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# DRUG ADDICTION AND MEASURES FOR ITS PREVENTION IN THE UNITED STATES

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The better orientation of public policies adopted for the solution of the so-called narcotic drug problem involves a knowledge of when, where and under what circumstances addiction occurs.

The practice of indulging in habit-forming drugs, like the problem of chronic alcoholism and mental disorders, is not limited to any one class of society; the high, the low, the rich, the poor, the weak and the strong are all represented. It has been estimated that 80 per cent of the present addiction occurs in the land of "Hobohemia," or in the underworld. This estimate is probably based on the fact that drug addicts of the underworld are more apt to come under observation, whereas those of the so-called middle and upper classes are usually inaccessible for observation, and the incidence of addiction is unknown.

It is interesting to observe that repeated prison sentences are imposed more often on drug addicts than on other types of federal prisoners, those with three or more prison sentences occurring twice as often among addicts. This contrast is decidedly greater for the country as a whole, however. This situation of repeated prison sentences challenges the usefulness of handling drug addiction through prison sentence alone.

The desirability of modifying pertinent public policies is suggested by the variation in the time elapsing between the ages when addiction becomes established and the age when such individuals are sentenced to prison for the first time. Approximately half of the

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narcotic drug addicts sentenced to prison for the first time have been addicted to the use of habit-forming drugs for eleven or more years; about 25 per cent have been addicted for twenty or more years, and 25 per cent for six years or less. In general, those addicted earlier in life have a greater time elapsing between the date when addiction becomes established and the date of first prison sentence. These factors suggest that, so far as remediable public policies are concerned, drug addiction has been regarded as a penal and correctional problem, like that of the insane of an earlier day, without cognizance being taken of its medicosociological and economic significance.

It is desirable to point out that no one occupation possesses a monopoly of the practice of using habit-forming drugs, and no nationality, race, color or social class is exempt, for drug addicts are found in most unexpected places.

Contrary to widespread belief, some drug addicts are engaged in lawful and gainful occupations. These comprise users accustomed to small doses that are kept constant for years. Those tending to increase their dosage are more often found among the irregularly employed, the unsteady, and the floating, loafing, "racketeer" population of a community. The migratory habits and unfixed residence of these people are proverbial.

Males predominate among drug addicts coming within the field of observation in the proportion of about four white males to one white female. The proportion of women is somewhat higher among the Negro group. A very large number of women drug addicts who come within the scope of observation are prostitutes.

The distribution of drug addicts observed among the white and the Negro populations shows higher quotas among the Negro group, especially for Negro females, when compared with white females. Studies of the nativity of drug addicts indicate that there is no significant difference in this respect from that observed in the general population. The foreign born, the native born of native parentage, and the native born of foreign or mixed parentage occur in about the same proportion in the addict and in the general population groups.

Separation and divorce are more common among drug addicts than in the general population, divorce

occurring about five times as often. Widows and widowers are also found more often among addicts. Marriage among female drug addicts occurs in about the same frequency as marriage among females of the general population. Marriage of male addicts, however, occurs with less frequency than marriage of males in the general population, there being a disproportionate number of single men without homes or without family ties among them.

The educational status of persons addicted to the use of drugs is somewhat higher than that of the general population; illiteracy, however, occurs somewhat more often among those addicted. About the same proportion of drug addicts finish the fifth and the eighth grade in schools, enter and finish high school, or go to college, as is observed in the general population. There is, however, a relatively higher proportion of the professional classes in the addict group.

Drug addiction is most prevalent in the larger urban centers. It is also observed in smaller cities and towns, and in rural communities. Studies of the commitments of drug addicts to prisons, jails and reformatories throughout the country show variability in geographic origin. Investigations of prison commitments for violation of the narcotic laws indicate that drug addiction is very widespread and that its geographic distribution corresponds generally with the density and geographic distribution of the general population of the country. This is true for those who are registered to deal in and handle narcotic drugs and for those who are unregistered.

Persons addicted to the use of habit-forming narcotic drugs are found in all age groups above the age of 15 years. Relatively few come under observation during the first two decades of life, about one fifth in the third decade, and more than one third in the fourth decade, or about 57 per cent under the age of 40 years. About one third are represented in the two decade age periods of 40 to 60 years, and relatively few after 60 years of age. Drug addiction is therefore represented in each age period above 15 years, but with a greater concentration in the 25 to 45 year age groups.

These observations apparently indicate that addiction to the use of habit-forming narcotic drugs is wide-

spread throughout the United States; that all classes and groups of the general population are affected in one way or another; that occupation, periods of life, nativity, sex, color, marital or educational status, are not exempting factors. It appears that drug addiction is somewhat like an endemic disease, for it is through and on the people. If this is true, drug addiction constitutes a medicosocial problem of concern and importance to local jurisdictions, to the state and to the nation. Although federal agencies are charged in law with certain functions respecting this medicosocial problem, it is nevertheless of sufficient importance to enlist the interests, activities and support of local and state governments; of local, state and national associations, and of official and nonofficial agencies and organizations to the end that a coordinate attack may serve in its solution.

