

*Impaired - Alcohol -**Alcohol**Effects*

Handbook  
of  
MODERN FACTS  
ABOUT  
ALCOHOL

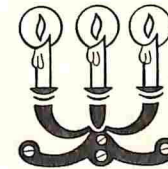
CORA FRANCES STODDARD

# HANDBOOK OF MODERN FACTS ABOUT ALCOHOL

By

CORA FRANCES STODDARD

*Secretary of The Scientific Temperance  
Federation*



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1914





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## FOREWORD

**T**HIS BOOK is an effort to make available in compact and graphic form some of the facts which the scientific study of alcoholic drinks has made available in the past twenty-five or thirty years.

The illustrations reproduce posters prepared for popular use and necessarily assume more of a propaganda type than if intended primarily for circulation merely in book form. They are based upon exhibits prepared for the International Congress on Hygiene and Demography held at Washington, D. C., September, 1912, and upon several years of experiment with diagrams in testing the most effective means of teaching the truth simply enough for the "man on the street," and with sufficient fullness to serve somewhat the interest of the student.

The text contains details concerning the studies illustrated with supplementary data to serve those who may wish to use the book and posters in giving illustrated addresses. As a further aid, certain illustrations are suggested as particularly useful in discussing special topics.

It will be understood, of course, that it is unwise and often impossible to draw large generalizations from these or other facts ascertained by experiment, or from estimates. Some effects of alcohol can never be represented by exact data, such as the number of deaths due to alcohol. Any statement as to such effects must be understood as only an approximate estimate of the truth. On such points the author has chosen to represent such estimates as seemed to represent the work most carefully done, and covering the largest field to avoid the margin of error, even though in some instances the results may be believed to be conservative.

Appreciation is due to the author's co-workers, Miss Edith M. Wills and E. L. Transeau, and to others for suggestions as to the material of this little volume.

# Parents' Drinking Weakens Children's Vitality

Comparison of Children in 50 Abstaining and 59 Drinking Families in One Village in Finland

## WEAKLY CHILDREN

In Abstaining Families

**1.3%**

In Drinking Families

**8.2%**

## CHILDREN WHO DIED

In Abstaining Families

**18.5%**

In Drinking Families

**24.8%**

## DRINK MENACES VIGOR AND LIVES OF CHILDREN

Prof. Taav. Laitinen, University of Helsingfors, Report XII International Congress vs. Alcoholism, 1909.

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## I. PARENTS' DRINKING WEAKENS CHILDREN'S VITALITY

The greater mortality of children of alcoholic parentage has been marked by all scientific observers.

A comparison of children in 50 abstaining and 59 drinking families in one village in Finland was reported by Prof. T. Laitinen, of the University of Helsingfors.<sup>1</sup>

The 109 families included 489 children. Persons were classed as abstaining parents who had never taken alcohol, or at least not since marriage.

The following table shows the comparative facts concerning the groups and their conditions of living:

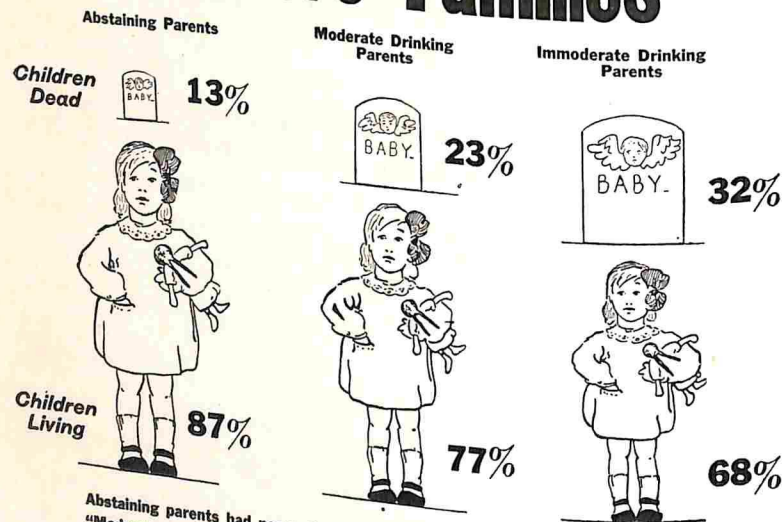
	Abstainers	Non-Abstainers
Average number rooms....	2.83	2.31
Average number children..	4.28	4.72
Average age fathers.....	47.16 yrs.	40.27 yrs.
Average age mothers.....	39.52 yrs.	39 yrs.

The diagram shows that the drinking parents had 6½ times as many weakly children and lost one-third more by death than the abstaining parents. Another fact not shown in the diagram was that in the abstaining families 0.94 per cent of all births were miscarriages; in the drinking families, 6.21 per cent, or nearly seven times as many.

Any effect that a more crowded home may have had in increasing mortality among children of drinkers is again doubtless traceable to the parental drinking habit. Several investigations in the United States have shown that on the average the money spent for drink would have provided at least one additional room.



# Child Death Rate IN Drinkers' Families



Abstaining parents had never drunk alcoholic liquors, or at least since marriage.  
 "Moderates" drank no more daily than corresponded to one glass of 4% beer.  
 "Immoderates" drank daily more than the above-named amount.

## Excessive Death-Rate in Drinking Homes Cost 2,407 Children Their Lives

Statistics of 19,519 children in 5,736 families. Laitinen: XII International Congress on Alcoholism, 1909. Abstaining families lost 13 per cent of children by death. At the same rate drinking parents would have lost 2,156 children. They actually lost 4,563, an excess of 2,407.

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### 2. CHILD DEATH-RATE HIGHER IN DRINKERS' FAMILIES

Professor Laitinen carried his studies of the mortality of children into a large number of families. Fig. 2. illustrates an investigation of 19,519 children in 5,736 families, dividing the latter as to drinking habits into three groups.<sup>1</sup> Parents classed as abstainers had never taken alcohol, or at least not since marriage. "Moderate drinking" parents drank daily no more than the equivalent of one glass of 4 per cent Finnish beer. Here, as in the smaller group of 50 and 59 families (p. 5) Professor Laitinen found that the waste of child life by miscarriage increased with the drink habit. The number of miscarriages was least in the case of abstainers, 1.07 per cent of all births; greater in the case of moderates, 5.26 per cent, and greatest in the case of the "drinkers," 7.11 per cent.

The illustration shows by the relative sizes of the figures of the child and of the gravestone that the abstainers had the largest percentage of living children, and, of course, had lost by death the smallest proportion.

The mortality of children increased with the parental drinking habit.

"If we reflect on the facts," said Professor Laitinen, "we find that all observations, whether made on a small or on a large scale, point in the same direction, namely, that alcohol-drinking by parents even in small quantities has exercised a degenerative influence upon their offspring."

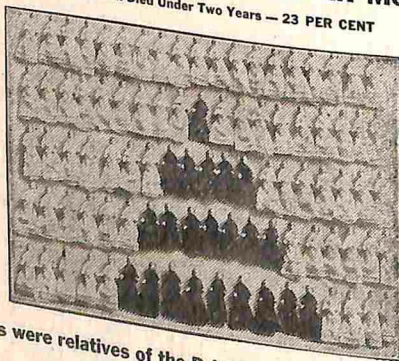
The abstainers lost 13 per cent of their children by death. At the same rate the drinking families would have lost 2,156. They actually lost 4,563, or an excess of 2,407 children. Where so large a number of children is involved, it would appear that the

# Drinking Mothers Lost More than Half their Babies Sober Mothers Less than One-fourth

**Mortality of Children of 21 DRINKING Mothers**  
Children in Black Died Under Two Years — 55 PER CENT.



**Mortality of Children of 28 SOBER Mothers**  
Children in Black Died Under Two Years — 23 PER CENT



The Sober Mothers were relatives of the Drinking Mothers and had Sober Husbands

W. C. Sullivan, M. D., "Alcoholism," 1906.

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drink in the home may have been directly or indirectly responsible for the, therefore, needless deaths of these 2,407 children, or more than one-half of the drinkers' children who died.

Any consideration of child mortality cannot overlook the factor of drink used by the parent.

## 3. DRINKING MOTHERS LOST HALF THEIR BABIES, SOBER MOTHERS ONLY ONE-FOURTH

The babies dressed in black in the two pictures represent those who were still-born or died under two years of age out of every 100 children born to the two groups of mothers.<sup>2</sup> Thus, 21 drinking mothers lost 55.2 per cent of their 125 babies. Twenty-eight women relatives who were sober and had sober husbands lost 23.9 per cent of their 138 children. The 21 drinking mothers were from a group of 120 women from Liverpool Prison who had in all 444 children, of whom 55.8 per cent died under two years. Sullivan, the investigator, excluded as far as possible cases in which alcoholism was complicated by such other degenerative factors as tuberculosis, syphilis and a tendency to nervous troubles, so as to arrive as closely as possible at the excessive mortality due to drink.

