plete suppression of malaria, which, a few months ago, constituted 75% of all ill-

Fig. 7.
Monthly Distribution of Reported Cases of Malaria, Crossett, Ark., 1916.
U. S. Public Health Service

Solid line, total cases; dotted line, white cases; broken line, colored cases.

ness; it is now negligible. As these studies are as yet incomplete, the detailed data are not as yet available.

The foregoing summary of activities with reference to malaria is briefly illustrative of the various lines of investigation that are being conducted by the Public Health Service, and some of the results that have been obtained through control operations instituted under its supervision. The services of the staff engaged in these studies are available for consultation to such communities as propose to undertake anti-malarial work, and for such supervision as may be required.

Though the economic losses due to malaria are almost beyond direct computation, the very tangible gains that have followed systematic application of appropriate measures have demonstrated what is possible of achievement. The necessity for further and greater works of education and demonstration, and for continued and extended investigations, is impossible of adequate emphasis; it may be summed up in a quotation taken from a paper of Surgeon von Ezdorf, to whom the writer was deeply indebted and desires to pay his personal tribute: "Malaria in the

South Spells 'Destruction'; Its Control, 'Construction.'"

List of Service Publications with Reference to Malaria

- Reprints by Assistant Surgeon-General H. R. Carter:
Supplement No. 13, "Malaria—Lessons and Its Cause and Prevention."
Reprint No. 105, "Anti-Malarial Measures for Farm Houses and Plantations."
Reprint No. 156, "Malaria in North Carolina."
Reprint No. 175, "Quinine Prophylaxis for Malaria."
Reprints by Surgeon R. H. van Ezdorf:
Supplement No. 11, "What the Farmer Can Do to Prevent Malaria."
Reprint from the Journal of the A. M. A., Feb. 7, 1914, "Investigations of the Prevalence of Malarial Fevers in the United States by the U. S. P. H. S."
Reprint No. 159, "Malarial—Index Work—Methods Used in Obtaining Blood, Making Blood-Smears and Staining."
Reprint No. 160, "Malarial Fevers—Prevalence and Geographic Distribution in Arkansas."
Reprint No. 170, "Prevention of Malaria."
Reprint No. 172, "Malarial Fevers—Prevalence and Geographic Distribution in South Carolina, Georgia and Florida."
Reprint No. 186, "Malarial Fevers—Prevalence and Geographic Distribution in Alabama."
Reprint No. 193, "Malarial Fevers—Prevalence and Geographic Distribution in Mississippi."
Reprint No. 272, "Anopheline Surveys."
Reprint No. 277, "Malaria in the United States."
Reprint No. 328, "Demonstration of Malaria Control."
Reprint No. 331, "Endemic Index of Malaria in the United States."
Reprints by Sanitary Engineer J. A. A. LePrince:
Reprint No. 257, "Impounded Waters."
Reprint No. 258, "Malarial Control—Drainage as an Anti-Malarial Measure."
Reprint No. 260, "Malarial Control—Oiling as an Anti-Malarial Measure."
Reprint No. 290, "Anopheles as a Winter Carrier," by Technical Assistant M. B. Mitzman.
Reprint No. 324, "Anopheles Punctipennis Say."

PROPHYLAXIS IN MENTAL DISEASE*

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Medical science has probably made the greatest progress for the public good in the field of prevention. In no branch of medicine has this been more true than in psychiatry and its allied problem, feeble-mindedness. In psychiatry, not only have great advances been made in the methods of examination, classification, care and treatment, but prophylaxis has come to be more and more universally recognized as the only possible solution of the problem of the increasing burden of the insane.

In discussing prophylaxis in mental disorder, it is well first to consider as

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definitely as possible the etiology of insanity. Statements as to the causes of the psychoses are frequently very loosely made, particularly in commitment papers, and it is often some accidental or coincident event, or something which may have rather resulted from the abnormal mental state, that is assigned as the etiological factor. It is quite generally accepted, however, at least in a statistical way, that there are three great fundamental or essential causes upon which, as a basis, insanity may develop, namely: heredity, alcoholism, and syphilis.