The economic loss to communities caused by drug addiction should be of interest to the legislator, business interests, and the practical administrator of public affairs. An intangible but important aspect of the problem is the economic loss through addiction in the prime of life, and the suffering and depredation of individuals whose families are not infrequently impoverished thereby.

It is impossible to determine the exact number of narcotic drug addicts in the United States. Various estimates have been made, however, based on a variety of factors, and approached in different ways. A comprehensive publication appeared in 1924 by Kolb and DuMez, wherein previous estimates and surveys were reviewed and an estimate of the number of drug addicts calculated on the theoretical possible quantity of drugs available to satisfy the craving of addiction. Their estimate places the number as not greater than 150,000. These authors consider that probably the more accurate and correct estimate would be near 110,000.

Other estimates have been made, based on first hand contact with the problems of narcotic law enforcement. The number of narcotic addicts compiled from that source is estimated by the Bureau of Narcotics, of the Treasury Department, as not to exceed 100,000. Terry estimates that there are at least 90,000, based on an analysis of the legal distribution of drugs in Detroit.

Other estimates have been made also which are not based on any standard bodies of observations.

It is highly probable, based on knowledge available, that there is not more than one narcotic drug addict to each thousand of the general population of the United States. Any estimate in excess of two per thousand of the general population may be considered, in the light of present knowledge, as an exaggeration. However, it is not so important to determine the exact number of narcotic drug addicts in a country as it is to determine the extent to which addiction affects the various groups or components of the population, and whether or not it constitutes a medicosocial problem demanding solution.

## THE CAUSES OF ADDICTION

Ease of access to habit-forming narcotic drugs must be considered an important causative factor in addiction. The more important precipitating or immediate causes of addiction, however, are related to the previous uses of such drugs in medical treatment, to self treatment for the relief of pain, to recourse to drugs during emotional distress, to the influence and association with others who are habituated to their uses, to overcome drunkenness, and to indulgence for the sake of experience, curiosity, a thrill or bravado.

The more important predisposing or underlying causes of addiction are related to the inherent constitutional make-up of the individual. The nervously unstable person is more prone to embrace the habitual use of narcotic drugs than one with a stable constitution. This is one way of saying that those with mild psychic disorders, or those of faulty personal constitution or mental make-up, constitute a variable proportion of addicts. An approach to the partial solution of narcotic drug addiction must therefore take into account the mental hygiene factors involved.

Drug addiction, like chronic alcoholism, becomes established at a much earlier age than is ordinarily supposed. It is usually established at a later period in life among those who handle drugs professionally or legally than among those unauthorized to handle narcotic drugs for professional or business reasons. In every hundred addicts authorized to deal in drugs,

approximately four become addicts before 25 years of age, seventeen before 30 years, and forty-seven, or less than half, before 40 years of age. Among addicts unauthorized or unregistered to handle narcotic drugs for professional or business reasons, almost half acquire the habit before 25 years of age, and two thirds before 30 years of age.

The causative factors of addiction are found to be different in degree when comparison is made between those unauthorized to deal legally in narcotic drugs and those authorized to handle them. Among addicts licensed to deal in narcotic drugs for professional or business reasons, and who are accessible for study and observation, more than three fourths attribute their addiction to the previous use of these drugs in medical treatment or to self treatment for the relief of pain. Relatively few attribute their addiction to contact and association with other addicts, to a desire for experience, to satisfy curiosity, to obtain a thrill, or to their use during emotional distress. Among the unregistered group, almost half attribute their addiction to contact and association with other addicts. A proportion attribute their addiction to a desire for experience or bravado, to satisfy curiosity, to obtain a thrill, to allay emotional distress, or to overcome drunkenness. A proportion, however, attribute their addiction to the previous use of drugs in medical treatment and to self administration for the relief of pain.

## PREVENTION OF ADDICTION

The enforcement of restrictive measures imposed by law, governing the importation, manufacture and distribution of narcotic drugs, bears a relation to prevention, since ease of access to such drugs is an associated causative factor of addiction. The first of these laws dealt more especially with safeguards surrounding the sale and distribution of drugs in an effort to limit their abusive uses. These local efforts, which are by no means uniform, eventually became crystallized into a federal measure for controlling commerce in narcotics. Inadequacies in these measures soon became apparent, and further elaboration in control was necessary, until in the United States today all manufacturers, dealers, pharmacists, physicians, dentists and veterinarians must

be registered to deal legally in such drugs for professional or business reasons. A complete recording system is maintained of all imports, manufacture, sales and exports of these drugs.