## 4. DEATHS OF BABIES INCREASED AS MOTHERS BECAME MORE ALCOHOLIZED

Sullivan also found that the number of children who died under two years of age increased as time went on.<sup>2</sup> Thus, as the diagram (Fig. 4) shows, of the children who were first born, 33.7 per cent died, the percentage increasing with the alcoholiza-



# Deaths of Babies Increased as Mothers Became More Alcoholized

Studies of 444 Children of 120 Alcoholic Mothers

First Born 80 Children

33.7% Died

Second Born 80 Children

50% Died

Third Born 80 Children

52.6% Died

Fourth and Fifth Born 111 Children

65.7% Died

Sixth to Tenth Born 93 Children

72% Died

Of the Living Children 4.1% were Epileptic  
Others were Mentally Defective

W. C. Sullivan, M. D., "Alcoholism," 1906.

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tion of the mother, until of the younger children, sixth to tenth born, 72 per cent died. Several of the living were mentally defective, 4.1 per cent being epileptic.

"This type of alcoholic family frequently appeared in individual cases, as, for instance, in one where the first three children were healthy, the fourth was mentally defective, the fifth was an epileptic idiot, the sixth was dead-born, and finally the reproductive career ended with an abortion.

"The high rate of still-births and abortions proves that the detrimental effect of alcoholism in the mother must be in a large measure due to a direct influence on the germ-cells and on the developing embryo, and can not be explained as merely a result of the neglect and lack of proper nourishment from which the children of the drunken mother are naturally apt to suffer, although the latter indirect influence, of course, also comes into play." (Sullivan.)

## 5. DRINKERS' CHILDREN DEVELOPED MORE SLOWLY

The development of children was studied by Laitinen<sup>1</sup> from a group of 2,125 families of whom statistics were carefully obtained as to the size of dwelling, age, health and alcoholic habits of parents, weight of children at birth and the development as to weight and teething during the first eight months after birth.

There were 840 children whose parents were abstainers, 623 of "moderate-drinking" parents—those who drank daily no more alcohol than corresponds to one glass of Finnish beer (about 4 per cent alcohol). There were 662 children whose parents,

# Drinkers' Children Developed More Slowly

Studies of 2125 Children from 2125 Families

## PERCENTAGE OF CHILDREN WHO HAD CUT TEETH AT EIGHT MONTHS OF AGE

Abstainers' Children 72.5%

"Moderates'" Children 66.1%

"Drinkers'" Children 57.7%

## AVERAGE NUMBER OF TEETH CUT AT EIGHT MONTHS

Abstainers' Children 2.5 Teeth

"Moderates'" Children 2.1 Teeth

"Drinkers'" Children 1.5 Teeth

Abstainers—Those who never used alcohol or at least not since marriage.  
"Moderate"—Those who took no more alcohol than the equivalent of one glass of (4%) beer daily.  
"Drinkers"—Those who took daily more than the foregoing amount.

*These facts tend to show the retarding influence upon the children  
by the consumption of alcohol by their parents. --- LAITINEN*

Laitinen: Report XII International Congress vs. Alcoholism, 1909.

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called "drinkers," drank daily more than the equivalent of one glass of Finnish beer.

In weight at birth and during the succeeding eight months, the children of abstaining families ranked highest, those from "moderate" families next, those from "drinking" families ranked lowest. That is, the children of "drinkers" were smallest at birth and developed most slowly.

In development as shown by teething, children of abstainers cut the first tooth much earlier than those of the drinking groups, and at the end of the eighth month (Fig. 5) the abstainers had the largest percentage of children who had teeth, while the children of abstainers who had cut teeth had the largest average number of teeth. "These facts tend to show the retarding influence upon the children of the consumption of alcohol by their parents." (Laitinen.)

## 6. HAND IN HAND—FEEBLEMINDEDNESS, ALCOHOLISM

Various methods have been used for tracing the interrelation of parental drinking and defectiveness of children. Each method contributes a link in the chain of evidence.

No single group of facts should be considered alone as proof, but each should be taken in connection with the evidence afforded by others.

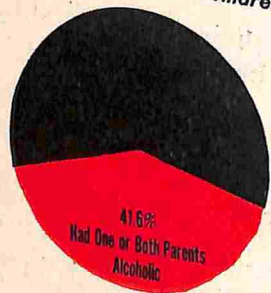
The relation may be traced backward from children to parents as was done in the study<sup>3</sup> illustrated in Fig. 6. In the case of 250 mentally defective children in special schools of Birmingham, Eng., nearly one-half (41.6 per cent) were found to have had one or both parents alcoholic. For comparison 100 normal children from similar homes in the same



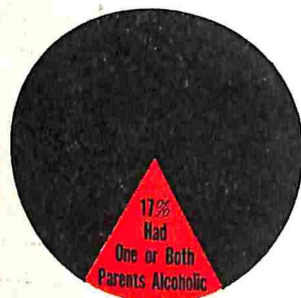
# Hand in Hand Feeble-mindedness Alcoholism

More Alcoholism found in Parents of Feeble-minded  
than in those of Normal Children

250 Feeble-minded Children



100 Normal Children



Five Times as Many Feeble-minded  
as Normal Children  
had Both Parents Alcoholic

Investigations of Children in One District, Birmingham, Eng. by W. A. Potts, M. D.,  
for Royal Commission on Care and Control of Feeble-minded, 1908.

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district were studied, and only 17 per cent came from alcoholic parentage.

Both parents were alcoholic in 5.2 per cent of the defective children, and in only 1 per cent of the normal children.

There was more alcoholism in parents of feeble-minded children than in the parents of normal children.

## 7. MORE WHITE PLAGUE IN CHILDREN OF DRINKING FATHERS

A second method of studying the relation of alcoholism to heredity is to examine the children of drinkers.

Prof. G. von Bunge, Basel University, studied<sup>4</sup> conditions of children of fathers of varying alcoholic habits (Fig. 7). The fathers were divided into four groups: 1. Abstainers or occasional drinkers. 2. Regular "moderate" drinkers who used less than the equivalent of two quarts of beer daily.\* 3. Regular "immoderate" drinkers who used more than the equivalent of two quarts of beer daily. 4. Confirmed drunkards.

In the families shown in the illustration (Fig. 7) only those were recorded where both parents were free from any chronic disease and where the history of the fathers' drinking habits was fully known. All the children had been nursed by the mothers, so had had a fair start.

The percentage of tuberculosis in the children increased with the drinking habits of the fathers.

The poverty which the use of alcohol often causes may lead to overcrowded, poorly-ventilated homes, and these conditions undoubtedly make children more susceptible to invasion by the germs of

\* An error crept into Fig. 7 on this point. Amount of alcohol should be 2 quarts not 2 pints.

# More White Plague In the Children of Drinking Fathers

149 Occasional Drinkers — Children Tuberculous 8.7%

169 Habitual Moderate Drinkers — Children Tuberculous 10.7%

67 Habitual Immoderate Drinkers — Children Tuberculous 16.4%

60 Confirmed Drunkards — Children Tuberculous 21.7%

Moderate Drinkers used less than equivalent of two pints of beer daily. Immoderate Drinkers used more than equivalent of two pints of beer daily. Both parents free from chronic disease

**"Alcoholism must be considered  
the most active co-operator of the  
deadly germ of tuberculosis"**

—S. A. KNOPE, M. D., In International Prize Essay "Tuberculosis," 1908

Alcoholic Poisoning and Degeneration: Prof. G. von Bunge, M. D.  
Basel, Switzerland.

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tuberculosis. But beyond this, investigations have shown that when there is alcoholism in the parent the child is especially likely to contract tuberculosis.

Alcohol prepares the soil for the seed of tuberculosis.

Further, tuberculous patients of alcoholic parentage seem less resistant to the disease when it obtains foothold.

At the Phipps Institute, (Penn.) 1907, 37 per cent of the tuberculous patients who had alcoholic parentage improved,<sup>5</sup> and 13.5 per cent died, but of patients of non-alcoholic parentage 47 per cent improved and only 9.4 per cent died.

"Alcoholism must be considered the most active co-operator of the deadly germ of tuberculosis."—Knopf.

## 8. DEFECTIVE CHILDREN INCREASED WITH ALCOHOLIZATION OF FATHERS

Professor Bunge also studied the nervous condition of children of drinking fathers who were classified according to drinking habits (see classification in description of Fig. 7). The heavier the drink habit in the father, the more numerous, on the average, were the children having nervous or mental defects. The defects included idiocy, epilepsy, feeble-mindedness, St. Vitus' dance, and others.<sup>4</sup>

Some scientists, like Forel, believe that alcohol, like lead and syphilis, may directly injure the germ-cell so that it fails to develop normally and a defective individual results. Other observers believe that alcoholism is itself the expression of some defect in the family line, or that its use is dangerous in possibly bringing out a defect that otherwise would not appear. All scientists agree that alcohol



# Defective Children Increased With ALCOHOLIZATION of FATHERS

*Among the Defects were Epilepsy, Feeble-mindedness and St. Vitus Dance*

219 Children of Occasional Drinkers  
2.3%  
DEFECTIVE

130 Children of Regular Moderate Drinkers  
4.6%  
DEFECTIVE

67 Children of Regular Heavy Drinkers  
9%  
DEFECTIVE

53 Children of Drunkards  
19%  
DEFECTIVE

## Alcoholism and Defects of Brain and Nerves Go Hand in Hand

Regular "Moderate" Drinkers Drank daily less than the equivalent of 2 qts. of Beer; Heavy Drinkers more than this amount.  
Bunge: Graphische Tabellen zur Alkohol, 1907, p. 169.

