—There is some evidence to show that the worker (especially one doing heavy manual labor) often gets the lion's share of the family food supply. Therefore, if a good part of this need can be met in the plant cafeteria, there is likely to be a real improvement in the supply remaining for the rest of the family (28).

—That the work in the plant definitely improves when proper eating facilities are provided is attested by many employers. Here are a few of their statements (29):

Production increased 10 percent due to improvement in morale in first two weeks after food service was set up according to recommendations of the Government's Nutrition in Industry Division.—Hugh Comer, executive vice-president, Avondale Mills, Sylacauga, Ala.

Absenteeism was cut 19 percent in first four months following installation of our Nutrition in Industry Program, which includes serving of Victory Lunch Specials providing balanced meals supplying more than one-third of the daily food needs—Serval, Inc., Evansville, Ind.

An adequate nutrition and feeding program is an important contribution to the health and safety program for the employees.—Craig Cochrane, manager, Industrial Relations Department, Eastman Kodak Co., Rochester, N. Y.

We are meeting the need for changing food habits necessary under wartime rationing by serving more raw vegetable salads, more fresh vegetables and fruit, and milk, and weekly Meat Conservation Lunches in our 7 cafeterias and 35 mobile units which provide meals that follow Government recommendations.—John C. Becker, cafeteria manager, Curtiss Wright Plant, Paterson, N. J.

—The use of supplementary “snacks” between meals is believed to decrease fatigue, bolster morale, and increase production. An experiment (30) made on a group of women operators in a plant manufacturing rubber footwear showed an increase of about 10 percent in their production when the women changed from three to five meals a day. The amount of food eaten was not increased, but the intervals between meals were shortened. It is important that when such between-meal refreshments are made available they should be such as to have positive nutritional value—milk, citrus-fruit juices, fruits, tomato juice, sandwiches, and the like.

Haggard and Greenberg, who made this study, suggest the possibility of between-meals use of fruit or tomato juice (31). They point out that such juices contain vitamins and minerals, are readily digestible, and give prompt and definite increase in concentration of sugar in the blood. At the same time they are easy to handle in the factory, require no preparation, can be quickly consumed, and appeal to a wide range of tastes.

The use of sugar as a source of energy for industrial workers should not be encouraged, but rather the use of foods which have more essential food factors and a more prolonged effect (32).

—The lunch period should be sufficient to allow time for going to and from the cafeteria, washing the hands, eating without gulping, and to leave a few minutes for relaxation. A minimum of 30 minutes is necessary in spite of the fact that many plants actually have only 15 or 20 minutes for lunch. The nurse would do well to discourage the workers from eating while they are working or at their workplaces, and to encourage the management to supply suitable places and enough time for eating lunch.

That management itself is greatly concerned about this business of getting proper food for its workers is indicated in the pamphlet published by the National Association of Manufacturers (33), which describes the responsibility of management. According to this, leadership may be taken if management will—

1. Acquaint itself with the problem in its own plant.
2. Inform itself about the principles basic to proper diet.
3. Take five lines of attack:
 - a. Educate the worker.
 - b. Educate his family.
 - c. Provide nutritious food in the plant.
 - d. Cooperate with local restaurant owners to provide nutritious foods under sanitary conditions.
 - e. Make nutritious foods available at low cost.

Personal hygiene.

Cleanliness.—To get clean and keep clean is no small achievement in many of today's industrial jobs. But personal cleanliness is one of the largest factors in dealing with some of the ills to which workers fall heir. For instance, the complete removal of irritating solvents from the hands is the main guard against dermatitis on certain processes. And scrupulous cleaning is an absolute must in the protection of radium dial painters and others working with radium. Many years ago, when industrial poisons and similar dangers were first making themselves apparent in growing American industries, there was a tendency on the part of some employers to disguise them for fear the workers would be reluctant to stay on the job or the plant would acquire

a bad reputation. Now industry makes a point of telling workers what hazards they may encounter on the job and how to protect themselves.