But these measures for domestic control have been inadequate to meet the situation, since large quantities of habit-forming narcotic drugs are smuggled into the country each year. These supplies have their sources usually in countries where drugs are manufactured in excess of the medicinal and scientific needs.

The United States can be protected against this avalanche of contraband by an international agreement for limiting the world manufacture of narcotic drugs to the amounts required for medicinal and scientific purposes. The provisions of the Geneva Convention of 1931, to which the United States government is a signatory power, is intended to accomplish this purpose and further to control the movement of such drugs in international trade. The convention or treaty of 1931, if honestly and faithfully enforced by all countries, together with the existing measures for domestic control, should play an important rôle in the solution of the drug addiction problem in this country. The treaty was ratified by the United States Senate on March 31, 1932.

But restrictive laws governing the commerce in narcotics are not the only measures to be applied in the solution of this medicosocial problem. So long as there are drug addicts within the country, and so long as addicts are made through contact with other addicts, whose every motive and interest is centered on obtaining and maintaining a supply of drugs, there will be depraved men and women to supply them from any source or sources humanly possible. The need for destroying drug peddling is obvious, but the potential market for contraband must not be neglected.

The isolation and segregation of drug addicts with the object of treatment instead of punishment appears desirable and necessary, for their presence and contact with others in American communities is a potential danger and a causative factor in the production of further addiction. Their segregation and isolation should be for an indeterminate period, contingent on the individual concerned in somewhat the same way as the insane are segregated. A significant change in

federal policy toward this phase of the drug problem occurred in 1929, when Congress authorized two institutions for the segregation and confinement of persons addicted to the use of habit-forming narcotic drugs who have committed offenses against the United States, including federal court, court martial, and consular court cases, for those placed on probation by such courts, and for those who may voluntarily seek treatment.

The control and management of these institutions is vested in the United States Public Health Service through a newly created Division of Mental Hygiene in the Office of the Surgeon General. One of these institutions is now being built near Lexington, Ky., designed to accommodate a thousand or more inmates, and the other has been located in the vicinity of Fort Worth, Texas. The objects, purposes and designs of these institutions are to rehabilitate, restore to health, and train to be self supporting and self reliant those who are admitted. In addition, the control, management and discipline is to be maintained for the safe keeping of the individual and the protection of the community. Industries are to be established to afford occupation, vocational training and education for inmates. Experiments are to be carried on to determine the best methods of treatment and research in this field, and the results disseminated to the medical profession and the general public to the end that states may make some provision and establish a public policy for helping to solve the problem of drug addiction. The functions of these institutions assume the character of a treatment and research center, of an educational, industrial, vocational and rehabilitation center with certain custodial features superimposed. These institutional provisions make an appeal to the humane instinct and may play an important rôle in the prevention of addiction. Nevertheless, other educational factors should not be neglected.

Studies of the quantities of narcotic drugs legally distributed to retailers and dispensers in various sections of the United States indicate wide variations in the per capita requirements of the general population. Great diversity of needs is also observed in different parts of the same communities. The diversified per capita requirements for narcotic drugs for medical pur-

poses in the several communities of the United States, and in the same communities at different times, involve a wide variety of factors, none the least of which concern the choice of the individual practitioner. Investigations, however, have revealed that narcotic drugs are prescribed when indispensable and when no substitutes are available or can be employed. They are also prescribed inadvisedly, perhaps, and contrary to pharmacologic facts and opinions, which are so valuable to the general practitioner. They are unfortunately prescribed, in some instances, for the mere satisfying of addiction. It has already been pointed out that addiction is more readily induced in some persons than in others, one important predisposing or underlying cause being an inherent mental or nervous instability. Since it is known that addiction may be induced by the injudicious use of drugs in persons apparently free from any mental or nervous instability, then it is necessary that greater care must be exercised in their administration to avert this result in the unstable.

It is possible that the abuses of narcotic drugs may be avoided or prevented by giving consideration to the possibility of substituting non-habit-forming drugs whenever possible. When the use of habit-forming drugs is essential, however, care should be taken not to give larger or more frequent doses than are necessary to achieve the desired end. Patients requiring daily administration of habit-forming drugs should be seen often by the practitioner, and the amount of drugs ordered or supplied should not exceed that required by the patient until seen again. Administration on the part of nurses should be limited to prescription, and changes in treatment should be in writing. Patients should not be informed of the name or dose of the drugs administered, and hypodermic administrations should be avoided if possible, and never self administered. The use of the drug should be discontinued immediately when no longer required; and if a craving has resulted, close supervision and appropriate treatment should be maintained until the patient has been rendered independent of the drug.

Valuable results in the judicious use of narcotic habit-forming drugs might be obtained through the medium of instruction to professional students and to practitioners, and through the medium of an authori-

tative memorandum for guidance in this difficult and important problem. This phase of the problem has been approached through the medium of the American Medical Association. THE JOURNAL has published a series of articles on the indispensable uses of narcotic drugs. These articles were prepared by various authors and are now available in book form. The publication has been issued in cooperation with the Committee on Drug Addiction of the Division of Medical Science of the National Research Council and the Division of Mental Hygiene of the United States Public Health Service, and made possible through contributions by the Bureau of Social Hygiene.

