

## NEUROPSYCHIATRIC OBSERVATIONS

STANLEY COBB, M.D., AND ERICH LINDEMANN, M.D.

FROM THE DEPARTMENTS OF PSYCHIATRY, MASSACHUSETTS GENERAL HOSPITAL, AND OF NEUROPATHOLOGY  
HARVARD MEDICAL SCHOOL, BOSTON, MASS.

THE STUDIES to be reported here do not deal with all the neuropsychiatric abnormalities which occurred on the Disaster Ward. Mild transient confusions and delirious conditions, fluctuations in consciousness, fleeting periods of restlessness were handled by surgeons and medical men without the need for a special psychiatric inquiry.

This report deals rather with the problems involved in the emotional adjustment of the patient to the disaster, with all its implications—disfigurement, lasting disability, loss of work, bereavement, and disturbed social situations. We wanted to learn how to recognize those patients who are liable to emotional disorders, to prevent such disorders if possible, and to help those who had become victims of untoward emotional reactions.

The first request for psychiatric help came through the social workers who were serving as liaison personnel with relatives and friends. They soon had become aware of the fact that the emotional upset which followed the discovery of a body had attained, in some of the relatives, the proportions of a major psychiatric condition and needed trained intervention, and it was at their insistence that we first witnessed the states of acute grief which will be discussed in detail later in this study.

From observing violent reactions in the relatives, we concluded that similar reactions might occur in the patients on the ward as soon as they were recovered enough to deal with the disruption of their social relationships.

The social workers continued to confer with the psychiatrist about the management of milder reactions and were extremely helpful in the arrangement of the subsequent systematic studies.

On the eighth day after the disaster, the psychiatrists were invited to review all patients still on the ward. The occasion was a dramatic psychotic episode in a woman who had not been confused and was not then showing signs of impairment of brain functions, but who had responded to the news of the death of her husband and son with a state of excitement and intense paranoid suspicions about the ward personnel. She also believed that nurses and doctors were considering her an immoral, sinful person and were plotting to detain her and to prepare for her punishment. She insisted upon leaving against the advice of the physicians and was able to persuade members of her family to demand her release. Psychiatric inquiry showed that this patient had had a former episode of mental abnormality with obsessive fears, depression, and mild agitation. Follow-up reports show that her subsequent adjustment has remained quite precarious, with spurts of overactivity alternating with periods of apathy but that she has not developed any frank psychosis.

In the light of this incident it was decided to make a brief psychiatric study of all the patients left on the ward in order to be able to anticipate subsequent emotional disturbances. Seventeen patients have been so reviewed. Each received a neurologic and psychiatric examination. Abnormalities in mental status were recorded. A psychiatric history was obtained from the patient, and with the help of social workers from the relatives. Plans then were made with surgeons, social workers, and the occupational therapy workers for the best care of each patient in the light of our observations about his emotional reaction patterns and his former modes of adjustment.

The group as a whole was of fair intellectual level. Except in one case there was no aphasia or apraxia, and the disturbances of memory were limited to amnesic scotomata, which was difficult to separate from the effects of impairment of consciousness at the time of the accident. The one case that showed neurologic symptoms with signs of cerebral lesions is described first:

One patient showed a clear-cut picture of cerebral lesion. This was a married woman, age 35, who was admitted in profound shock, with stertorous breathing. She was quite red, and carbon monoxide poisoning was diagnosed. At 11:30 P.M. oxygen was started and she had become active and noisy, but was out of touch with her surroundings. Twelve hours later she was still restless and disoriented; she occasionally spoke short sentences that had little relation to the situation. By 7:00 P.M. she was extremely restless, thrashing about with her arms and legs and had to have restraint and sedation. After that she was quiet for 12 hours. During the next three days she alternated between periods of motor activity and periods of quiet due to sedatives. When aroused she thrashed about. On December 3, it was noted that the movements were definitely athetoid and were accompanied by facial grimaces. These movements reached an apex on the fifth to tenth days, when she showed a full-blown picture of athetoid chorea, especially marked on the left side. Along with this there was jaundice, semicomatose and speechlessness.