Here, of course, lies an important part of the nurse's job. Among the women new to industry, especially, the nurse is likely to find many who require particularly constant and firm guidance in the matter of protecting their persons against exposures to solvents, dust particles, fumes, and other sources of industrial disease. They may need to have stressed to them the part that careful and regular washing plays in protecting their health. Here is a considerable job of education to be done, and no one is in a better position to do it than the industrial nurse. However, there is no point in urging personal cleanliness unless the worker has a chance to practice it. The question of adequate washing facilities in the plant will be discussed in the next part of the report. (See p. 23.)

One thing that should be made clear to the workers is the possibility of carrying into their homes the dangers they encounter on the job. Dust or solvents on the clothes may contaminate the home. A woman who leaves a scaling gun or a filing bench to go home and cook dinner for her husband and children should make very sure that she leaves the dust and the metal behind her, too.

Care of the feet.—The "foot problem" is more serious for women than for men. Standing for long hours is very fatiguing to women and they may be susceptible to varicose veins. A report of 1,000 cases seen in a foot clinic states that there were 15 women to every man. Of these women, 33 percent had abnormalities of the forefoot, and 20 percent had flat feet. About one-third had severe corns, ingrowing nails, arthritis, or other such conditions. Many of those with forefoot deformities were under 30 years of age.

Lack of exercise, long periods of standing, and inadequate diet contribute to the problem. But a part of it arises from the habit of following unhealthy footwear fashions. High heels, narrow toes, absence of arch support, and thin soles add up to foot trouble. When unsuitable shoes are worn into the factory, where they are especially dangerous, the problem becomes serious.

When jobs require constant standing, rest periods should be allowed and seats be provided for the women. Very often jobs that are done standing could just as well be done while sitting; in such cases women should be allowed to alternate their positions. If this cannot be done, an attempt should be made to rotate the women on standing and sitting jobs, so as to afford some relief to all of them. Women who have foot ailments should be shown the need for proper medical care. Correctional exercises and treatment should be encouraged when they are needed.

One of the most important jobs of the industrial nurse is, of course, to sell the women the idea that broken-down party shoes, loose sandals, or other types of unsuitable shoes must not be worn in the factory. The appeal to the sense of fitness of proper types of shoes, as well as their comfort and safety, can be made a strong one. Moreover, the nurse can point out that sturdy and sensible shoes are especially advisable when rationing limits sharply the number that can be bought.

A safety program in the plant that insists on proper shoes—safety shoes when they are needed—is of major importance. The medical

director of a plant employing many women tells the story of one woman who was wearing a pair of old high-heeled party shoes in the plant. She lost both heels coming down some stairs, fell, and sat down so violently that her coccyx was broken. This incident was the focus of a safety-shoe campaign in the plant; the guilty shoes were paraded around on a truck, and from then on, low-heeled oxfords were the only working shoes allowed in the factory. It is not the part of wisdom, however, to wait until such things happen before dealing with an obvious danger.

Care of the teeth.—It has been stated (34) that many of the absences due to nonoccupational illness can be traced to bad mouth conditions. Thus it is very important, from the standpoint of production as well as that of health, to encourage adequate care of the teeth. At the time of beginning her employment, it would be well if the new worker could have her teeth examined and be told how much and what kind of attention they need. With the proper encouragement and follow-up, teeth can be repaired before they cause much damage and add to the already great sum of days lost because of illness.

In addition to the ordinary run of dental needs are the dangers caused by specific hazardous exposures. It is known that such substances as lead, mercury, phosphorus, and radium may have a far-reaching and destructive effect on the mouth, teeth, and gums. A chart prepared by Dr. Isaac Schour and Dr. Bernard G. Sarnat (35) shows the types of destruction caused by certain substances, and lists occupations that may be considered hazardous for this reason. Thus the importance of taking note of the slightest sign of injury or decay of gums or teeth should be made clear to workers exposed to such special dangers. And all workers, regardless of occupational risks, should learn to know the close relation between good teeth and good health. This means knowing it with conviction, so that they will act on the basis of their knowledge.

Care of the eyes.—The amount of eyestrain and the need for accurate vision involved on the job vary from one occupation to another. But certainly the well-being of the worker and efficiency on the job necessitate good vision and freedom from strain. Tests of eyes should be made that are suitable to the job. Thus, inspection work involving close visual examination will make certain demands on the eyes; operating a crane or driving a truck will make other demands.