Experience has shown that some practitioners order for or supply narcotic drugs to individuals simply to enable those addicted to satisfy their craving, or the circumstances of supply are of such a character as to cast doubt on the method and intent as being bona fide medical treatment. Quantities of drugs have been prescribed over long periods of time for persons seen at long intervals or not seen at all; drugs have been sent by post for some alleged urgent need or have been obtained concurrently from two or more practitioners. In some instances, large quantities of drugs have been purchased or supplied practitioners and used for administration to themselves. It is evident that narcotic drugs have been supplied and used without the necessity for medical treatment and in contravention of the intent of the law.

International treaties and the laws of the land have rightfully made certain professional groups the custodians of these dangerous narcotic drugs. Thinking people of this and other countries believe they have not misplaced this trust, and they expect these drugs to be used for bona fide medical and scientific purposes. The abusive uses of these dangerous drugs and the violations of this trust are problems to be dealt with, corrected and prevented by the concerted actions of representative organizations and leaders among these professional groups in cooperation with law enforcement agencies having responsibilities in the matter.

The problem of drug addiction demands that further research studies and investigations be made, and the results applied in its solution and in the prevention of addiction. The Committee on Drug Addiction of the

Division of Medical Science of the National Research Council, supported by the Bureau of Social Hygiene in cooperation with the Bureau of Narcotics of the Treasury Department and the United States Public Health Service, two federal governmental agencies most concerned with this problem, has inaugurated certain fundamental research activities in this field.

These research studies are of a chemical and biologic character. The first relates to the chemistry of the opium alkaloids, the activity being carried on at the Cobb Chemical Laboratory at the University of Virginia with a view to finding a preparation derived from opium, having all the qualities of a narcotic drug but without addiction properties. The discovery of such a substance would go far toward the prevention of drug addiction. The second, or biologic, studies have reference to the pharmacologic action of these preparations with the object of determining their toxicity and physiologic properties on lower animals. These studies are being carried on in the Department of Pharmacology at the University of Michigan Medical School. Further clinical investigations as to the value of these substances in man are being inaugurated by the Public Health Service incident to the supervising and furnishing of the medical services in federal penal and correctional institutions, and to the establishment of the United States narcotic farms. Progress reports of these studies and investigations are being published from time to time.

The present status of knowledge concerning the nature of drug addiction leaves much to be desired. The phenomena of drug tolerance and addiction, the disturbances in water, lipoid and carbohydrate metabolism, the dysfunction of the endocrine and vegetative nervous systems, the effects of these drugs on the mind, and the euphoria experienced from the continuous use of opium or its derivatives are all subjects on which great diversities of opinion exist. They demand further coordinate research for their solution. The exact nature of narcotic drug addiction will be better understood through a chemicopharmacologic, biochemical, psychobiologic and medical approach.

The necessity of prolonged or life-long administration of narcotic drugs is not universally held in this

country. The fact that it is held by some individuals makes it difficult to assume that the continuous administration in nondiminishing doses is necessarily inconsistent with ethical medical treatment. It is apparent that this phase of the subject is much confused with and involved in the much broader question of ambulant versus institutional treatment of drug addiction. In the United States the ambulatory treatment of drug addiction, while theoretically possible, has been condemned as impracticable by the majority of medical opinion. According to the modern conception, crystallized in socially and legally sanctioned laws, drug addicts or persons requiring continuous and nondiminishing doses of opium or its derivatives are unpopular and regarded as a menace to the social order. They appear to constitute a medicosocial problem demanding institutional segregation and treatment. There is, however, no treatment for drug addiction from the standpoint of specific cure that will miraculously operate to rid drug addicts of their addiction.

The treatment of drug addiction automatically divides itself into three phases, involving, first, the detoxication or physical rehabilitation stage; second, the emotional stabilization and reeducational phase, and, third, the social placement and community supervision phase.

The problem of institutional treatment, however, must take into account the diverse motives or underlying reasons for seeking treatment, the incidence of intercurrent diseases and defects in such a group, the great differences in the types of personalities involved, and the need for protecting the institutional community against the weaknesses and cupidity of its component individuals.

There are, of course, some persons addicted to the use of habit-forming drugs who sincerely desire to throw off the so-called slavery of the drug, but this sincerity vanishes when withdrawal symptoms appear. There are those who seek treatment through coercion by friends or relatives, the individual having little sincerity or desire to throw off the habit. Then, too, there are those who seek treatment because of their desire to impress the court or court official. Others seek treatment because an institution offers a convenient refuge from the police, because of a desire to

reduce the daily dose of the drug, thus lessening the expense of maintaining themselves in a future daily supply, and still others because of their need for maintenance and support.

