regarded as a danger sign, and the blood pressure should be restored before anything else is done, the only exception to this rule being the minimum steps necessary to stop haemorrhage. It is not always appreciated that in cases of traumatic shock the precipitating injury precedes the secondary factors, such as pain, exhaustion, drug depression, and injudicious rough handling, which join in to complete the clinical picture; whereas in labour most of these factors will have been present for some hours before the final trauma which determines and initiates shock. The ultimate state of shock is the same, but the sequence is different. When, therefore, a long and difficult labour is anticipated we have a particularly favourable opportunity of controlling these accessory factors, especially if we study the blood pressure.

I would therefore urge the general practitioner to use his sphygmomanometer at the bedside in his midwifery, and cannot do better than quote in support of my plea the words of Prof. Miles Phillips (1936), who made it his practice to do so, although he has not published his figures. Speaking before an American Association of Surgeons, he said: "Neither she nor her husband was concerned with the maternal mortality rate—only four, five, or six in a thousand—but they did expect you to take every precaution."

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NERVOUS BREAKDOWN IN THE NAVY DOMESTIC DIFFICULTIES AS A CAUSAL FACTOR

BY

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While it is generally agreed that prolonged psychotherapy has no place in the treatment of psychiatric casualties in the Services in wartime, this need not mean that the psychiatrist should concern himself only with diagnosis and institutional efforts at rehabilitation. In this paper the part played by the domestic affairs of the sailor in determining the onset and gravity of nervous breakdown is considered and suggestions are made for investigating and treating these difficulties more effectively. Psychological motivation is said (Kretschmer, 1934), to be due to combinations of causes, of which the least socially and morally acceptable possesses the greatest driving force and is furthest removed from consciousness, whereas that which the patient considers to be the most easily acceptable is in the forefront of consciousness and is the manifest cause of any reaction. Wartime propaganda is directed towards assigning to patriotism and devotion to duty the highest ethical values and stressing the subordination of the individual and the family to the State. In this present struggle, waged by conscript armies and navies, such a fundamental change of outlook might well give rise to conflicts, of which the most potent cause need not be the most obvious.

Aetiological Classification of Naval Psychiatric Material

In classifying the causal factors in mental illness it is usual to make a broad distinction between those that are determined mainly by the personality of the patient and those that are chiefly environmental. Though it is seldom possible to make a

rigid distinction between endogenous and exogenous, yet for purposes of treatment and prognosis it is almost essential to divide the facts of the history in this way. Exogenous factors can be considered as forming a graded series, the members of which will vary in their closeness to the centre of the patient's personality. On theoretical grounds it would be reasonable to assume that those factors which most intimately affect this hypothetical nodal point of the personality would have the greatest strength in causing a nervous breakdown: the effects of domestic trouble are explicable on this basis.

Wartime psychiatry is greatly simplified because the individual environmental stresses in war are much more constant than they are likely to be in peacetime; for example, the living conditions of a sailor in his ship, which may be his home for years at a stretch, are so invariable as to be comparable to those artificially produced in a psychological laboratory. The effects of stress are evenly distributed throughout the ship's company, and, although there are differences in responsibility among the various ranks and ratings, so far as exposure to what are usually termed "the hazards of life afloat" are concerned all can truly be said to be in the same boat. The realization of this has led to the conception that the breakdown of a small percentage of a ship's company following an action is an indication of the poor morale of those who succumbed, and, because the majority stood up to the test, cannot be attributed to the conditions of the action. In some cases this may be true, but it is probable that this assumption accounts for only a small number of the men who break down under the stress of action.

On the basis of the observation of fairly large numbers of these cases, it appears more likely that unfavourable reactions to stress are due, in order of frequency, to the following causes: (1) constitutional weakness of the personality; (2) combinations of environmental factors; (3) simple bad morale, in the sense of "yellowness" or lowered social responsibility. It is with the second of these groups that this paper is chiefly concerned.

Effects of Stress

By the time a man becomes a frank psychiatric casualty, unless he belongs to the low-morale group, he has usually had to readjust or repress his former scale of ethical values, and the ease with which he does this depends upon his personality. Both in the last war and in this it has been noted (Beaton, in *The Naval Medical History of the War*; Curran and Mallinson, 1941) that the better types suffer affective changes in the direction of either depression or elation, usually combined with anxiety, whereas their less meritorious messmates react with hysterical symptoms. It has been observed, moreover, that affective disturbances in good personalities, when they are due to the effects of war service uncomplicated by other factors, respond surprisingly well to ordinary hospital conditions. It is those cases in which the causal factors are multiple that sometimes present unusual clinical states and, on the whole, do badly. In the Services, the return of a man to duty is a fair measure of the success of treatment; invaliding usually implies failure, and the invaliding rate may be regarded as an indicator of the virulence of a condition.