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seems to increase the frequency of defects, that if there is a tendency to feeble-mindedness, epilepsy or insanity in a family, a larger proportion of cases appear when a parent is alcoholic than when the parent is free from alcoholism.

Alcoholism and defects of brain and nerves go hand in hand.

### 9. ALCOHOLISM AND DEGENERACY

This now famous study was carried on by Prof. Demme, of Berne, Switzerland,<sup>6</sup> his method being to compare the children in two groups of families. He selected twenty families living in the same circumstances, following trades of similar character, as nearly alike as possible in every respect except as to drinking. The parents in ten of the families were sober, having no noticeable alcoholic taint. The parents in the other ten families were very intemperate. He watched the twenty families for twelve years.

The illustration shows the comparative condition of the children in the two sets of families. Only 10 children (17.5 per cent) were normal in the intemperate families, 50 (82 per cent) were normal in the temperate families.

Prof. Demme also analyzed the intemperate families according to ancestral drinking habits and found that the abnormalities increased with the extent of ancestral drinking as the following table shows:

	No. Families	No. Children	% Normal	Died Young	Defective
Father only a drinker...	3	20	7	7	6
Father and Grandfather drinkers .....	6	31	2	15	14
Father and Mother drinkers .....	1	6	1	3	2

# ALCOHOLISM AND DEGENERACY

61 Children in 10 Very Temperate Families  
5 Died in Infancy



2 Had St. Vitus Dance



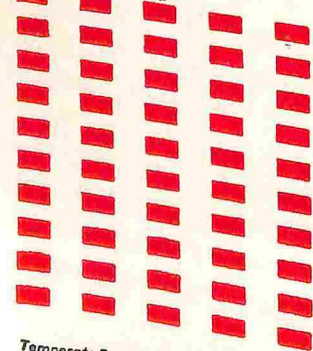
2 Were Backward, not Idiotic



2 were Deformed



50 were Normal



57 Children in 10 Intemperate Families

25 Died in Infancy



1 Had St. Vitus Dance — Idiotic



6 Were Idiotic



5 Were Deformed



5 Were Dwarfed



5 Were Epileptic



10 Were Normal



Temperate Parents Had [Defective Children 18%]  
Normal Children 82%

Alcoholic Parents Had [Defective Children 82.5%]  
Normal Children 17.5%

Demme: The Influence of Alcohol on the Child. Investigations in Berne, Switzerland, 1878-1889. Families lived in same section and were similarly situated except as regards intemperance.

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It might be objected that the probable unhygienic conditions and poor care in the intemperate homes might explain the greater mortality. If true, that, even, might be an indirect result of the use of alcohol by parents, since the money spent for drink would have provided a better home. But the following animal experiments indicate that the difference cannot be explained wholly on hygienic grounds. Various experiments with animals have shown that the young of alcoholized parents have less vigor, die in greater numbers, and show more defects than the young of animals to whom no alcohol is given, but who otherwise are similar. The advantage of these experiments in heredity with animals is that it is possible to get stocks free from nervous taint so that the effects of alcohol can be studied without the necessity of considering the possibility of some pre-existing defect as in human lives. The young of alcoholized animals can be compared with the young of animals non-alcoholized but otherwise living under the same conditions. Several generations can be closely observed in animals in a comparatively short time, which is impossible in human families. While the effects of alcohol on animal life may not in all respects be similar to the effects on human life, when the experience of animals given alcohol corroborates the experience in the human family it would suggest that the alcohol, and not some other influence, is responsible for the result.

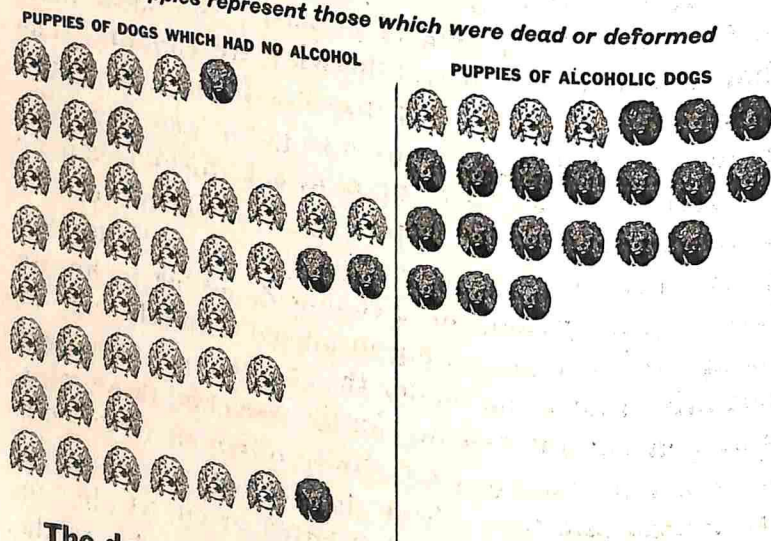
## 10. ALCOHOLIZED DOGS HAD MORE FEEBLE AND DEFECTIVE PUPPIES

Two pairs of dogs were studied as to the effects of alcohol.<sup>7</sup> To one pair of dogs, Bum and Tipsy, Dr. C. F. Hodge, of Clark University, gave alcohol with



# Alcoholic Dogs Had More Feeble and Defective Puppies

**Black Puppies** represent those which were dead or deformed



The dog parents were given alcohol once daily with their food. Not enough was given to cause signs of intoxication

## RESULTS:

**RESULTS:**  
 Alcoholic dogs had 17.4% of their puppies able to live  
 Non-Alcoholic dogs had 90.2% of their puppies able to live

Hodge: Physiological A

Hodge: Physiological Aspects of the Liquor Problem, 1903.

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their food,\* beginning when they were about three months of age, never giving enough, however, to cause signs of intoxication.<sup>7</sup> To the other pair, Nig and Topsy, he gave no alcohol. He compared the working ability, and found that Bum and Topsy tired more quickly and did less work when tested than Nig and Topsy.

When he compared the puppies of the two pairs of dogs, as shown in the illustration (Fig. 10), he found that Bum and Topsy had 15 dead puppies, 8 deformed. Only 4 out of 23 were able to live. Nig and Topsy, who had had no alcohol, had no puppies born dead, 4 were deformed, and 41 out of 45 able to live.†

Thus the proportion of puppies in the dog families was nearly identical with the proportion of healthy children in Professor Demme's two sets of human families.

Number of Young Normal and Able To Live.

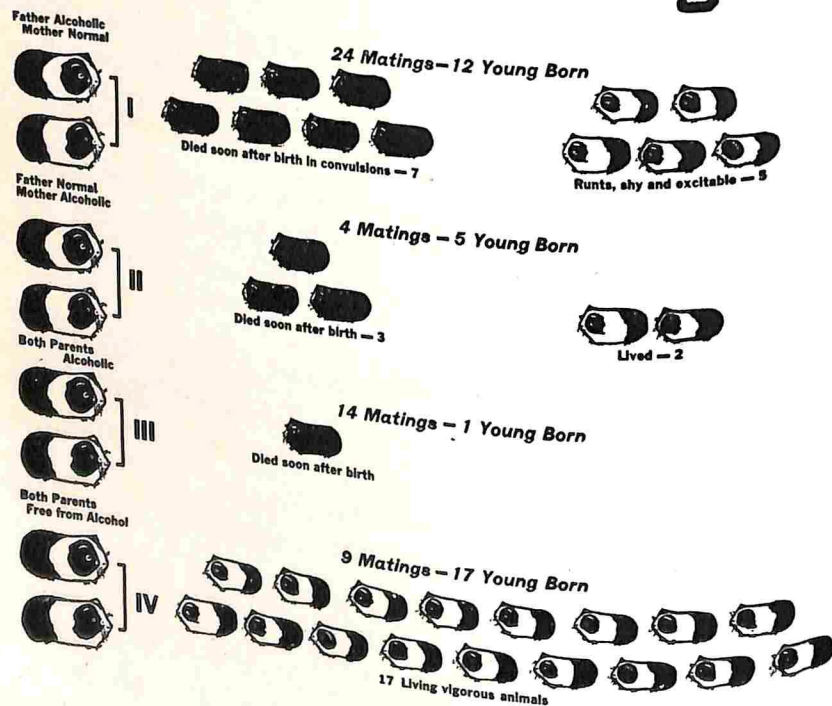
	Of Dogs Per Cent	Of Men Per Cent
When parents were alcoholic. . . .	17.4	17.5
When parents were not alcoholic. . .	90.2	82.0

In the case of the dogs, it was not a question of better care. The dog families had exactly the same care, except that Professor Hodge spent hours working over some of these puppies of the alcoholic parents and "they simply would not put forth the least effort to make a live of it," so much less vigor had they than the puppies of the non-alcoholic dogs.

\*The dose of chemically pure alcohol, four cubic centimeters per kilogram of body weight, was given the parent dogs daily thoroughly mixed with the chief meal.

†Some of the non-viable puppies were also deformed, which accounts for the seeming discrepancy in the figures.

# Deaths, Defects, Dwarfings in the Young of Alcoholized Guinea Pigs



## RESULTS

One or Both Parents Alcoholic: 42 Matings: 18 Young Born; 7 Living, ---5 Not Normal.  
Both Parents Free from Alcohol: 9 Matings: 17 Young Born; 17 Living Healthy Animals.