Heredity has long been recognized as an important factor in the development of insanity, but it remained for modern psychiatrists, applying the discoveries of Gregor Mendel, the monk, working among his flowers, establishing the so-called Mendelian theory or law of heredity, to state the problem more explicitly. It was found that parents with certain known characteristics or unit traits may be expected to have children a definite proportion of whom will exhibit similar traits. Rosanoff, of the New York State Hospital Service, who has done so much to elucidate the subject of heredity in insanity, has, from investigations of actual family trees, reached quite conclusive findings which seem to coincide with the Mendelian theory. It is yet difficult, of course, to state definitely what is meant by the different unit characters or traits, but at present by heredity is meant not so much an actual inheritance of insanity, but rather a predisposition, an unstable mental make-up or psychopathic constitution. Such persons lack some quality, the absence of which causes them to become upset mentally by circumstances or conditions which a normal person is able to overcome, resist or bear.

The common psychoses as dementia praecox, manic depressive insanity, constitutional inferiority, the psychoneuroses and allied conditions appear to develop upon a basis of heredity in a large proportion of cases where it is possible to obtain complete anamneses.

Alcohol, in a somewhat varying degree, according to the locality being considered, is a real factor in the causation of insanity. In the New York State hospitals, with a total patient population of over 33,000 and an annual admission of about

8,000, alcohol was assigned as the most important etiological factor in over 12 % of cases. But in any locality alcoholic psychoses such as pathological intoxication, delirium tremens, hallucinosis, Korsakoff's psychosis (polyneuritic delirium), alcoholic deterioration, paranoid states and allied conditions, are very infrequent when one considers the multitudes who constantly use alcoholic liquors. As a matter of fact, careful investigation has led to the conclusion that psychoses develop in those who use alcohol because of some inherent constitutional defect or weakness and that alcohol is often only an exciting factor which may simply bring to light a neuropathic state or an actual pre-existing psychosis. Here again one returns to heredity as probably the real basis for many of the alcoholic psychopathic states.

In syphilis, however, is had a real and undoubted casual agent in the various cerebral luetic conditions, the special type, general paralysis of the insane or paresis and in certain cerebral arterio-sclerotic conditions. In the New York State hospitals over 14 % of first admissions were directly traceable to syphilis. The spread of syphilis is closely linked with the evil of prostitution. It is an important consideration that a large percentage of prostitutes are feeble-minded. In this way again, as in the case of alcohol, an intimate — although indirect — relationship is shown to exist between the development of syphilitic psychoses and the problem of heredity.

Without entering into an extended discussion of the question, it seems also as if most, if not all, the psychoses which develop at the critical periods of life, i. e., adolescence, menopause and senility, have as a necessary basis some degree of predisposition or neuropathic constitution.

The limits of this paper will admit only a reference to the contributory, accessory or exciting causes of the psychoses. These are very numerous and many times are perhaps accidental or incidental. Actual injuries to the brain may cause insanity, but this is largely a matter foreign to the present consideration. Infectious diseases, toxic conditions, child-bearing, pellagra—a very prolific cause of admission to the South Carolina State Hospital—and other influences tending to reduce

the general vitality, are frequently associated with insanity as contributory factors. The so-called "mental" and "moral" causes bear a similar relationship, causes such as financial or marital difficulties, deaths of relatives, disappointments of various kinds.

Many if not all of the so-called contributory or exciting causes are experienced by almost every one in general. It can be readily seen, therefore, that it would not be logical or true to consider these alone as sufficient to bring about a psychosis, and it must be the conclusion that a basis of a neuropathic constitution or a natural tendency predisposing toward the development of insanity has existed in these cases.

From the brief and hurried consideration of the etiology of insanity, it has been shown that heredity in the sense of a neuropathic constitution is a most constant element in the development of the psychoses. As a prophylactic aid, therefore, any method of successfully combatting the hereditary influences and their effects must be important.