The worker should be told when he is in need of corrective lenses, and urged to get them. If safety goggles are required, proper corrective lenses should be put in the goggles.

The Division of Labor Standards of the United States Department of Labor, through the National Committee for the Conservation of Manpower in War Industries, has instituted an important eye-saving program for industry. Through its regional representatives, lectures and demonstrations by a specialist in eye-protection are brought to the plants. Information about this program can be obtained from the Division of Labor Standards. It should be called to the attention of plant management by the nurse, if it is not already known. Advantage should be taken of this opportunity to develop an effective program of education on eye protection for both supervisory personnel and the workers.

The Division of Industrial Hygiene of the Public Health Service points out (36) the need to be concerned not only with protective

equipment and safety practices to guard eyes from injury on the job, but also with the development of standards for visual requirements in different types of occupation. Along with such standards must go examination of workers' eyes to determine what their condition is and to correct defects. The importance of interest and cooperation on the part of workers as well as management is great; and the industrial nurse can help to educate the worker to recognize the need for such a program.

Health in the home.

Of every 10 absences from work due to illness, 9 are due to causes not related to the work itself—illness such as everyone, regardless of his job, may be subject to. Consequently, it is not possible for the medical department to separate sharply the causes of illness and say that it will concern itself only with causes picked up on the job. Just as a worker may carry infection or disease from the plant to the home, so she may carry it in the other direction. Moreover, whatever the source, an absence is still a drain on the worker and a hindrance to production.

The woman who works all day on the job and runs her household as well needs all the help she can get to keep the health standard in her home high enough to protect her and her family from illness. Some plants have established a policy of home visits by nurses when workers are absent through illness. Others avail themselves of the help of visiting nurses from Public Health or other organizations. In either case a nurse going into the home will have an opportunity to assist directly with the health problems she may find there. If she does not visit the home, she must get from talking with the worker an understanding of what her home health problems are.

For more specific help the women can be directed to the medical, dental, and health clinics in their communities, to social agencies, to child-care centers or other groups organized to take care of local war emergency community problems, and to Government agencies such as the Public Health Department.

If there are women counselors in the plant, it should be their function to explore these possible outside services and to direct the women to them as needed. If there are no women counselors, the Personnel Department probably will be in a position to supply such information. In addition, there are in many areas nurses' organizations that can be of assistance in helping the women in the plant. (See pt. V for further discussion of this question.)

Mental hygiene.

On an earlier page it was mentioned that fatigue can develop from mental as well as physical causes; that the relation to her fellow-workers, her supervisor, and her environment has much to do with a woman's ability to produce efficiently. The reason for this lies in the fact, pointed out by Dr. Lydia G. Giberson (37), psychiatrist in the medical division of the Metropolitan Life Insurance Co., that—

* * * the worker, regardless of mass effort or organization, will inevitably remain an individual and maintain his right to the dignity of an individual. * * * The individual is the man who counts.

Added to the task of adjusting to a wartime work program is that of facing the practical difficulties at home and in the community. The working woman struggles against problems of food, transportation, housing and service shortages. This, for the many thousands of inexperienced women now in industry for the first time, comes on top of the difficulties of a strange and demanding work environment.

Add again the personal and individual problems each person faces, and the fact that there are many workers who have considerable difficulty in dealing with them unaided. The sum total is, for some workers, tension and uncertainty that make them unable to keep going without costly effort. At this point, understanding and friendly counsel can be of immeasurable help. Some individuals may come near enough to the breaking point to need medical advice. When this need is apparent, the nurse should be able to discuss with the worker what kind of advice she needs, and show her where to get it. Others, with a chance to talk out their troubles and get some advice, will find themselves able to handle their problems. The nurse's place in this process of adjustment can be a very important one, if she sees and responds to the needs that will be shown. And as Dr. Sappington points out (38)—

* * * morale has definite relationships to other important parts of an industrial health program, such as proper nutrition, fatigue control, and adequate and properly spaced recreation. No people can be expected to maintain top morale who are poorly nourished, who are tired and beset with physical and mental ills, and who do not have a reasonable chance to recover and recuperate through proper food, adequate rest, and simple recreative facilities.