The picture of athetoid chorea was gone by the fourteenth day. During the next two weeks the patient began speaking but showed marked aphasia, which resolved into a dysarthria plus extensive memory defect (31st day). The memory improved over the next six weeks, so that she could remember events for a number of hours and even up to three days. It is very much impaired even at the last examination (94th day); she remembers facts that she did certain things, such as that she had lunch with a certain person, she seems to have lost all ability to revisualize, to remember what the scenes were like, and how people looked and even how objects looked. The dysarthria remains.

*Diagnosis.*—There was evidently an extensive asphyxia of nerve cells of the brain. This appears to have been very widespread and to have affected both the basal ganglia and the cortex. In the cortex there is no special localization except that the lower end of the motor area in the left hemi-

sphere seems to have been especially affected and the temporal lobe seems to have been largely spared. The worst lesions are probably in cortical areas 19, 39, 9, 10 and 11, on both sides, with the lower part of areas 4 and 6 on the left. The right striatum is probably degenerated more than the left, but most of the damage to the basal ganglia seems to have been acute and reversible.

#### PSYCHOTIC CONDITIONS PRIMARILY PSYCHOGENIC

Two patients developed frank psychotic episodes and in both instances the former history showed clear-cut indication of previous maladjustment:

A young man had received only minor burns and left the hospital apparently well on the road to recovery just before the psychiatric survey took place. On the fifth day he had learned that his wife had died. He seemed somewhat relieved of his worry about her fate and impressed the surgeon as being unusually well-controlled during the following short period of his stay in the hospital. There seemed to be no occasion for any psychiatric attention.

On January 1 he was returned to the hospital by his family. Shortly after his return home he had become restless, did not want to stay home, had taken a trip to relatives trying to find rest, had not succeeded, and had returned home in a state of marked agitation, appearing preoccupied, frightened, and unable to concentrate on any organized activity. The mental status presented a somewhat unusual picture. He was restless, could not sit still or participate in any activity in the ward. He would try to read, but drop it after a few minutes, try to play ping-pong, only to give it up after a short time. He would try to start conversations, break them off abruptly, and then fall into repeated murmured utterances: "Nobody can help me. When is it going to happen? I am doomed, am I not?" With great effort it was possible to establish enough rapport to carry on conversations. He complained about his feeling of extreme tension, inability to breathe, generalized weakness and exhaustion, and his frantic fear that some terrible thing was going to happen. "I'm destined to live in insanity or I must die. I know that is God's will. I have this awful feeling of guilt." With intense morbid guilt feelings, he reviewed incessantly the events of the fire. His wife had stayed behind. When he tried to pull her out, he had fainted and was shoved out by the crowd. She was burned while he was saved. "I should have saved her or I should have died, too." He complained about being filled with an incredible violence and did not know what to do about it. The rapport established with him lasted for only brief periods of time. He then would fall back into his state of intense agitation and muttering. He slept poorly, even with large sedation. In the course of four days he became somewhat more composed, had longer periods of contact with the psychiatrist, and seemed to feel that he was being understood and might be able to cope with his morbid feelings of guilt and violent impulses. On the sixth day of his hospital stay, however, after skillfully distracting the attention of his special nurse, he jumped through a closed window to a violent death.

A young unmarried woman with severe burns of face, back, hands, and feet, more restless than the other patients during the first week, developed a strong attachment to her special nurse, resisted the care given by others, but remained fairly inconspicuous until January 2, when she developed a state of excitement with violent aggressive behavior, vulgar language, and furious refusal to cooperate with the nurses. She slept poorly, refused food, and disturbed the rest of the ward with her noisy behavior. She became a serious problem in nursing care. She had a period of four weeks of fluctuations in mood, apathetic, tearful periods alternating with outbursts of aggression, and in the first week of February again was excited, refused food, and became incoherent, hallucinated, and preoccupied with fantasies of destruction and violence.

The past histories of both these patients were obtained in detail, and showed evidence of inadequacy, with a tendency to retire from social contacts and to develop psychotic manifestations in situations of stress.

#### PSYCHONEUROSES

A history of a frank neurosis in the past was present in two patients. They did not show any signs of mental derangement during the hospital stay and did not become serious nursing problems. Their difficulties became most conspicuous after discharge from the hospital. The return to normal life activities was slow and previous psychoneurotic manifestations recurred in exaggerated form, requiring systematic psychiatric therapy.