In the Navy there appear to be two groups of exogenous factors, which are not directly connected with the hazards of war: (a) the conditions and type of service, including reactions to authority, disappointments over promotion or the lack of official recognition of services, and other specifically Naval determinants; (b) domestic difficulties. Of these two groups the former is the commoner; but the latter, as will be shown, can give rise to the most virulent and intractable reactions, leading to invaliding in a high proportion of cases.

The home life of the sailor has been the subject of ribaldry and a cause of unhappiness for as far back as the lives of sea-going men are recorded. Among sea-faring peoples the subject has become part of the national mythology; it is not recorded that Jason or Ulysses suffered from anxiety states, but their behaviour on landing after long voyages showed considerable apprehension as to what might have happened at home in their absence, and the Norse sagas abound with references to these additional hazards of sea life. The Admiralty has evidently given much thought to this matter, and in peacetime every effort is made to enable the sailor to lead a double life with the minimum of discomfort and disruption of his material home.

But in wartime, although opportunities for reunion with the family are given whenever possible, many men must be separated from their homes for long periods. It is hardly surprising that such unusual conditions should sometimes lead to difficulties. I have had the opportunity of observing the results of these factors under two widely different conditions—for the first eighteen months of the war on the South Atlantic station, and for the past two years in a Naval hospital at home.

The total number of cases seen during the first period was too small to be of use for statistical analysis, but those seen during 1942 are given in the following table. In order to reduce any effect due to personal bias the figures are taken from the returns of two separate Naval hospitals and represent the combined opinions of at least five different psychiatrists. Only those cases are included in which the aetiological factors were quite definite, and these form, of course, a small proportion of the total number seen during the year.

Number of Cases during 1942

Aetiological Factor	Returned to Duty	Invalided	Proportion Invalided
Domestic difficulties ..	58	32	35.6%
Enemy action (E) ..	137	56	29.0%
Conditions of service (C) ..	89	26	22.6%
Total	284	114	28.6%

It will be seen from these figures that the percentage of men invalided from the group in which domestic trouble was the main causal factor is higher than in the other groups. The difference is not quite significant. Bearing in mind that a man is not invalided on compassionate grounds but because he shows symptoms of mental illness and is medically unfit for further service afloat or ashore, even though he may be in part responsible for his home difficulties, it is clear that domestic worry is at least as effective a factor as exposure to enemy action in causing breakdown leading to invaliding.

Where two or more factors, of which one is domestic trouble, are combined, the virulence of the reaction is considerably higher than when domestic worries alone are responsible. The following table illustrates this point, and the difference between the groups is significant, although the numbers are small.

Aetiological Factor	Returned to Duty	Invalided	Proportion Invalided
Domestic difficulties alone ..	37	12	24.4%
Domestic + E or C	21	20	48.7%
Total	58	32	35.6%

Although this observation might appear to be self-evident, it helps to explain some puzzling clinical pictures. It is a common experience for men to be sent into hospital with a psychiatric diagnosis and a history of exposure to enemy action which may be more or less recent; the history points to war experience as the cause of their breakdown, and the patient is often content, for various reasons, to allow it to be thought that this is the whole story. It is only after the condition has failed to respond to the usual treatment that a more thorough investigation and the interviewing of relatives reveal a sometimes long-standing anxiety over domestic affairs, to which war service has merely served as a catalyst in precipitating a psychopathological reaction.

The early recognition of the cause is of some importance both for treatment and in the assessment of attributability; for in these cases, if war service alone is considered responsible, the patient may become eligible for a pension. The following record illustrates this type of case:

Case 1.—A stoker petty officer, aged 32, with a previously stable personality and a clear record of twelve years' Naval service, had been abroad since Dec., 1940. He had been involved in the evacuation of Greece and Crete, and was subsequently employed in running supplies to Tobruk until Nov., 1941. He stood up to this long and continuous spell of hazardous work without feeling any ill effects, and carried on until Nov., 1942, when, following the loss of some merchantmen in the convoy his ship was escorting, he broke down and was admitted to hospital in Jan., 1943. On examination he was very depressed and agitated, and blamed the long spell of sea service for his condition. He made no mention of home worries, but in

an interview with his sister the following facts came to light. In 1939 he had married against the wishes of his family, and was very devoted to his wife, who during the time he had been abroad had been sharing a flat with her sister, of whom the patient did not approve. Towards the end of 1941 she had written asking his permission to adopt the alleged illegitimate son of this sister by a foreign sailor, and to this the patient raised no objection. There was a hitch in the adoption proceedings when the man who had been, unbeknown to himself, cited as the father of the child proposed to the alleged mother and was accepted by her. As this might have led to a difficult family situation, fresh adoption papers had to be taken out and the name of another man given as the father. It was at this stage of the proceedings that the patient returned home, and, although he gave no indication of suspecting his wife of double-dealing, there was no doubt from his letters to her that he was extremely worried about the whole affair. The true facts, as attested by the patient's sister, were that the child was born to the patient's wife during his absence.