Stockard: Experiments on Guinea Pigs, Cornell Medical College, Archives of Internal Medicine, October, 1912.

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## II. RESULTS OF ALCOHOLIC PARENTAGE IN GUINEA-PIGS

A very careful and elaborate series of experiments on the effects of alcohol on the young of animals has been done by Dr. Charles R. Stockard, Cornell University Medical School, New York.<sup>8</sup> The experiments were undertaken to ascertain whether alcohol exerts a marked influence on the germ-cells and developing embryos of animals, and, if possible, to show the nature and mode of action of this influence.

Guinea-pigs of strong, healthy stock were used and were carefully handled. All remained in vigorous health. "Most of them increased in size and fattened during the experiments. No structural changes were found in any of the animals examined even after fifteen months of treatment. Their general health and behavior indicated that they were in good condition. One can not claim, therefore, that the treatment [by alcohol] is greater in proportional amount than the alcohol a human being often takes." (Stockard.) They were never intoxicated, but received only enough to affect their nervous states. The alcohol was given by inhalation, because, given with food, the animals did not like it and so took less food. Forced feeding would have upset them so that the results on offspring might have been modified by their poor bodily condition.

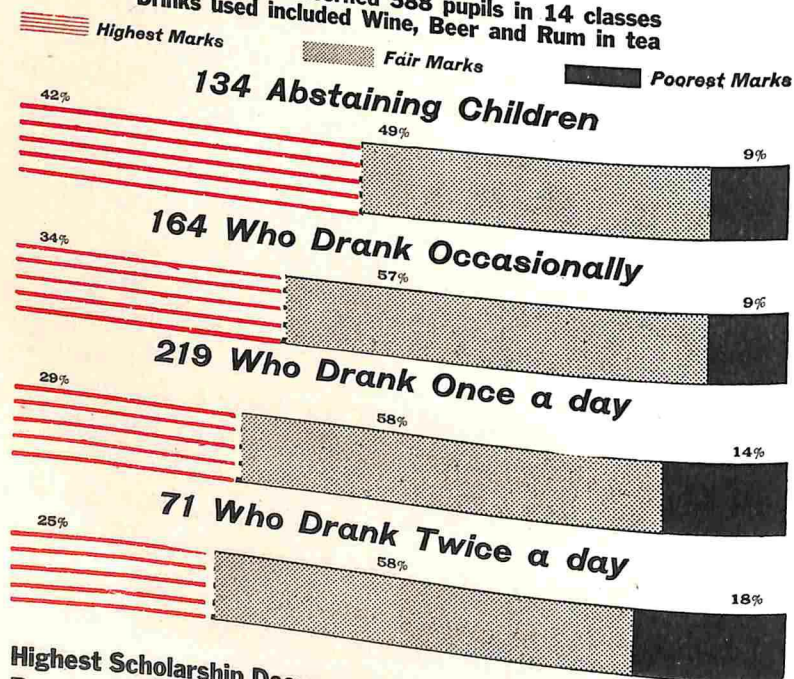
Group I in the illustration (Fig. II) shows the result when alcoholized fathers were mated to non-alcoholic mothers — 12 young born alive from 24 matings (8 still-born). Only 5 lived, and these were unusually small and very shy, excitable animals. The 7 which died soon after birth "showed various



# Drink Impaired Scholarship

## A Comparison of Abstaining and Drinking School Children in Vienna

Investigation concerned 588 pupils in 14 classes  
Drinks used included Wine, Beer and Rum in tea



Highest Scholarship Decreased  
Poorest Scholarship Increased | As the Use of Alcohol was Increased

Investigation by E. Bayr, School Director, Vienna, 1899.

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nervous disturbances, epileptic-like seizures, and in every case died in a state of convulsion. This is commonly the fate of feeble and nervously defective children.

"This is really crucial proof of the influence of alcohol on the germ-cells, since the defective offspring must be due to the modified germ-cells of the father."

Group II. Mothers alcoholized, fathers normal. Only 2 survived out of 5 young born. "In such cases the alcohol may modify the germ-cells of the mother or act directly on the developing embryo."

Group III. Parents both alcoholic. As might be expected, this group shows the highest fatalities. Only one living young was born from 14 matings (6 still-born), and this one was weak and died in convulsions 6 days after birth.

Thus 42 matings when one or both parents were alcoholized gave only 7 surviving young, of whom 5 were stunted and nervous.

Group IV. Here neither fathers nor mothers had alcohol. From 9 matings 17 young were born, all lived, and all were large, vigorous animals for their age when the experiments were reported.

## 12. DRINK IMPAIRS SCHOLARSHIP

In many of the European countries, parents often give children wine or beer believing it is harmless, even a beneficial drink. In homes transplanted to America the custom continues. In a survey made by the Cincinnati Tuberculosis Society in 1912, in four districts it was found that in the Hungarian families 42 per cent of the children drank beer; in the Italian families, 49 per cent; in the Irish families, 48 per cent.



# WINE DRINKING SCHOOL CHILDREN DID POORER SCHOOL WORK THAN ABSTAINERS

Records of 3,999 Pupils in Brescia, Italy

▬ Highest Marks

▬ Fair Marks

▬ Poorest Marks

462 Abstaining Children



1516 Drank Wine Occasionally



2021 Drank Wine Daily



**Wine, Beer or Other Alcoholic Drinks  
are Harmful to Children**

A. Schiavi, Brescia, Italy, L'Abstinence, Nov. 13, 1909.

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These boys and girls are future parents and citizens of America.

The ill effects of alcohol upon children have been frequently noted in recent years. The Hungarian Official Alcohol Commission<sup>9</sup> found that more than a third of the alcohol-using pupils were careless and idle; 20 per cent nervous and restless. At least 10 per cent gave confused answers in the first hours of the morning after the breakfast beer or wine. Hecker, in the Munich, Germany, public schools found<sup>10</sup> that the slowness of perception increased, and diligence and progress decreased with pupils in proportion to the extent of their drinking habits, the abstainers in all respects outranking the drinkers.

The illustration (Fig. 13) shows the results of a study of Vienna (Austria) school children by Emmanuel Bayr, a school director.<sup>11</sup> Observing that certain children were disobedient and unsatisfactory scholars, he noted finally that most of these children came from homes where the parents allowed them to use alcoholic drinks. At last, with the co-operation of teachers in 14 classes, reports were secured on the drinking habits and class work of 588 pupils. Those who drank used wine, or beer, or rum in tea. As the illustration shows, the highest marks decreased, the mediocre and poor marks increased with the use of alcohol. There were three children not shown in the illustration who drank alcoholic liquors three times daily, and no one of them had marks of high rank.

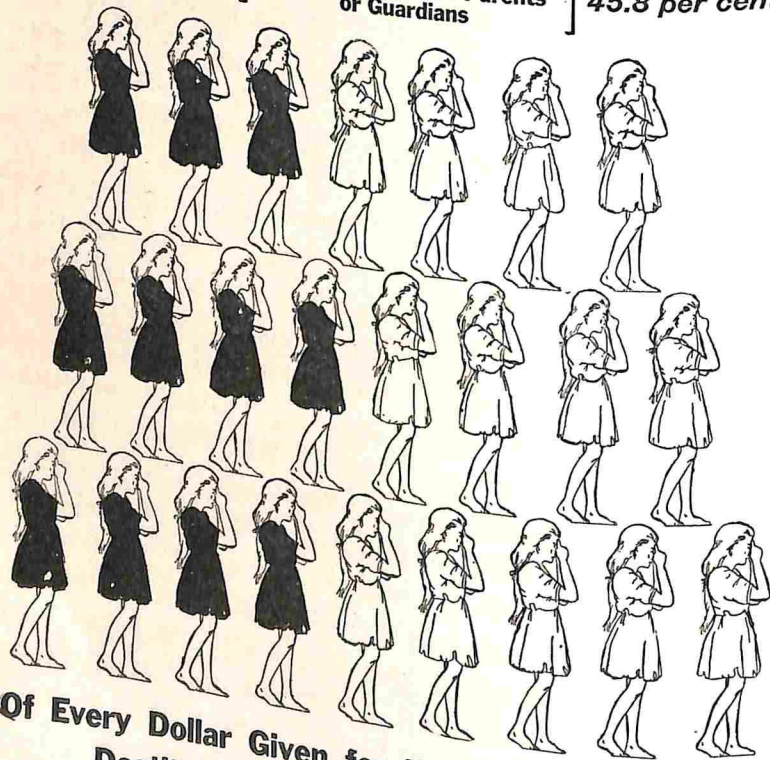
**13. WINE-PRODUCING SCHOOL CHILDREN  
DID POORER WORK THAN ABSTAINERS.**

A study of school children in Brescia, Italy,<sup>12</sup> similar to that of Bayr in Vienna, except that the



# DRINK BURDENS CHILDHOOD

Children in black [Abused or Neglected because of Intemperance of Parents or Guardians] 45.8 per cent



Of Every Dollar Given for Relief of Neglected or Destitute Children \$0.46 Goes to Care for the Results of Drink

Statistics of 5,184 Children: Committee of Fifty, 1899.

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children used wine only, showed again that the abstainers held highest rank, that mediocre and poor work increased with the use of wine.

Much evidence shows that wine, beer or other alcoholic drink is harmful to children and should never be given them.