So far, regulation of marriage so as to rule out the unfit either by a compulsory physical examination or otherwise, and the sterilization of certain classes such as the feeble-minded, have proven to be a disappointment except in a few isolated cases. In some states, laws have been placed upon the statute books with the above in view, but they have simply become dead letters on account of the question of constitutionality. On the other hand, publicity at present seems to be the most practicable prophylactic measure, and popular lectures on marriage, sex hygiene, feeble-mindedness and so forth should prove to be of value in counteracting the marriage of the unfit.

To prevent the increase of the feeble-minded, there is no plan at present more practicable than the segregation, especially of the females, during the child-bearing age. The cost would be large, but not so great as would be the cost of the many descendants of these persons if at large. In order to overcome the objections of parents and friends to segregation, reliance must be placed upon education, the persuasion of social workers, teachers, clergymen, physicians and other influential persons. The attractions of

the institution itself and its facilities for recreation and training will do much toward overcoming whatever sentiment there may be against it.

Having neuropathic tendencies quite generally to combat, all popular movements looking toward the betterment of the race, such as "better babies" movements, should be encouraged and advocated. Such agitations afford excellent opportunities not only to start children properly by instructing parents in accepted methods of infant feeding and other details of care, but also in the spread of propaganda in respect to the management of older children. In this age of what many are pleased to call "enlightenment," it often appears that too little heed is paid to the old, but by no means to be discarded, adage, "Spare the rod and spoil the child." At any rate, in the home firmness of decision and discipline must be maintained. Care must be taken, as Barker pointed out, that too much concession to passing likes and dislikes is not made, especially in the case of nervous young girls in whom, if there is no organic trouble as a basis, there should early be instituted a process of psychic hardening. Plenty of outdoor exercise and play in the active association of other children under judicious supervision, especially in the case of the only child, the teaching of self-reliance, respect for the rights of others, the necessity for the control of the emotions and passions, are among the possible influences for good with which children may be surrounded and which may save a child with neuropathic tendencies from developing later into a neurasthenic, psychasthenic or the subject for a psychosis.

Faulty home influences and surroundings may do much toward aggravating an already present neuropathic disposition. In the home, health and right living should be cultivated that a proper environment may be had for the members of the family. The fostering of a correct mental attitude towards life, a tendency toward optimism, the avoidance of worry, suspicion, envy, hate and the like, all of which if exaggerated form strong bases for the development of psychoses, these are all important as measures of prophylaxis and especially necessary where there are neuropathic tendencies.

The government in many ways is becoming more paternalistic and all are growing more and more dependent upon civil authorities for the correct upbringing of the children. The school is thus becoming increasingly important in the care of the health and the development of the character and mentality of the children. It is no longer a matter of debate as to the necessity for medical inspection of school children. The importance of strict medical supervision is well recognized and the elimination of the unfit and the formation of special classes are natural consequences. In this way the mentally defective or neuropathic are early recognized and many of the latter, by special attention, may be helped to such a degree of readjustment that they may become useful and to casual observers, normal members of the community. Greater efforts should be made to individualize education. It must be acknowledged that all are not fitted for the same course of instruction and that the limitations, natural inclinations or aptitude of the individual should, as far as possible, be given due consideration.

School systems should be prepared to apply such tests as the Binet-Simon for mental deficiency and psychological laboratories with those familiar with such investigations should be provided. In this way, it would be possible to avoid the production of many failures in life and consequent worry and psychosis development. The haphazard, ill-advised and guideless selection of courses in school work is alone often responsible for the misfits one sees in various trades and professions — persons who might in their proper and more simple environment or sphere prove to be successful individuals or at least self-maintaining members of society.