A welfare society was supplied with the facts of the case but took no action, which, considering the complexity and delicacy of the situation, was hardly surprising. At no time could the problem of the parentage of the child be discussed with the patient or his wife, but, no doubt relieved by the prospect of going home for good, he improved sufficiently to be discharged from hospital, and was invalided.

It is possible that, as the result of his war experience, this man would have broken down in any case, but it seems more likely that the sense of insecurity and anxiety over his home affairs was the primary factor and that the war experience served as a face-saving device. His reticence and his unwillingness to face up to the realities of the domestic situation, of which he could hardly have been unaware, support this view.

Types of Domestic Trouble

An analysis of the types of domestic trouble that have led to breakdown shows that the real or suspected infidelity of a wife or fiancée heads the list by a clear margin, followed by the illness or death of near relatives, including the prospect of childbirth; financial stress and the more concrete situational problems appear to give little trouble. In this connexion it was observed that out of the 42 patients whose breakdown was attributed to domestic factors during the eighteen months from Jan., 1940, to July, 1941, on the South Atlantic station, anxiety due to enemy action at home was given by only one as the cause of his condition. This period includes, of course, the time during which the "blitz" of England was at its height. To explain this curious fact on the basis of "out of sight, out of mind" would probably be incorrect; it seems more likely that an anxiety shared by many is easier to bear and its virulence is in inverse proportion to the numbers who have to put up with it. This is possibly analogous to the rarity with which sea-sickness, from which so many of the sea-going population suffer, is given as the primary factor in breakdown. It also appears to be easier to accept philosophically the personal share of a common disaster when it is at a great distance than when, as in the case of home-based personnel, it is spatially close to them. Again, the relatively lower virulence of the effect of enemy action is probably due to the fact that it is rarely a solitary experience, and morale can therefore be built up against it. By contrast with these communal stresses, which may be said to affect only the periphery of the personality, the infidelity of a wife affects the husband's self-esteem and is aimed at its very centre.

The Need for Thorough Investigation

The record below illustrates the difficulties that may be encountered in the investigation of a case of this kind:

Case 2.—A South African stoker, aged 35, was admitted to hospital ship for the investigation of an intractable dyspepsia, which rendered him useless for duty. No organic abnormality was discovered, but the patient stated that he was very worried about the behaviour of his wife, who, he alleged, was living with another man, squandering his money, and neglecting his home and child. His story, which had some documentary support, was vouched for by the captain of his ship, who had already given him a spell of compassionate leave on the same grounds. On the strength of a recommendation backed by his commanding officer, the Commander-in-Chief granted a further period of leave to enable him to divorce his wife and arrange for the care of his child. On his arrival in Capetown, investigation by the chaplain at the base failed to confirm the man's story, and his subsequent desertion made it probable that the whole tale was a tissue of lies.

This case is instructive in showing the necessity for thorough social investigation, and also because it demonstrates how misguided would have been the alternative measure of invaliding such a man on the grounds of his dyspepsia.

Methods of Investigation

The inquiry into the circumstances and the treatment of such cases is by no means easy: under the existing system the divisional officer is responsible to his captain for the individual welfare of his men; this responsibility is shared to some extent by the chaplain in a big ship or at a shore base. That more men do not go sick from this cause under the exacting conditions of Naval service is a tribute to the efficiency of the system as much as to the stability of the men themselves. The introduction of airgraph letters and cheap cable rates has undoubtedly done much towards allaying the anxiety of men on foreign stations; nevertheless there does seem to be a need for a more specialized branch of social welfare organization to which complex and difficult cases could be referred, especially by the psychiatric specialists in depots, where such cases are usually first seen.

Much can be done, and is being done, by the existing welfare societies, but, since in peacetime it has been found necessary to employ specially trained workers in this field, the need can scarcely be less great in wartime. It is sometimes objected that the Englishman will not tolerate interference in his private affairs, but this prejudice is not borne out by personal experience or by the records of the psychiatric social services. The epic success of a follow-up of 100 families in which both parents had committed suicide marks a high level of achievement, and is a tribute to the workers who carried it out without a single rebuff. The growing demand for trained psychiatric social workers in clinics and voluntary hospitals is an indication that this kind of work is needed and can be effective.

It is possible that a further expansion of the social services—as, for example, by the appointment of a psychiatric social worker to Naval depots—might lead to a reduction in the invaliding rate from this cause. The work of the psychiatrists in hospitals and barracks would be greatly helped by such an arrangement, and it seems possible that the executive branch might also welcome assistance in carrying out what must be a difficult and time-consuming part of their duties.