## 14. DRINK BURDENS CHILDHOOD

Besides the direct effect of alcohol upon the vigor, vitality and education of children, account must be made of the indirect effects from an alcoholic environment. In every state and city of any considerable size, there are agencies for the relief and care of destitute and neglected children. In the illustration (Fig. 15) the children with black dresses represent as closely as possible the proportion whose misery was due to the intemperance of those who should have cared for them. Forty-six out of every 100 such children (45.83 per cent) owed their condition to the liquor habits of parents or others, according to the statistics gathered in 1899 by the Committee of Fifty.<sup>13</sup> In other words, 46 cents of every dollar spent for the relief of these children went to take care of the results of drink.

Five thousand, one hundred eighty-four children were studied in this investigation, which was made through societies in eight states for the prevention of cruelty to children, humane societies, state organizations of the National Children's Home Society and two state public schools which were, in fact, state orphan asylums.

## 15. CHILDREN IN MISERY

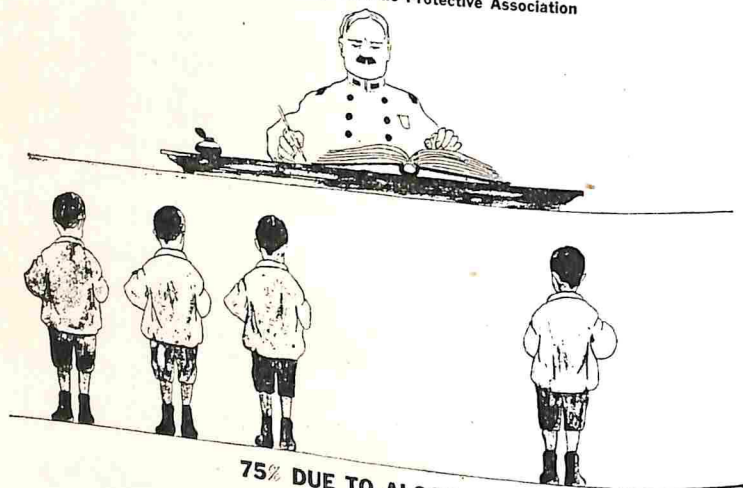
The Chicago Juvenile Protective Association in the first six months of the year 1910 dealt with 1,379 cases of adult delinquency toward children.



# CHILDREN IN MISERY PARENTS' DRINK TO BLAME

## IN AT LEAST THREE CASES OUT OF EVERY FOUR

Handled by the Chicago Juvenile Protective Association



75% DUE TO ALCOHOL

The Child's Birthrights are  
To be Well Born  
To be Well Cared for  
To be Well Trained  
DRINK SPOILS ALL THREE

Statistics compiled by Gertrude H. Brittan, Supt. Chicago Juvenile Protective Assn., from 1,379 cases of Adult Delinquency, Jan. 1-June 30, 1910.

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Out of this number, 1,034 (75 per cent), or three out of every four, represented in Fig. 16, had drunkenness as the chief cause.<sup>14</sup> The secretary of the Association stated that if the figures were to be compiled for one or two years, it would show that intemperance was responsible for more than 75 per cent of this child misery. It may safely be believed that alcoholic liquors were a considerable factor in the other causes of delinquency toward children.

Judge Gemmill, of the Chicago Court of Domestic Relations, found that 42 per cent of the unhappy homes referred to him (1912) owed their unhappiness to alcoholic drinks. Such homes mean unhappy or wretched, and certainly poorly-trained children.

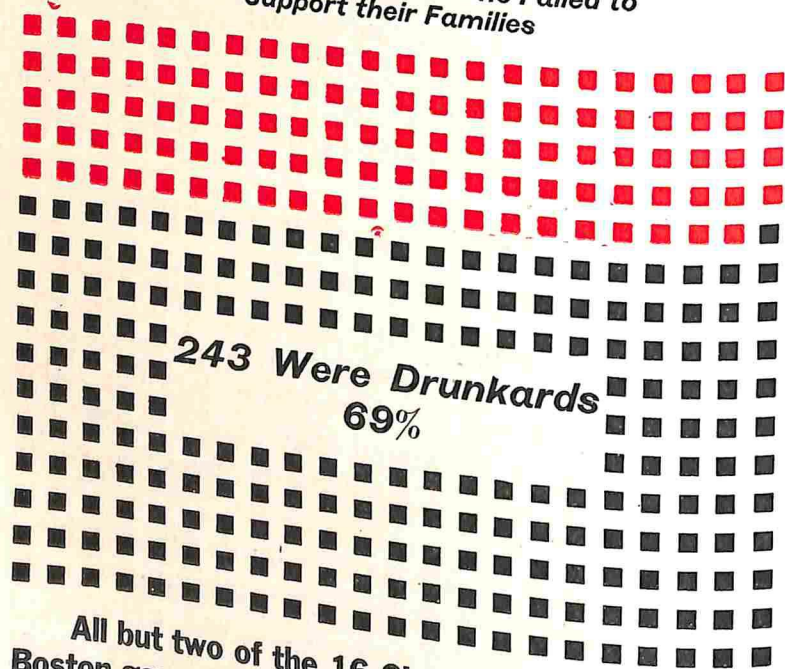
### 16. DRINK CUTS INTO THE SUPPORT OF THE FAMILY

The Committee of Fifty reported that desertion of children by drunken parents is even more common than the abuse which would make them liable to arrest. "It is estimated that about 16,000 children annually in the United States are deserted by their parents."<sup>15</sup>

In 386 cases of desertion of the family compiled by Miss Brandt<sup>15</sup> from charity organizations in 25 cities of the United States, drink was given as a cause of desertion in at least 20 per cent. As 325 of the men and 43 of the women were hard drinkers, the drink habit undoubtedly entered into other characteristics given as the actual cause of desertion, and so of non-support. Alcohol impairs efficiency, tends to crowd the worker down from the skilled to the unskilled occupations, and so lessens earning ability, lessens the sense of responsibility for the maintenance

# DRINK CUTS INTO SUPPORT OF THE FAMILY

*Of 352 Able-Bodied Men who Failed to  
Support their Families*



*All but two of the 16 Charities' Conferences of  
Boston gave Intemperance as the Chief Cause  
of Non-Support in the Cases Studied.*

## PHILANTHROPY PAID THE BILL

Report Associated Charities, Boston, Mass., 1910.

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nance of the family, tends to create a craving for increasing amounts which call for money needed by the family for support.

Hence, there is a reason for the facts shown by Fig. 16. It represents 352 able-bodied men who in one year in Boston failed to support their families. The Associated Charities appealed to for aid by the families found on investigation that 243 of these men (69 per cent) were drunkards (shown by the black section.)<sup>16</sup>

All but two of the charity conferences of the city gave intemperance as the chief cause of non-support in these cases.

Drink caused failure to support the family.  
Philanthropy paid the bill.

### 17. TILL DEATH DO US PART

The wrecking influence of the use of alcoholic liquors on the home appears at its climax in divorce.

In twenty years, 1887-1906, in the United States,<sup>17</sup> drink was one cause in about one divorce case out of every five (19.5 per cent). It was the sole cause in one case of every 13 (7.9 per cent). It was thus directly or indirectly responsible for breaking up 184,568 homes, or about 9,228 every year.

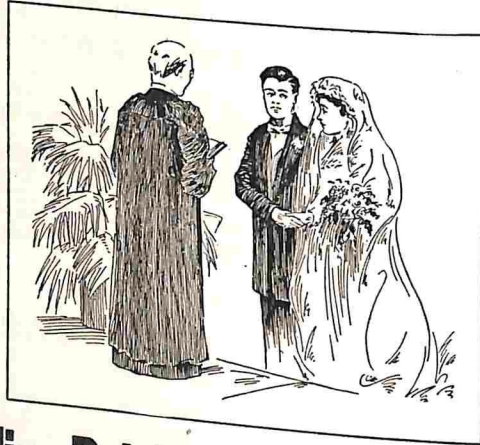
When divorces were granted to the wife, the husband was intemperate in about one case out of four (26.3 per cent). The wife's intemperance caused divorce in only 6.1 per cent. In one divorce in every three granted to the wife for the husband's cruelty, he was intemperate.

When divorces were granted to wives for neglect to provide, the husband was intemperate in about one case in each five (21.2 per cent).

Intemperance alone caused 36,516 divorces; 17,-



# TILL DEATH DO US PART



**Alcoholic Drinks Helped Break Up  
9,228 Homes Every Year  
184,568 in Twenty Years  
1887-1906**

**One in Every Three Husbands  
Divorced for Cruelty was  
Intemperate**

**Alcohol is an Enemy to the Home**

Marriage and Divorce Special Report U. S. Census Bureau, 1909, Part I.

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765 in combination with other causes; it was present as an indirect contributing cause in 130,287.

Nearly 80,000 homes involved<sup>18</sup> children in their breaking up by drink. This is probably considerably below the real number, as in 27 per cent of the divorces granted to husbands, and 16 per cent of divorces granted to wives, no report was made as to children. By far the highest percentage of children appears in divorces granted to wives for drunkenness, "raising the question," says the government report, "whether in this case the mothers' regard for the children may not be among the motives determining her action in securing the divorce, her purpose being to protect her children from the evil influences or brutality commonly associated with intemperance. In divorces granted to the wife for cruelty, the percentage of cases in which children were affected is also above the average."