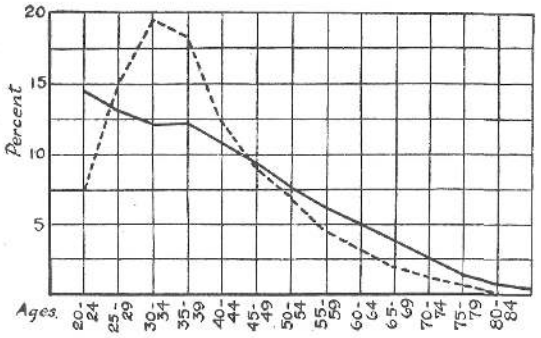


Fig. 1.—Comparison of ages of drug addicts of the United States with age distribution of general population (drug addicts coming within the purview of the law during the period July 1, 1929, to June 30, 1930, compared with age distribution of general population according to U. S. Census of 1930): solid line, population; broken line, all addicts.

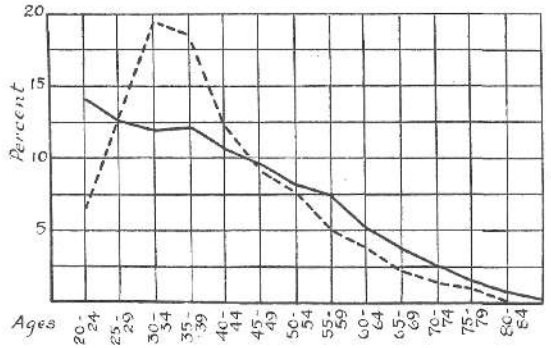


Fig. 2.—Comparison of ages of male drug addicts of United States with age distribution of general population (male drug addicts coming within the purview of the law during the period July, 1929, to June 30, 1930, compared with age distribution of general population according to U. S. Census of 1930): solid line, population; broken line, male addicts.

The intercurrent diseases observed among these people embrace the whole category of medicine, and their needs involve provision for the ambulant, semi-ambulant, bedridden, and convalescent sick. The diverse personalities involved point to the need for appropriate

classification and groupings as a necessary corollary to treatment, based on first-hand knowledge of the antecedent, social, educational, industrial and economic background, together with an analysis of the character

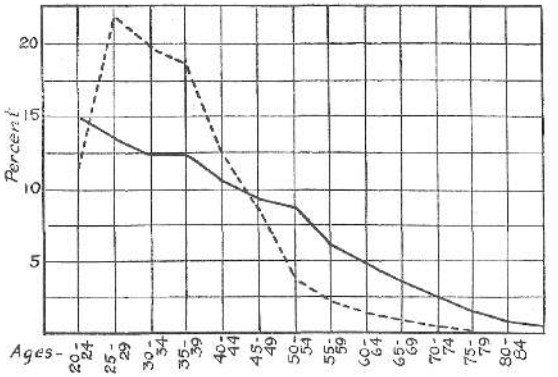


Fig. 3.—Comparison of ages of female drug addicts of United States with age distribution of general population (female drug addicts coming within the purview of the law during the period July 1, 1929, to June 30, 1930, compared with age distribution of general population according to U. S. Census of 1930): solid line, population; broken line, female addicts.

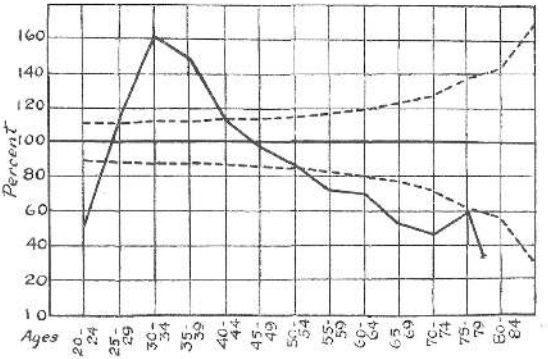


Fig. 4.—Deviation of ages of addicts from expectancy (the excess and deficiency of addicts in different age groups as compared with the general population; drug addicts coming within the purview of the law during the period July 1, 1929, to June 30, 1930); broken line, number of people in different age groups used as the base; solid line, index of the number of addicts in different age groups; $\pm 3$ (S. D.) the odds are about 1 to 400 that the excess or deficiency of the number of addicts cannot be due to chance when it falls outside the broken line zone.

traits of the individual. The appropriate classification and grouping of these people within an institution is important for rehabilitation purposes and for the safety

and protection of the institutional community and the community at large.