One woman had severe burns of face and hands and was threatened with marked disfigurement during the first period of her stay. She was extremely worried about her appearance and needed frequent reassurance. Her recollections of the disaster are that she was walking upstairs from the Melody Lounge and noticed that the fire was sweeping rapidly upstairs. By the time she got up there she already found herself stumbling over many bodies and was afraid that she would not reach the door. She felt suddenly that the fire was God's punishment because she had fallen below her standards. She prayed aloud and other people fell in with her prayer. While she was praying she somehow was shoved over piles of dead bodies and finally her hand reached out "into fresh air." The whole picture is now extremely clear to her and returns to her mind at frequent intervals.

Her course in the hospital was fairly smooth. The only symptom was her intense fear of being left alone, without ready access to other people. When the psychiatrist inadvertently left her alone in the interview room she cried bitterly and expressed marked resentment. The patient has been followed since discharge. She finds it impossible to attend any gathering place. Visiting a restaurant with her family, she had a vision of fire breaking out, of tables and chairs being tipped over, and left the room in frantic fear without having eaten anything. She had a similar experience of return of memories of the fire when she tried to attend a movie.

Another young woman has had frequent attacks of anxiety ever since

puberty. These consist of trembling, heart palpitation, choking sensations, and the fear of impending disaster. She had not obtained any adequate help for her psychoneurotic symptoms and restricted her social activities and occupational plans because of them. She had come to consider her life a failure. The Coconut Grove incident had seemed to her the final fulfillment of all her fears. During her convalescent period in the hospital she was a very cooperative, if somewhat discouraged patient. Except for her timidity and anxiety, she had no emotional difficulties during her hospital convalescence, but after she left the hospital she was unable to make a satisfactory home adjustment. She feels too disfigured, believes she has no chance for further happiness, and is hopeless about the future. She is being continued in regular psychotherapeutic interviews.

The other patients did not show any significant history of previous psychiatric difficulties. None of them had positive symptoms of neurosis, psychosis, or personality defect.

#### REACTIONS TO BEREAVEMENT

Seven patients became problems of psychiatric study and management because their recovery was complicated by severe grief. This study provided an unusual opportunity to observe the mechanisms of grief by which the bereaved person reestablished his equilibrium after the loss of a beloved.

Within a few days after the incident, as soon as the patient recovered from the shock and clouded consciousness, the question arose of when to tell him about his loss. It was obvious that both the physical and mental condition must be such that the individual could tolerate the message.

Our observations concern seven bereaved patients. Three of them said that they had been told just at the right time. Three felt that they had been reasonably certain of the loss and the final confirmation appeared as a relief of uncertainty rather than as an additional shock. One patient suspended all inquiry about the details of her husband's fate for more than four weeks, deliberately occupying her thoughts with personal friends and pleasant fantasies and recollections. When, however, her relatives visited her, they became more and more uneasy because the range of topics discussed in conversation was necessarily small. Any reference to the lost person and any attempt at planning the future had to be avoided. It finally became the psychiatrist's task to confront the patient with the sad news. This was done in the slow process of gradually recalling to her the details of her family life, her relationships to her children and relatives, and making it inescapable for her to inquire positively about the fate of her husband. Her first reaction was to blame her relatives for withholding the news and in the subsequent interviews there was a marked hostility against the psychiatrist. After a grief period of less than a week she continued to make an unperturbed recovery so far as her physical condition was concerned. She has refused any further relationship with the psychiatrist but has apparently made a fairly good adjustment at home.

Frequent discussions between the surgeon and the psychiatrist were necessary to weigh somatic and psychologic factors bearing on the right moment of delivering the message of bereavement.