## 18. YOUTH AND THE ALCOHOL HABIT

The illustration shows that the formation of the alcohol habit peculiarly belongs to youth. Dr. T. J. Abbott took 275 detailed histories of alcoholics in Bellevue Hospital.<sup>19</sup> The diagram shows that 6.5 per cent began to drink before 12 years of age, and that nearly one-third began before 16 years. Sixty-eight per cent began before 21 years.

Brandthwaite found in England<sup>20</sup> a smaller, but nevertheless considerable and significant, percentage of alcoholic women (42 per cent) who began to drink before they were 21 years old. These were women in reformatories.

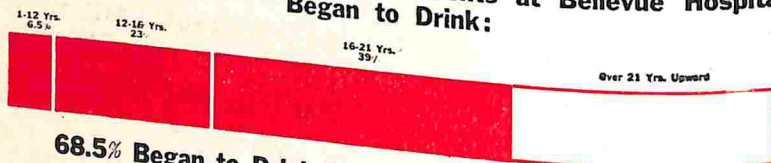
In the Bellevue cases, almost all gave a history of intemperance in other members of the family. The reasons why the drink habit began are also



# Youth and The Alcohol Habit

## When The Drink Habit Begins

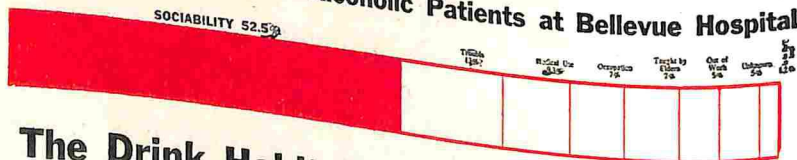
Ages at which 259 Alcoholic Patients at Bellevue Hospital Began to Drink:



**68.5% Began to Drink Before Twenty-one Years of Age**

## Why The Drink Habit Begins

Reasons Given by 246 Alcoholic Patients at Bellevue Hospital



**The Drink Habit Begins [LARGELY IN YOUTH  
LARGELY IN SOCIAL DRINKING]**

## Protect Youth From Alcohol

Med. and Surg. Report Bellevue and Allied Hospitals, N. Y., 1904.

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suggestive of preventive measures. Poverty as such plays a very small part; of the 5 per cent who contracted the habit while "out of work," a part were on vacations. The 13 per cent due to "trouble" included both business and domestic affairs. Occupations (7 per cent) included such as bartenders and ice men who by location or association or conditions of work found it easy to form the drink habit.

Overtopping all as a cause, however, was "sociability," which was the chief cause in 52.5 per cent of the 246 cases in which the reason was known.

"Few of them drink because of the enjoyment of the taste. Most of them drink for the narcotic effect."

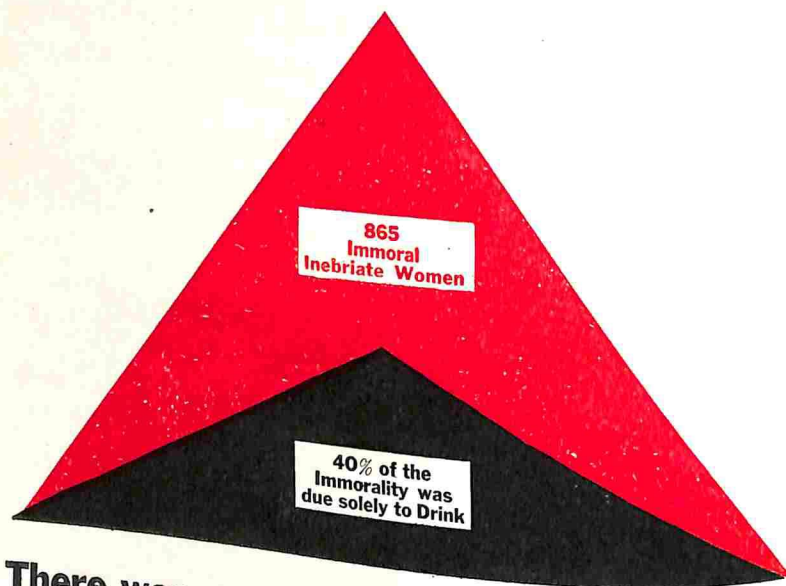
It is apparent that if the alcohol habit is to be prevented, youth must be educated and protected against its dangers. The chief mischief is done in youth and through the social appeal.

## 19. DRINK A GREAT CAUSE OF IMMORALITY

The relation of drink to immorality is well-known. The pyramid in Fig. 19 stands for 865 women in British reformatories who were both immoral and inebriates.<sup>20</sup> Drink and immorality, therefore, went hand in hand.

The black section shows the proportion of these women (40 per cent) whose immorality was solely the result of drink. They were alcoholic before they became immoral. "In the remainder prostitution preceded alcoholism or had been co-existent from a common cause," e. g., a drinking, immoral environment in childhood. The former cases had "a history of a decent married or working life previous to the formation of alcoholic habits, and resorted to

# DRINK A GREAT CAUSE — OF — IMMORALITY



There was no apparent reason why any of the persons (represented by the black section) should have become immoral but for preceding alcoholism. — R. W. Brandthwaite, M.D.

Report (1909) of Inspector Under Inebriates Acts, on 865 Immoral Inebriate Women in British Reformatories.

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immorality after inebriety had become well established. There is no apparent reason why any one of these women in this section should have become immoral except for antecedent alcoholism. They are usually decent-minded when sober, and desire to live a moral life, and all express fear or certainty that reversion to drunkenness will mean the recurrence of immorality." (Brandthwaite.)

One of the first effects of alcohol is to impair the power of self-control, to relax the self-restraint that normally preserves modesty of thought and action in both men and women. "Even a slight exhilaration from alcohol throws a sentimental or adventurous glamor over an aspect of life from which a decent young man would ordinarily recoil."<sup>21</sup> "The lower tendencies and desires that have been held in check then run their course." . . . "It is impossible to lead many women astray without the use of liquors."<sup>22</sup>

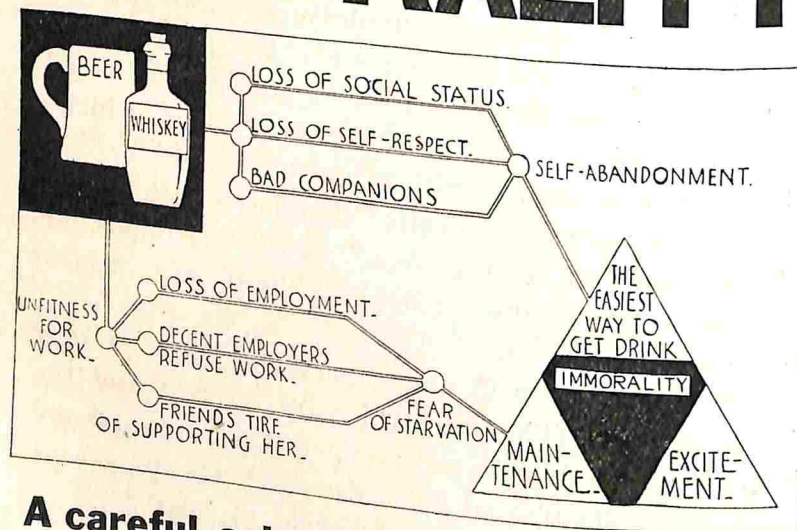
Former Police Commissioner Bingham, of New York, said: "The immorality of women and the brutishness of men have to be persuaded, coaxed and constantly stimulated in order to keep the social evil in its present state of business prosperity."<sup>21</sup>

## 20. HOW DRINK LEADS TO IMMORALITY

Many young men and young women first step aside from the path of chastity when under the influence of wine or other alcoholic drink which has temporarily narcotized judgment and self-restraint. Forel reports on 211 cases of diseases of vice that 75 per cent were infected while more or less under the influence of drink. Forty-six and nine-tenths per cent were merely in "a state of slight exhilaration" from drink when they contracted the disease.<sup>23</sup>



# HOW DRINK LEADS TO IMMORALITY



**A careful scientist has called Alcohol  
the indispensable vehicle of business  
of the white slave traders. Without  
it this trade could not long continue.**

JANE ADDAMS, *McClure's Magazine*, March, 1912

Illustration based on Report of British Inspector Dr. R. W. Brandthwaite, 1909.  
Study of 865 immoral, inebriate women.

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Many a girl, ignorantly brought into white slavery under the influence of drink, in sheer shame remains in it.