THE CHARTS

Figure 1 shows the proportional distribution of ages of addicts in five-year groups. The solid line

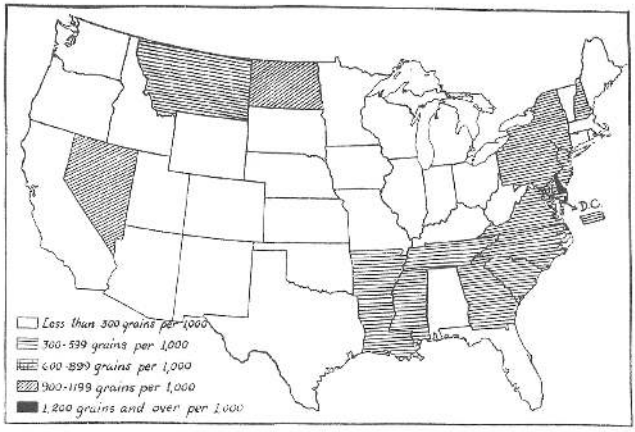


Fig. 5.—Distribution of medicinal opium to licensed retailers and dispensers (grains per thousand of population).

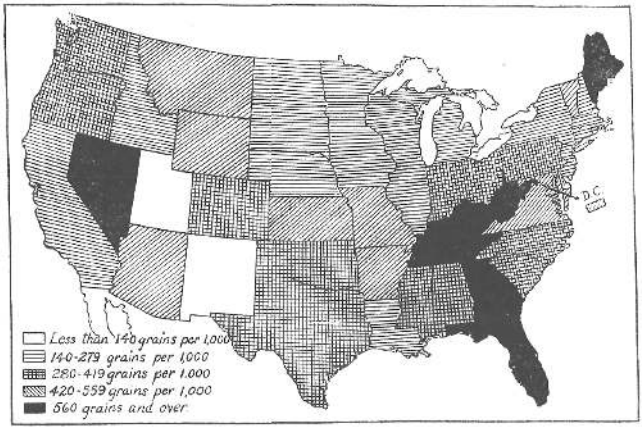


Fig. 6.—Distribution of morphine to licensed retailers and dispensers (grains per thousand of population).

shows the proportional distribution of ages 20 and over in the general population; the broken line shows the corresponding age distribution of addicts. It is to

be seen that in ages 20 to 24 the proportional representation of addicts is less than that of the general population of the same age; in ages 25 to 40, the proportional representation of addicts is greater, being approximately 3 to 2 as compared with that of the general population. The proportion of addicts over 45 years of age is, on the other hand, less than the proportion of persons over 45 years of age in the general population.

Figure 2 shows the proportional distribution of ages of male addicts in five-year groups. The solid line indicates the proportional distribution of males of

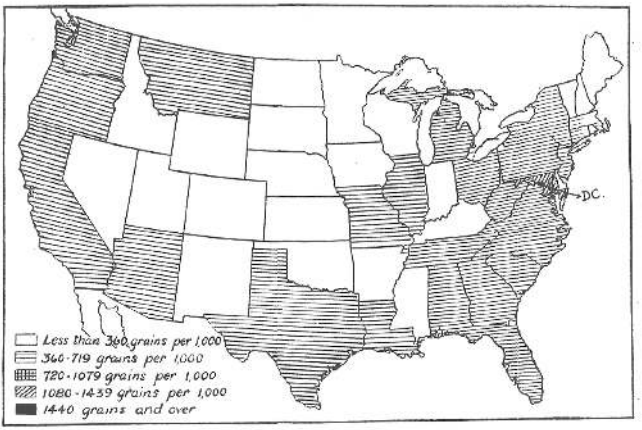


Fig. 7.—Distribution of codeine to licensed retailers and dispensers (grains per thousand of population).

various ages in the general population, and the broken line, the proportional distribution of ages of male addicts. It is to be noted again that there is a deficiency in the proportion of addicts in ages 20 to 24, an excess in ages 25 to 40, and a proportional deficiency in ages 45 and over.

Figure 3 shows the proportional distribution of ages of female addicts in five-year groups. Corresponding with the former graphs, the solid line indicates the age distribution of females in the general population, and the broken line, the age distribution of females who are addicted to the use of narcotic drugs. The distribution is essentially the same as in the case of the

males; that is, a proportional deficiency in the years 20 to 24, an excess in the years 25 to 40, and a deficiency in ages over 45.

Figure 4 shows the age distribution of addicts of both sexes as compared with the age distribution of the general population used as the base, the 100 per cent line. The zone included in the broken lines may be considered as the zone of probability; deviations beyond this zone cannot be attributed to chance, the odds being approximately 1 against 400. It is to be noted, therefore, that the deficiency below 24, the excess between ages 25 and 40, and the deficiency of the

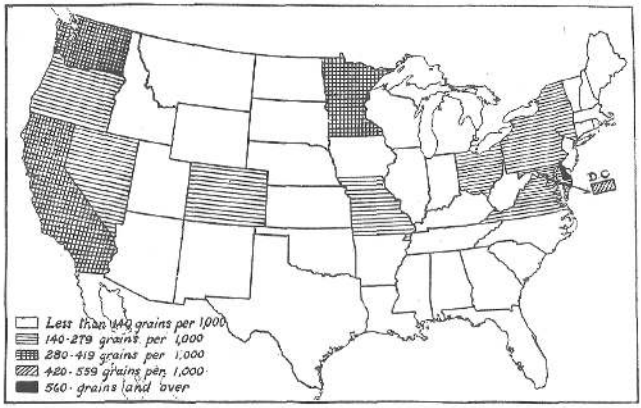


Fig. 8.—Distribution of cocaine to licensed retailers and dispensers (grains per thousand of population).

proportion of addicts after the age of 45 are statistically significant.