The second task of the psychiatrist was to assist the person with the adjustment to the loss and to steer him through the disturbing period of intense emotional upheaval which ensued during the subsequent weeks. It became apparent that the different patients showed considerable variation in their reactions. Common to all of them, however, was the following syndrome: Sensations of somatic distress occurring in waves lasting from 20 minutes to one hour; a feeling of tightness in the throat, choking with shortness of breath, need for sighing, and an empty feeling in the abdomen, lack of power in the muscles, and an intense subjective distress described as tension, lonesomeness, or mental pain. The patient soon learned that these waves of discomfort could be precipitated by visits, by mentioning the deceased, and by receiving sympathy. There was a tendency to avoid the syndrome at any cost, to refuse visits lest they would precipitate the reaction, and to keep deliberately from one's thoughts all references to the deceased. Three men appeared in the psychiatric interviews to be in a state of tension, with tightened facial musculature, unable to relax for fear they might "break down." It required considerable persuasion to yield to the grief process before they were willing to accept the discomfort of bereavement. One of the patients assumed a hostile attitude toward the psychiatrist, refusing to allow any references to the deceased and rather rudely asking him to leave. This attitude remained throughout his stay on the ward, and the prognosis for his condition is not good in the light of other observations. Hostility of this sort was encountered on only occasional visits with the other patients. They became willing to accept the grief process and to embark on a process of dealing in memory with the deceased person. As soon as this became possible there seemed to be a rapid relief of tension and the subsequent interviews were rather animated conversations in which the deceased was idealized and in which misgivings about the future adjustment were worked through.

It seems that the grieving person can delay his grieving period but not avoid it, and that individuals who show no signs of grief during the period of convalescence from their somatic injuries are likely to have disabling disturbances at a later period. Prophylactic care is most important here. The patient must be allowed to carry through his grief reaction at the optimal time without undue delay; he must be assisted in his efforts to extricate himself from the bondage to the deceased, to be prepared to face the task of social readjustment when he leaves the hospital.

#### SPECIAL STUDIES

In addition to these problems of clinical management, the solution of certain research problems has been brought nearer realization through the cooperation of a group of patients. For some time, the Department of Psy-

## GRAPHIC REPRESENTATIONS OF ACTION-SILENCE

Figures 1 to 7 present interaction chronograms which show the striking differences in activity rates observed in patients with acute grief and in those suffering from other forms of morbid depression.

Figures 2 and 3 represent mood disturbances which were seen in the Psychiatric Service. They showed depressive reactions with the usual slowness of response and underactivity. Figure 4 shows a patient who was found in a mild manic state of overactivity with euphoria and cheerful thought-content. Contrary to expectations, the interaction chronograms of bereaved patients, as shown in Figures 5, 6 and 7, show overactivity and no retardation and slowness of response as seen in other depressed states.

### SCHEMATIC REPRESENTATION OF TAPE, FIGS. 1 TO 7 INCLUSIVE

To show actions, silences, double actions, and double silences (double actions and double silences reckoned from Subject A).

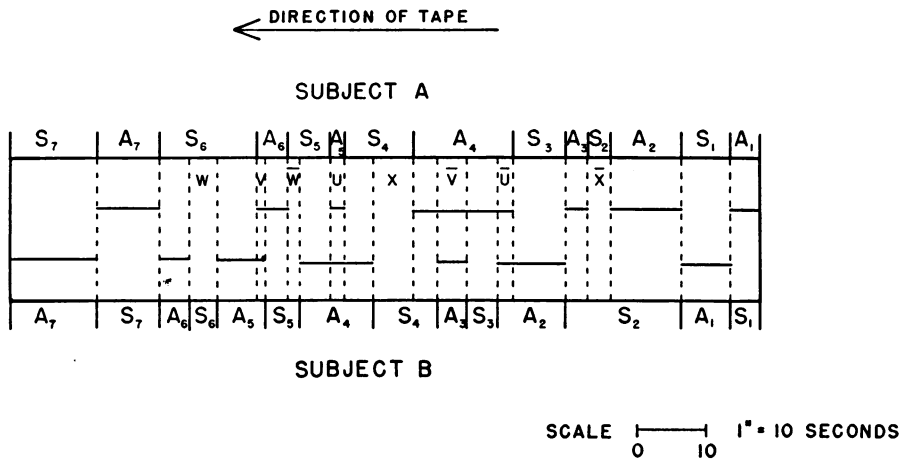


FIG. 1 shows the various symbols assigned to different events in interaction. (A)— activity (verbal or gestural), (S)— silence (inactivity), (u)— double action initiated by the patient (such as verbal interruption), (v)— double action initiated by the doctor, (w)— double silence due to failure to respond on part of the patient, (x)— double silence due to failure to respond on part of the doctor.