Much can be done in a positive way for race betterment by instruction in the schools in the principles of hygiene. The question of teaching to children the various phases of the sexual life is a debatable one, especially as to the practical methods of instruction. Theoretically, children should obtain their information on such subjects in the home, but practically, in the vast majority of cases, such topics are either tabooed or neglected. Some instruction is necessary and advice

should be available, especially for those who are in the critical period of adolescence or early sex activity and longing. In many cases the family physician can exert the greatest influence for good and has the best opportunity for confidential discussions of such matters. Repression of difficulties or unfortunate experiences and brooding at this period may result later in psychotic disturbances, whereas free discussion and explanation may entirely remove this danger.

As the pupil becomes older and mature, the discussion of the hygiene and mysteries of the sex life should be continued. The dangers of promiscuous sexual activity, the virtue and possibility of continence, the menace of disease and its far-reaching consequences must be indelibly impressed. That this is a difficult task and one to be entrusted only to selected and qualified instructors is acknowledged, but this should not deter nor excuse educational authorities from assuming the responsibility.

Such instruction, together with the early and constant teaching of the necessity for bodily purity in the male and the inculcation of chivalry and respect for womanhood, should accomplish much toward the elimination of the menace of venereal disease. A growing interest in athletics, with the training incidental thereto, should help in the formation of habits of right living, and will often appeal to the individual when the purely moral aspect of the question, which should by no means be neglected, will fail.

Criminologists are coming to recognize more and more the close relationship between insanity or mental defect and crime. The recent movement to establish psychologic and psychiatric investigators in prisons and as adjunct court officers illustrates the modern tendency in this direction. Habitual criminals and the members of their families may be eliminated as defectives and by segregation removed as further producers of their kind, or perhaps by treatment and correction of environment made less dangerous or even useful citizens.

One frequently hears of the "ever-widening influence of psychiatry." No longer can institutions for the insane and the officers connected with them restrict their activities to the small sphere of the

"asylum" as formerly designated. The facilities for advice, observation and treatment must be extended by the establishment of out-patient departments in the large centers of population and psychiatric wards in general hospitals. In this way, as is shown by actual experience, thousands of persons may be reached and benefited in the early and borderline stages of psychosis development and restored to mental health in a short time, avoiding what is now so often wrongfully considered the stigma of commitment in a hospital for the insane. The frequently unwieldy, slow and public methods of commitment procedures, often treating a prospective patient as a criminal, incarcerating him in a jail, escorting him to the hospital, it may be handcuffed in the custody of an officer, must be substituted, so far as possible without endangering his constitutional rights, by prompt and expert examination, care of trained attendants, and quick and unobtrusive method of conducting to the hospital for treatment. The system of voluntary admission must be extended, bringing within reach of many patients, who themselves often realize the necessity for treatment, the early care that insures a brief residence at the hospital. Such facilities are not only of great benefit to the patient, but are really a matter of economy to the state, shortening the length of care in the hospital, consequently lessening the expense and, it may be, restoring sooner a useful member to the community.

Through a system of parole of suitable patients by reason of improvement or recovery, an opportunity may be given for the trial return to self-support for a period of some months, during which time the patient may return to the hospital for further care and treatment without a repetition of the legal formalities should it be deemed necessary. The parole system should be combined with an efficient after-care agency, preferably a member of the medical staff or a social worker, who may have a certain amount of supervision over the paroled patient. Such an after-care worker may render service in advising the return of the patient if indicated in assisting in a change of habits or environment, in helping to obtain a suitable position, in arousing a kindly, help-

ful attitude toward the former patient, in combatting the feeling of suspicion or lack of confidence so often met with, and in adjusting various difficulties in the home, family or environment which might otherwise cause a return of the psychosis. In other words, the state hospital should be the centre of advice for mental health, an active rather than a passive agency for good.