Figure 5 shows the distribution of medicinal opium sold to licensed retailers in the different states as obtained from a sample study of sales by manufacturers and wholesalers in 1930. It is to be noted that thirty-one states have an annual opium consumption of less than $\frac{3}{10}$ grain per capita; fifteen states have an opium consumption of from $\frac{3}{10}$ to $\frac{6}{10}$ grain; two states have a per capita consumption of from $\frac{9}{10}$ to $1\frac{2}{10}$ grains, and in one state the annual consumption of opium, as shown by our sample, exceeds $1\frac{2}{10}$ grains per capita. This wide variation in the per capita con-

sumption of opium in the different states indicates that certain states are using an excessive amount of this drug.

Figure 6 shows the distribution of morphine sold to licensed retailers in the different states as obtained from a sample study of sales by manufacturers and wholesalers in 1930. It is to be noted that two states have an annual consumption of morphine of less than $^{14}/_{100}$ grain per capita; seventeen states have a consumption of from $^{14}/_{100}$ to $^{28}/_{100}$ grain; fourteen states a consumption of from $^{28}/_{100}$ to $^{42}/_{100}$ grain; ten states a consumption of from $^{42}/_{100}$ to $^{56}/_{100}$ grain, and in

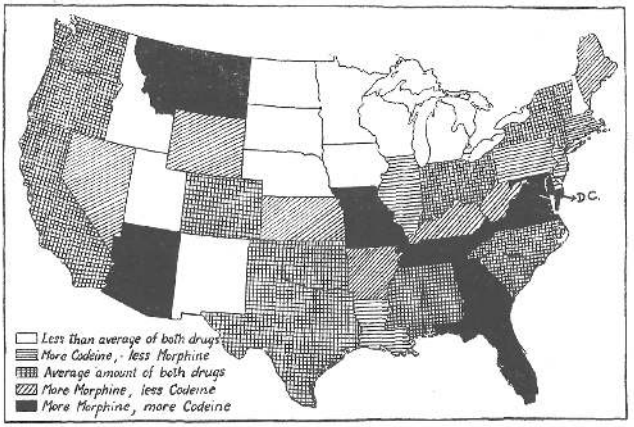


Fig. 9.—Comparative distribution of morphine and codeine to licensed retailers and dispensers (grains per thousand of population).

six states the annual consumption of morphine, as indicated by our sample, exceeds $^{56}/_{100}$ grain per capita. There is again a wide variation in the per capita consumption of morphine in the different states, indicating an excessive use of morphine by certain states.

Figure 7 shows the distribution of codeine sold to licensed retailers in the different states as obtained from a sample study of sales by manufacturers and wholesalers in 1930. It is to be noted that twenty-three states have an annual consumption of codeine of less than $^{36}/_{100}$ grain per capita; twenty-four states have a consumption of from $^{36}/_{100}$ to $^{72}/_{100}$ grain; one state a consumption of from $1\,^{1}/_{10}$ to $1\,^{44}/_{100}$, and in

one state the annual consumption of codeine, as indicated by our sample, exceeds 1 $^{44}/_{100}$ grains per capita. The same wide variation in the per capita consumption is present in codeine as in other narcotic drugs.

Figure 8 shows the distribution of cocaine sold to licensed retailers in the different states as obtained from a sample study of sales by manufacturers and wholesalers in 1930. It is to be noted that thirty-five states have an annual consumption of cocaine of less than $^{14}/_{100}$ grain per capita; nine states have a consumption of from $^{14}/_{100}$ to $^{28}/_{100}$ grain; three states

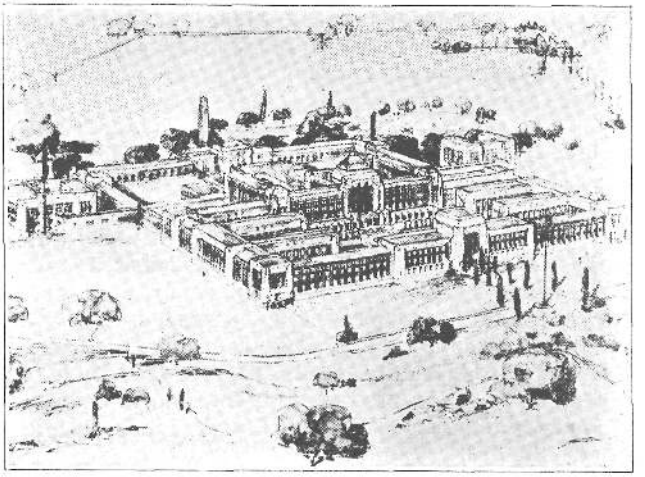

Fig. 10.—The first United States narcotic farm, at Lexington, Ky.