Summary

The role of domestic difficulties in causing nervous breakdown in the Navy is compared with that of other aetiological factors; special note is made of the bad prognosis in these cases and in those in which there are multiple causal factors. The various types of home worry and the possible causes of its virulence are discussed. The need for thorough investigation is illustrated, and a suggestion is put forward for the enlistment of the services of psychiatric social workers to supplement the existing arrangements.

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THE TONIC ACTION OF STRYCHNINE

BY

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Strychnine is often used as the principal constituent of tonic mixtures. This custom is in part dependent on the belief that in therapeutic doses this drug has a beneficial action on the gastro-intestinal tract, promoting the appetite, rendering the digestive processes more efficient, and thereby increasing weight and general well-being. Strychnine, of course, in virtue of its taste has the action associated with simple bitters which reflexly increases the appetite and the flow of gastric juice. Therefore, in order to determine whether strychnine has any effects other than those due to the taste the drug should be given parenterally.

Experimental Findings

The present research was carried out with the view of finding whether strychnine administered parenterally had any action on

gastric digestion and whether any evidence could be obtained in support of its use as a tonic.

Effect of a Single Dose of Strychnine on the Secretion of the Fasting Stomach.—Four specimens of fasting juice were aspirated at 15-minute intervals. Thereafter 1/20 gr. of strychnine was injected subcutaneously and the juice again withdrawn during the succeeding hour. In four subjects with normal gastric acidity there was an increase both in the volume and in the hydrochloric acid content of the gastric juice after administration of the drug. In three patients with achlorhydria the strychnine failed to stimulate the secretion of hydrochloric acid or to alter significantly the volume of the secretion.

Effect of a Single Dose of Strychnine on the Movements of the Fasting Stomach.—Bennett (1923) stated that small doses of strychnine had a beneficial effect on gastric atony, and quoted Berti to show that as small a dose as 0.5 mg., given orally, caused increased gastric peristalsis. Dickson and Wilson (1925) also maintained that strychnine increases gastric motility. Bastedo (1936) stated that it increased the height of the hunger contractions. Clark (1940), on the other hand, affirmed that strychnine had no effect on gastric movements even when given in large doses. In the present investigation 1/20 gr. of strychnine hydrochloride was given after a period of at least five hours without food or water. Gastric motility was recorded by a modification of Carlson's balloon method (Anderson, 1943). In eight subjects the strychnine was given during a period of quiescence, and in each of them strong gastric contractions appeared after an interval of 5 to 15 minutes, and lasted from 20 to 45 minutes. The movements so produced were strong, and the interval between each wave tended to become shorter towards the end of the period of contractions. In two subjects the strychnine was given after a period of contractions had lasted 35 and 45 minutes respectively; in each case a prolonged period of quiescence followed the administration of the drug. The quiescent phase may have been due to fatigue of the gastric muscle.

Effect of Continued Administration of Strychnine on the Response of the Gastric Secretions to a Test Meal.—The subjects of this investigation were 2 men with a slight degree of hyperchlorhydria and 5 with achlorhydria. Strychnine hydrochloride gr. 1/30 was given subcutaneously three times daily for three to four weeks. Test meals were given before and at the end of the period of strychnine medication. In one patient with hyperchlorhydria the maximum percentage of hydrochloric acid was reduced, while in one achlorhydric a small amount of free hydrochloric acid appeared. In no other patient was there any significant change in the secretion of acid. In four subjects the emptying-time was shortened, while in the other three it was unaltered.

Effect of Subcutaneous Administration of Strychnine on the Weight and General Condition.—Ten patients convalescing from various types of illness were employed for this investigation. In all, the weight had been stationary for three weeks before the drug was given. In addition the haemoglobin had been estimated together with the red and white cell counts. The strychnine was given subcutaneously in doses of 2.9 mg. three times daily for periods of 14 to 28 days. All the patients were on full ward diet and were all encouraged to eat as much as they desired. There were no significant changes in either the haemoglobin percentage or the cell content of the blood. Five patients showed an increase in weight of 1 to 5 lb., while in three patients there was a decrease of 1 lb. and in two there was no alteration.

Effect of a Single Injection of 1/20 gr. of Strychnine on the White Blood Cells.—Sollmann (1936) states that *in vitro* phagocytosis is hindered by very large doses of strychnine, while Edmunds and Lloyd (1923) find an increase in the white cells in healthy dogs. In two patients who received a subcutaneous injection of 1/20 gr. of strychnine no significant change in the number or distribution of white cells was noted.

Summary

From these investigations on strychnine three positive findings emerge: this drug appears, first, to stimulate the fasting stomach to active contractions; secondly, in some cases to hasten the emptying-time after a test meal; and, thirdly, to increase the volume and acidity of the fasting gastric juice. No evidence has been here