The drink habit also opens the paths to immorality which the victim pursues step by step, as shown in Figure 20. She may go by the path of personal moral and social decline. The drink habit leads eventually to loss of her social status, then to loss of her own self-respect, and to the formation of bad companionship. All this ends in the "don't care" attitude, a "self-abandonment and surrender to a life that seems to offer the best chance of obtaining alcohol and the greatest amount of excitement and attraction."<sup>20</sup>

Another path from drink to immorality is the economic. The drinking woman becomes inefficient, unsuitable for decent occupations; consequently there is loss of employment, employers refuse work, friends get tired of supporting her, and as a result, faced with the prospect of starvation, the woman turns to the life of immorality for self-support.<sup>20</sup>

## 21. ALCOHOL IMPAIRS MUSCLE WORK

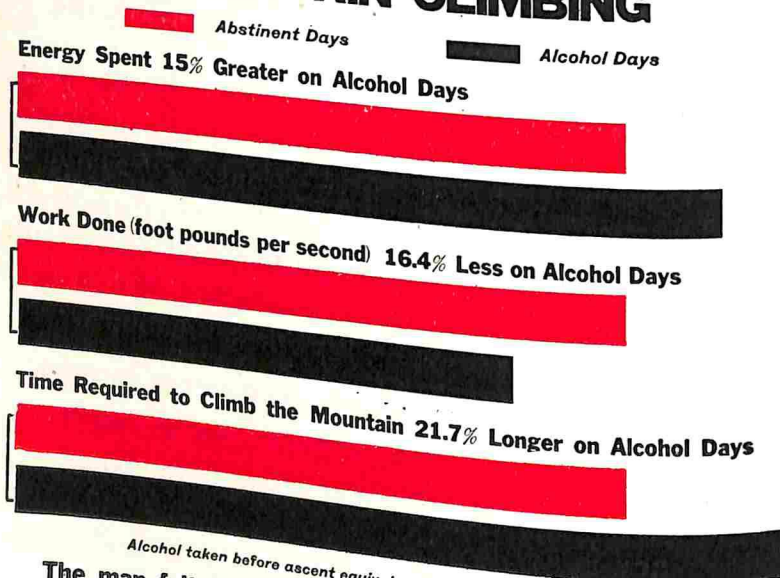
The man entering industrial and business life finds that he is expected everywhere "to make good." Efficiency is the first characteristic demanded. The efficient workman needs strength and endurance, ability to hold out through a good day's work without undue fatigue. Experiments with individuals and with large bodies of men have shown that even comparatively small amounts of alcohol decrease the amount of work accomplished and increase fatigue.

Professor Schnyder,<sup>24</sup> of Berne, tested muscle work with the ergograph in his laboratory and found that on the ten days when he took with his dinner



# ALCOHOL IMPAIRS MUSCLE WORK

## MOUNTAIN CLIMBING



*Alcohol taken before ascent equivalent to that in two glasses of Beer*

**The man felt that he worked more easily on alcohol days**

**BUT ALCOHOL**

*Made him expend more energy.  
Increased fatigue.*

*Decreased amount of muscle work done in a given time.  
Compelled him to work longer to do a given amount of work.*

Tests made by Prof. A. Durig on Mt. Bilkencrat (8,000 feet).  
Gruber: "Die Alkoholfrage," Vol. VIII, I, 1911.

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an amount of alcohol equivalent to that in two glasses of beer, he did 8.6 per cent less work than on ten corresponding days when he took no alcohol.

Professor Durig<sup>24</sup> carried out a series of experiments in actual work, mountain-climbing. The mountain, Mt. Bilkencrat, was 8,000 feet high. The results of the experiment are shown in Fig. 21. Ascents were made under similar circumstances except that on the days of the first of the series of experiments he drank no alcohol in any form. On the other days he drank in the morning liquor containing alcohol equivalent to the amount in from 2 to 2 1-3 glasses of beer, about what he was in the habit of using at other times.

He always took account of the products of bodily changes, the weight of his body and of the pack, the height to which he climbed, and was able to determine exactly how much energy he expended, how much work measured in foot-pounds he accomplished, and the time required in doing it.

As in the case of every person using alcoholic drinks, he had the impression that he worked more easily on the alcohol days. On the contrary, he found (Fig. 21) that on the alcohol days, although he spent 15 per cent more energy, the work done per second was 16.4 per cent less. He worked harder and accomplished less.

Further, it took him 21.7 per cent more time to climb the mountain on the alcohol days than when he drank no alcoholic liquors of any kind.

Alcohol does not increase strength for muscle work, but distinctly decreases it. The reason that many persons imagine that they are working better and with less weariness after taking alcohol is that

# Skill and Endurance Impaired by Drink

*Tests in Target-Shooting in Swedish Army*


## I. SKILL TESTS

Thirty Shots Fired in Quick Succession

Non-Drinking Days: Average 24 hits out of 30 shots



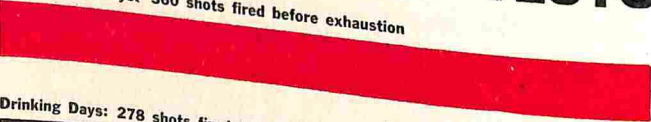
Drinking Days: Average 3 hits out of 30 shots



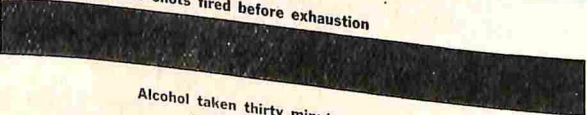
Alcohol taken equal to amount in 1½ to 2 pints of 5 per cent. beer, 20 to 30 minutes before shooting, and an equal amount the night before

## II. ENDURANCE TESTS

Non-Drinking Days: 360 shots fired before exhaustion



Drinking Days: 278 shots fired before exhaustion



Alcohol taken thirty minutes before test was amount contained in about one and a quarter pints of 4% beer

## Alcohol Lessens [ Skill Endurance

Lieut. Bengt Boy. Intern. Monats. z. Erforschung d. Alcoholismus, July, 1904.

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the alcohol blurs judgment. Thus, one judges that he has accomplished more work than he really has done, while the alcohol temporarily covers the feeling of fatigue. This is soon followed by greater depression, but the drinker seldom realizes that this is due to the alcohol, and sometimes uses more drinks to overcome it.

"Both science and the experience of life have exploded the pernicious theory that alcohol gives any persistent increase of muscular power."<sup>25</sup>

## 22. SKILL AND ENDURANCE IMPAIRED BY DRINK

Efficiency depends not only on muscular strength, but on endurance and on skill and precision in work.

Tests were made of these points in the Swedish army in 1903 by Lieut. Bengt Boy, of the Karlskrona Grenadiers, on the regular army maneuver grounds near Stockholm.<sup>27</sup> The experiments were carried out by three privates and three corporals, all excellent marksmen. All were used to alcoholic drinks, and believed them an aid to marksmanship.

There were three series of experiments, each lasting several days. In the first and third series, the men were entirely abstinent. In the second series, the men took a small definite amount of alcohol daily. Each experiment consisted of three kinds of tests with the target 200 yards away.

I. **Precision** tests of five shots. On the alcohol days the men took about two-thirds of a glass of brandy (34-44 gms. alcohol) from 20 to 30 minutes before the firing, and an equal amount of alcohol in punch on the evening before.

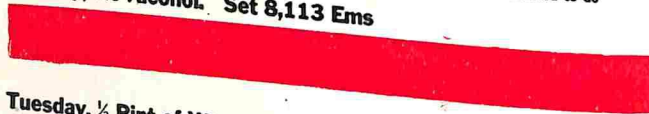


# MODERATE DRINKING REDUCES THE WORKER'S EFFICIENCY

WHAT HALF A PINT OF WINE DID TO FOUR TYPESETTERS

Colored sections show amount of work actually done  
White sections show amount of work which typesetters failed to do

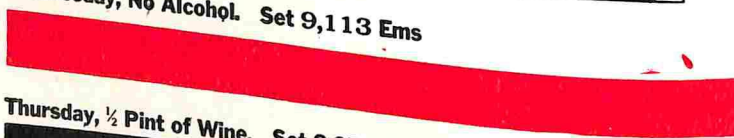
Monday, No Alcohol. Set 8,113 Ems



Tuesday, ½ Pint of Wine. Set 8,375 Ems, Should have set 8,613 Ems



Wednesday, No Alcohol. Set 9,113 Ems



Thursday, ½ Pint of Wine. Set 8,654 Ems, Should have set 9,613 Ems



The average working power was reduced 8.7 per cent.  
The normal gain given by practice was reduced

**"The LOSSES caused by Alcohol  
tend to INCREASE as time goes on.  
The NOTION that moderate drink-  
ing helps an artisan in his daily work  
IS FALSE."**

Prof. M. A. and Dr. A. J. Rosanoff.

Experiments by Dr. G. Aschaffenburg; Psychologische Arbeiten, Vol. I, 1896,  
I. Rosanoff; McClure's Magazine, March, 1909.

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Every man showed less precision and made fewer points on the alcohol days.

2. **Quick-firing tests.**<sup>28</sup> Each man fired a round of 30 shots in 30 seconds. In two sets of tests on abstinent days they hit the target 24 times out of thirty shots on the average; on the alcohol days the average was only 3 hits out of 30 shots.

3. **Endurance Tests.** (Fig. 22.) There were two trials of 200 shots each. The alcohol was used in smaller amounts than in either of the other tests, the equivalent of less than 2 glasses of beer (24 gms.) being taken half an hour before the test. On the non-drinking days, out of the 400 shots expected, 360 on the average were fired before the men became exhausted. On the alcohol days only 278 shots were fired before exhaustion.