A bar over the u, v, w, or x ( $\bar{u}$ ) indicates double actions or double silences after which the patient continues.

The tape moves at a speed of five inches per minute. An observer sits behind the screen and observes through a one-way window. She records on the moving tape by means of keys the activities of the two participants in the interview under the headings mentioned above. This tape is then mathematically analyzed to give the curves shown in Figures 2 to 7.

Figures 2, 3, 4, 5, 6 and 7 are graphic presentations in "cumulative series" of four types of relationships:

(1) A-S represents the relationship of the patient's periods of activity to his periods of silence. The more overactive he is the more positive is the slope of the A-S curve; the more underactive he is the more negative is the slope of this curve.

(2) u-w represents the relationship of the patient's double actions (such as his interruptions of the doctor) to his failure to respond.

(3) v-x represents the relationship of the doctor's double actions (such as his interruptions of the patient) to his failure to respond.

(4)  $\theta$ -o represents the relationship of the patient's initiations of actions to those of the doctor.

# CURVES IN ACUTE GRIEF AND ALLIED CONDITIONS

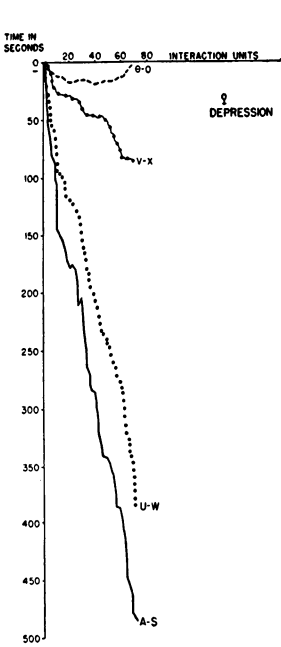


FIG. 2.—A morbid depression of mood not complicated by grief. Note the steep negative slope of the A-S curve and the U-W curve. The deficit of action in relationship to silence on the part of the patient is 480 seconds in a 40-minute interview.

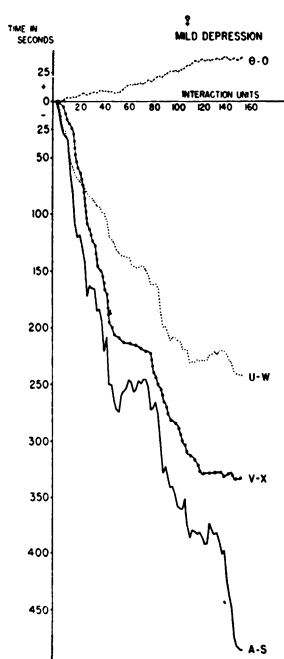


FIG. 3.—A milder depression. The steep negative slope of the A-S curve is interrupted by occasional periods of increased activity but there is still a marked deficit in action.



FIG. 4.—A patient in a mild manic episode with marked overactivity. The surplus of activity over silence in a 40-minute interview is 750 seconds.

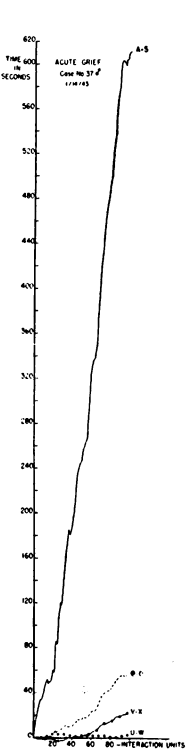


FIG. 5.—Acute grief reaction. The patient appears depressed during the interview but shows considerable overactivity. The A-S curve has a steep positive slope. The surplus of action over silence in a 40-minute interview is 610 seconds.