have a consumption of from $^{28}/_{100}$ to $^{42}/_{100}$ grain; one state has a consumption of from $^{42}/_{100}$ to $^{56}/_{100}$ grain, and in one state the annual consumption of cocaine, as indicated by our sample, exceeds $^{56}/_{100}$ grain per capita. This wide variation in the per capita consumption of cocaine in the different states indicates that certain states are using an excessive amount of this drug.

The last map of this series gives a picture of the comparative consumption of morphine and codeine sold to licensed retailers in the different states by manufacturers and wholesalers in 1930. From an *a priori* consideration, it is to be expected that the consumption of codeine is a substitute to more dangerous narcotic

drugs. The comparison, however, shows that, in general, states with a high consumption of morphine usually have a higher consumption of codeine, and vice versa. In twelve states the consumption of both morphine and codeine is below the average; in fifteen states the consumption is about average in both drugs, and in nine states there is an excessive consumption of both drugs. This indicates that in thirty-six states there is a parallelism between the consumption of morphine and that of codeine. In the remaining thirteen states the association is reversed; in seven states the morphine consumption is in excess while codeine consumption is less than average, and in six other states the codeine consumption is in excess of the average and that of morphine less than average.

## CONCLUSION

This paper briefly deals with an epidemiologic approach to the drug addiction situation in the United States; it points out that it is a medicosocial problem of interest and concern to local, state and national jurisdictions, organizations and associations; that a public policy which treats drug addiction solely as a penal and correctional problem is not contributing to its solution; that immediate and remote causes of drug addiction bear a relation to the measures adopted for its prevention in the past, the present, and those pending and contemplated; that measures for prevention demand the full cooperation and counsel of organized agencies representing the professional groups concerned, with law enforcement agencies having responsibilities in the matter; that prevention and treatment necessitate an appreciation of the psychobiologic, chemicobiologic and pharmacobiologic factors involved, and that fundamental research is essential for the establishment of more accurate knowledge concerning the chemistry of alkaloids, of more reliable information respecting their biologic effects in lower animals and in man, and of a more satisfactory evaluation of the many psychobiologic factors intergrading delinquency. Basic facts on these subjects may not be established this year or the next, but systematic and scientific studies by technically trained groups of workers should pave the way to a better understanding of this and related problems.

Unfurling the banner of medicine over the drug addiction situation in the United States is made possible through legislative act. This may be interpreted as a sign of the times, and an expression, first, of dissatisfaction with previous public policies that offered no solution to the problem, and, secondly, of the need for a more fundamental biologic approach. This legislation is all the more expressive when it is appreciated that for the first time in history a general public is showing a wider interest in disorders of the mind and is beginning to interpret social failures, unconventional behavior, and conduct in terms of personality factors having behind them mental, or, more technically, psychobiologic implications. These biologic interpretations, made by an interested public, have been crystallized into the law of the land as affecting the drug addiction problem.

But the general public is also recognizing that public policies of the future, dealing with groups of the population unable to comply with the standards of behavior and conduct maintained by society, must take into account those biologic factors, such as individual antecedent history and heredity, experience and education, and physical and mental status, that may bear on the deviation of a personality in a pathologic or unsocial direction. Then, too, it is being generally recognized that community sources of warped and distorted personalities must be uprooted; that such personalities must have early and adequate treatment best suited for the individual and for the safety and protection of the community; that underlying causes of these biologic misfits must be sought by study and investigation, and that means must be adopted to render less threatening the menace of increase in their number.

Whereas recent legislation requires that the solution of the narcotic drug addiction problem shall be largely a federal activity embracing administrative, investigative and research functions, nevertheless its medicosocial and biologic significance becomes more crystallized when these functions are imposed on the medical profession. It may be significant, therefore, that the United States Public Health Service has been designated ex officio, unsought as it were, the coordinator for carrying out those research functions relating to the eventual solution of the problem.

In concluding this discussion of drug addiction and measures for its prevention in the United States, attention should be called to some experiences of the past. These teach us that depraved men and women are eager and ready to raid those supplies destined for medical and scientific uses when contraband narcotic drugs are not available or are unusually difficult to procure. They will seek every means to divert such supplies from legitimate channels. The adoption of a public policy of segregating, isolating and treating drug addicts as a means of solving this potential menace to the legal supply of dangerous habit-forming narcotic drugs should serve to safeguard the interests of those professional and business groups who are custodians of these drugs.