Considering the question of prophylaxis in mental disorders from the standpoint of the public at large, the possibilities of bettering the general situation are numerous. The movement for temperance and prohibition which has been growing with such surprising rapidity should do much toward eliminating alcoholic excesses and resultant psychotic disturbances. Radical legislation is needed upon the question of syphilis. It might be made a reportable disease and thorough treatment compulsory under supervision of civil health authorities. Community, institutional and other Wassermann surveys with prompt treatment of those indicated can not be conducted too often. The question of prostitution, so closely connected, is too broad and difficult for present discussion, but certainly regulation is necessary. As mentioned before, probably in the education of the public lies one of the strongest hopes for future mental betterment. If possible, the young adult should be led to see that there are other considerations than so-called love—so often propinquity—in the question of selecting a mate and the dangers of bad heredity emphasized. Popular lectures should be offered the public giving the causes of insanity, ways of prevention, proper modes of living and healthy attitudes toward the world, general and personal hygiene, and so forth. The public should be informed that many varieties of insanity are curable and that it is not true that "once insane always insane." In behalf of the improved or recovered patient, the public should be taught a sympathetic and helping attitude. The fact should also be published that the possession of a neuropathic constitution or insane heredity does not necessarily mean the development at some time of a psychosis and that the latter may be avoided through the safeguards

of proper mental attitude, environment and general hygiene.

In view of the importance of the early recognition and treatment of insanity, more attention should be paid to the study of psychiatry in the medical schools. The state hospitals, by throwing open the staff meetings to the general practitioner, may also become valuable centers of instruction in a practical way.

One of the most active agencies in promoting prophylaxis in mental disease is the "National Committee for Mental Hygiene." Started as the result of the efforts of the author of "The Mind That Found Itself" to ameliorate the conditions of the insane and to improve the methods of care and treatment, this movement has grown to the most widespread endeavor for the prevention of insanity. By providing competent speakers for public meetings, the preparation and distribution of pamphlets, designed to inform the public as to mental disease, its causes, preventableness, what is done in hospitals and other data which would be of interest to the public, by the formation of local societies of mental hygiene, by the making of surveys, by the furnishing of advice — in these and countless other ways does the committee do much for prevention.

In conclusion, prophylaxis in mental disease would seem to be the most important measure in the solution of the problem of the increasing burden of the insane.

From the standpoint of the etiology of insanity, heredity, alcohol and syphilis are the most frequent factors, while in any case heredity in the sense of a neuropathic constitution would seem to be most constant.

As preventive measures, regulation of marriage and sterilization have so far been impracticable. Segregation of the feeble-minded, however, should be resorted to, especially in the case of females during the child-bearing period. "Better babies" movements and other propaganda designed for race betterment should be encouraged.

In the home, discipline and firmness of decision in dealing with the child should

be maintained. Outdoor exercise and active association with other children should be encouraged. Proper home influences and environment should be provided and a correct attitude toward life taught to the children.

In the school, medical inspection with provision for special classes, individualization of education, equipment for mental deficiency tests and psychologic investigations, guidance in selection of courses and life work, instruction in the principles of hygiene, including the sex question, with guarding against repression or brooding, all are important.

In the court, the recent movement to have as adjunct officers those qualified to make psychiatric and psychologic investigations will add to prophylaxis in mental disorder.

In the hospitals, the "widening influence" as exemplified by out-patient departments and psychiatric wards in general hospitals tends toward prevention. The importance of a prompt and unobtrusive method of commitment, of voluntary admissions, of the extension of the parole system and of after-care agencies should all be recognized.

In respect to the public at large, all temperance or prohibition movements are prophylactic aids.

Some form of legislation against syphilis is indicated. Wassermann surveys with subsequent treatment of those who require it are important. Some kind of regulation of prostitution should be instituted.

Probably the greatest general benefit at present is to be derived by educating the public. More thorough training in psychiatry should be given in the medical schools and the general practitioner would do well to take advantage of any opportunity he may have of gaining practical knowledge such as attending hospital staff meetings.

Valuable information upon the various phases of the question of insanity may be obtained from the "National Committee for Mental Hygiene," which is a most active agency for promoting prophylaxis in mental disease.