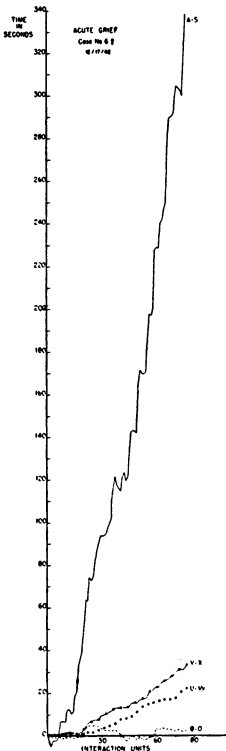


FIG. 6.—Acute grief reaction with strongly depressive thought content. Note the markedly positive slope of the A-S curve. The curve resembles that of Figure 4. There is a marked surplus of activity over silence.

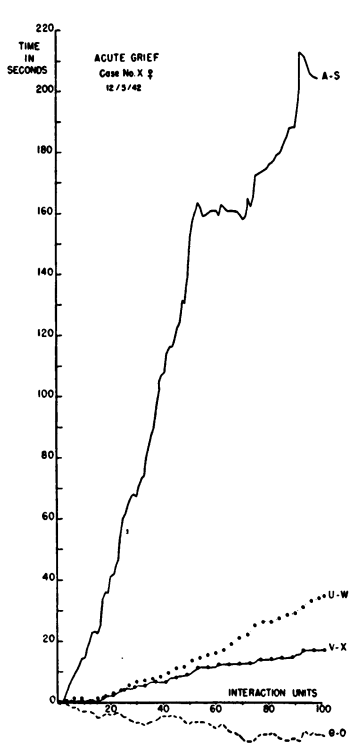


FIG. 7.—Acute grief reaction with less pronounced overactivity.



chiatry has been interested in the physiologic and psychologic aspects of acute grief. Since acute grief is one of the most frequent psychogenic factors found in patients with psychosomatic disorders, such as asthma, colitis, and rheumatoid arthritis, we have been anxious to discover what physiologic features of grief might play a rôle in contributing to the etiology of these disorders.

In the fire victims there was evidence of disturbances in autonomic functions. The pupils were generally large. During the surges of acute grief described above, there was usually sighing respiration, "hot waves" to the head, flushed face and perspiration. Systematic spiograms were not satisfactory because of the chest involvement. We have, however, been able to carry on observations in bereaved relatives who showed the same sighing respiration. The result of these studies will be reported elsewhere. There is indication that the altered respiratory activity, combined with the disturbance of sleep and appetite, may form the nucleus of a physiologic disturbance which forms the background for the "emotional distress" described by the patients.

Our data are somewhat more complete for the study of the amount of activity presented by the fire victims and bereaved patients. It is known that in states of morbid depression a patient is likely to be "retarded" in speech and action. Contrary to expectation, in the state of depression and unhappiness following such a disaster experience, there is not a reduction in activity as is seen in cases of psychotic depression; instead there is an increase in need for activity. This can be strikingly demonstrated by a new measuring device, the "interaction chronogram." The patients were examined during a psychiatric interview for the timing of their verbal and gestural activity. A record was made in this way of their interaction with the psychiatrist and a graphic presentation was furnished, showing the balance of activity and inactivity at any given time. These graphs furnish an objective record of the patient's capacity to be active, of his hesitations after questions, and of his tendency to "out-talk" the examiner in conversation. We found that all bereaved persons examined, showed a positive slope of the action-silence curve, indicating a surplus of activity over inactivity (Figs. 1-7). (For a brief description of procedure see Figure 1; for a complete description, ref. Chapple and Lindemann.<sup>1</sup>)

This finding is of special significance because it indicates a drive for activity in individuals who at the same time complain about apathy, inability to initiate any action, and lack of interest in their ordinary pursuits. Our observations seem to indicate that there is a good deal of drive for activity and the lack of "conduct patterns" by which to express their drive. A good many daily activities were conditioned to the presence of the deceased and could no longer operate. But more than that, other activities not obviously connected with the presence of the deceased have lost their meaning and are carried out only with difficulty. It is, therefore, not surprising that only two of our series of mourning individuals were able to resume their ordinary

activities after leaving the hospital. The others still find themselves aimless, lacking in initiative, and looking to others for suggestions to follow.

These observations are still going on, but already indicate the necessity of a careful follow-up study of both patients and relatives. We have made an effort to reach as many individuals involved in the tragedy as possible, but several months must elapse before any final conclusions can be drawn.

DISCUSSION.—Of 39 patients admitted to the hospital, seven died within 62 hours. Of the survivors, at least 14 presented neuropsychiatric problems. This high incidence may seem surprising, but it fits well with the experiences of psychiatrists working in general hospitals. Forty-five to 55 per cent of the patient population are likely to present psychologic factors in their problems.

Unless the psychiatrist has an opportunity to see all the victims of a disaster, danger signals and opportunities for help along psychologic lines may be overlooked, since they are by no means obvious to the untrained worker.

Conditions predominantly due to cerebral damage were rare, probably because they usually lead to death. Conditions predominantly due to psychogenic factors showed a high incidence. In all patients with clear-cut neuroses and psychoses, the psychiatric history offered clues as to the likelihood of such development under stress. This observation fits well with recent studies concerning traumatic neuroses in the armed forces.<sup>2, 3</sup> It seems well founded that induction boards refuse admission to the armed forces to candidates who show a former history of psychosis or psychoneurosis.

The more severe emotional disturbances encountered in formerly well-adjusted patients seemed to be due not so much to the impersonal effects of the disaster (fright and horror) as to the problems in personal and social relationships involving conflict and guilt. Similar observations are reported by Sargant,<sup>4</sup> in 1940, and Wilson,<sup>5</sup> in 1941, after the disaster experiences of members of the British armed forces and civilian population.

Psychiatric assistance in the solution of these personal problems and in readjustment after a social crisis forms an important part of the care of disaster victims.

#### SUGGESTIONS FOR FUTURE EMERGENCIES

Our observations seem to indicate that the psychiatrist can operate as a useful member of a disaster unit. His work may be divided into three phases:

In the first few days severe shock and life-saving procedures occupy the field. Apathy and excitement, confusion and delirious states have to be handled by proper sedation and proper surroundings. In our present observations we have only indirect evidence of the victims' emotional states at that time. Two patients complained of the lack of a chance for enduring contact with one person—doctor, attendant, or nurse: everything seemed to change; every person who arrived seemed to be new; no information or outside news

was available; the days were ones of utter bewilderment, offering no frame of reference. It might be advisable to have the ward personnel as small as circumstances permit or so divided that patients have a chance to deal with the same person repeatedly.

The second phase deals with the psychiatric care of the convalescent patient, advising him in his transitory problems, determining when messages should be delivered or revelations made, and managing with the patient his efforts to readjust.

The third phase deals with the psychiatric care of the convalescent patient after he leaves the hospital and his proper readjustment in the community. We can, in this manner, have reasonable hope of preventing the occurrence of prolonged maladjustment or traumatic neurosis.

During the first phase, the psychiatrist's chief contribution is his aid to the relatives and his counsel to the medical social worker who is dealing with the numerous problems of family and work relationships. During the second, he is intimately involved with the internist and surgeon and must continue his contact with the social worker, which becomes even more important during the third, when social readjustment forms the center of interest. Throughout the whole of the three periods, not the least of the psychiatrist's responsibilities is determining what can safely be delegated to the medical social worker and guiding her in her efforts.

It seems fair to conclude that it is desirable to have psychiatric evaluation of patients early in the course of their hospital care, continued psychiatric attention to those patients who are in a precarious emotional state, and, lastly, aid in making readjustment, especially to bereavement, after leaving the hospital.

#### REFERENCES

- <sup>1</sup> Chapple, E. D., and Lindemann, E.: Clinical Implications of Measurements of Interaction Rates in Psychiatric Interviews. *Applied Anthropology*, **1**, 1-11, 1942.
- <sup>2</sup> Ross, T. A.: *Lectures in War Neuroses*. Williams and Wilkins, Baltimore, 1941.
- <sup>3</sup> Gillespie, R. D.: *Psychological Effects of War on Citizen and Soldier*. Norton, New York, 1942.
- <sup>4</sup> Sargant, W., Slater, E.: Acute War Neuroses. *Lancet*, **2**, 1, 1940.
- <sup>5</sup> Wilson, A. T. M.: Reactive Emotional Disorders. *Practitioner*, **146**, 254-258, 1941.