The wind, weather and light were better on the alcohol days, so that better instead of poorer shooting should have been done. The men thought they did better work on the alcohol days. Exact tests, as always, showed that when work was carefully tested: **ALCOHOL IMPAIRED ENDURANCE, PRECISION AND SKILL.**

## 23. MODERATE DRINKING REDUCES THE WORKER'S EFFICIENCY

Careful tests with delicate instruments have shown that even a small quantity of alcohol—no more than that in a bottle of claret wine—caused disturbances of the mental faculties. It slowed reaction time—the response of the mind to signals—or if a choice had to be made the worker answered the signal more quickly but made more mistakes.<sup>28</sup> With larger quantities of alcohol the reaction was always slower. The alcohol brings on a condition similar to that of fatigue, so that work done is of a lower



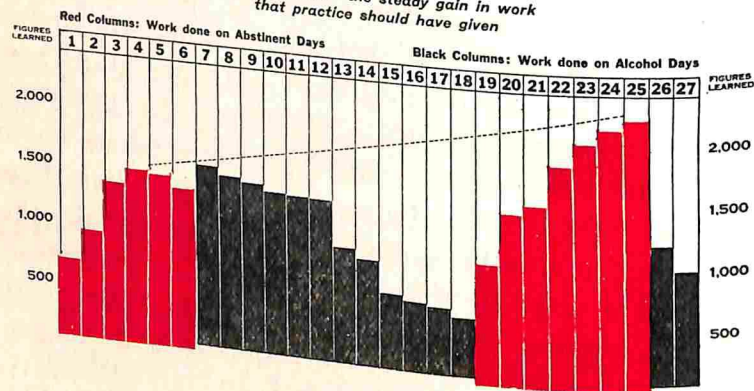
# Daily Drinking Impaired Memory

Each column represents the number of figures learned in a given time each day.

Alcohol taken on Alcohol Days: Amount in  $1\frac{1}{2}$  to 3 pints of beer.

Work done 8 to 10 hours after taking alcohol.

Dotted line shows the steady gain in work that practice should have given



## RESULTS

Daily Drinking greatly reduced ability to memorize.  
The effects of alcohol piled up from day to day.

"The drinker who daily consumes his bottle of wine [or beer] is, in reality, never actually sober from one week's end to another. Neither in bodily or mental activity is he ever up to what should be his normal level." —Dr. Henry Smith Williams.

Experiments by Dr. A. Smith, Heidelberg. 1895.  
Williams: Alcohol, 1909.

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order than that of which the mind is naturally capable. It impairs the power to memorize, to add, to judge.

A test of the practical effect of alcohol on efficiency is illustrated (Fig. 23) by the typesetting test of Professor Aschaffenburg<sup>29</sup> at the University of Heidelberg, Germany.

Four skilled typesetters in their own printing office and at their own stands worked from printed copy to secure uniformity. All the men were in the habit of drinking a number of glasses of beer on Sundays; one of them took generally four glasses on each week-day and eight or ten on Sundays. This man's work showed the worst results in the experiment. The one of the four whose work was least influenced drank regularly on Sundays, but not on week-days. The men all admitted that generally on Monday they felt little like work and made more mistakes, but they did not believe—before the experiment—that their regular use of beer made any difference with their work.

For several days before the experiments began, the men, at Professor Aschaffenburg's request, used no alcoholic liquors of any kind. The experiments were done on four successive days, Monday to Thursday inclusive. At five o'clock in the afternoon, the tests began. Each man was given identical copy on which he worked for fifteen minutes, then for an hour as rapidly as he could; the amount set was counted up in ems and a record kept, but the man did not know what the record was until the experiments were concluded.

On two of the four days, Tuesday and Thursday, at the end of the first fifteen trial minutes the men were given about three-fourths of a tumblerful (200



# A STORY FOR BOOK-KEEPERS

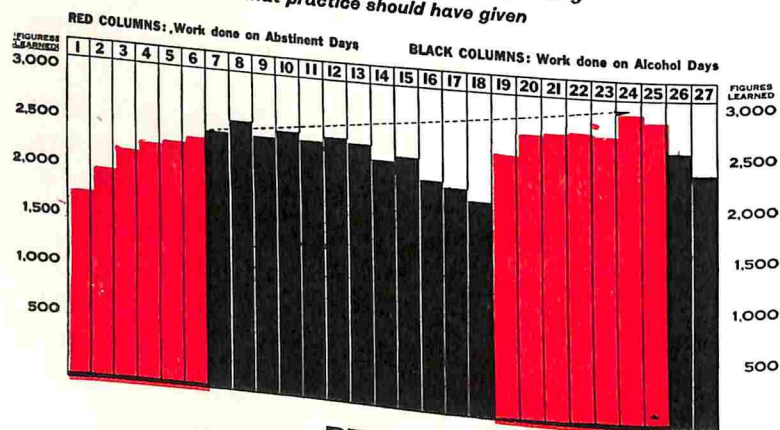
## ALCOHOL AND ABILITY TO ADD FIGURES

Each column represents one day's work

Alcohol taken on alcohol days — Amount in two to four glasses of beer

Work done eight to twelve hours after taking alcohol

Dotted line shows the steady gain in adding that practice should have given



### RESULT

On the 12th alcohol day (Day 18) the man was doing 35% Less Work than he should have done with normal practice increase

Alcohol taken daily [Lessened the advantages of practice  
Diminished the amount of work]

Experiments Dr. A. Smith, University of Heidelberg. Reported 1895.

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grams) of strong Greek wine. To properly understand the results of the experiment it should be known that daily practice in a trade gradually increases the amount of a given kind of work that one can do and that this increase can be definitely measured. Repeated observations have shown this to be true.

With the typesetters, therefore, it was to be expected that normally they would set more type on Tuesday than on Monday, still more on Wednesday, and most of all on Thursday.

The diagram (Fig. 23) shows what actually was the work done on the alcohol days as compared with the non-alcohol days.

The red bars stand for the amounts accomplished when no alcohol was taken.

The black bars show what was done on the alcohol days. The skeleton outlines show the amount of work to be expected on the two groups of days, taking into consideration the rate at which the men set type during the test period and the gain which was made between two non-alcohol days, which showed approximately the increase in efficiency from day to day. "Thus<sup>26</sup> one compositor set up 2,339 ems on Monday, and 2,560 ems on Wednesday, an increase of 221 ems in two days, or an average 'experience increase' of 110 ems per day, so that under normal conditions he should have set up 2,249 ems on Tuesday and 2,670 ems on Thursday. But he set up only 2,212 on Tuesday, a loss for the time being of nearly 10 per cent (9.7 per cent) of his efficiency, and on Thursday he fell below expectation 11.9 per cent."

In each case . . . "the four men were affected by alcohol to an unequal extent. But with the exception of one man [and he the lightest drinker], there are



# The Better Chances of the Sober Workman

■ Represents employers who DO consider an applicant's drinking habits  
■ Represents employers who do NOT consider an applicant's drinking habits

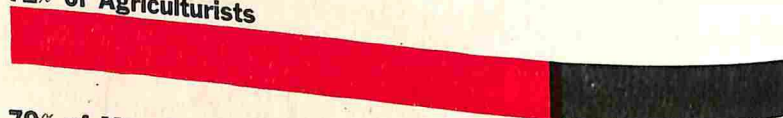
**77% of All Establishments Reporting**



**56.5% of Mines and Quarrymen**



**72% of Agriculturists**



**79% of Manufacturers**



**88% of Trades**



**98% of Transportation**



From the Report of the U. S. Department of Labor of an investigation  
authorized by Congress, 1897.

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No. 26

losses of efficiency in all cases, and in most cases the losses are heavy."<sup>26</sup>

The average loss of working ability due to alcohol was 8.7 per cent. If the same loss occurred regularly, a man paid by piece work who could normally earn \$2.00 per day, would therefore earn \$.17 per day less on the alcohol days.

Further, "the losses are in all cases heavier on Thursday than on Tuesday. This can mean only one thing. The effects of alcohol accumulate. The effect of Tuesday's drink was not entirely gone on Thursday so that Thursday's loss in efficiency is the effect of Thursday's drink plus a lingering part of Tuesday's. The experiments, though few, were carefully done and showed that:

"Moderate drinking reduces considerably an artisan's efficiency.

"Its effects is cumulative. Losses caused by it increase as time goes on.

"The notion that moderate drinking helps an artisan in his daily work is false."<sup>26</sup>

## 24. DAILY DRINKING IMPAIRED MEMORY

Many experiments in the Kraepelin laboratory at the University of Heidelberg<sup>28</sup> tested the influence of daily drinking on various mental processes. Figure 24 gives the results of some experiments with memory.<sup>30</sup> For a half hour each day time was given to memorizing as many numbers as possible. The height of columns represents the number of figures learned each day. Abstinent days are represented by columns printed in red; the alcohol days by solid black columns. The increase from day to day on the abstinent days shows the gains due to practice (See p. 53) in the number of figures learned. On the fifth and sixth

# Three Accidents on Monday to Two on Other Days

What the Zurich Building Trades Learned

1900-1906

Av. Accidents Monday



Av. Accidents Other Days



## DRINK UNSTEADIES NERVES IMPAIRS JUDGMENT

Report Zurich Building Trades Sick Club, 1900-1906.

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days a temporary illness caused a decrease in the amount of work done. On the evening of the sixth day the use of alcohol was begun, and thereafter the work of the seventh to the eighteenth days was done 8 to 10 hours after taking a dose of alcohol (40-80 gms.) equivalent to that in from one and one-half to three pints of 5 per cent beer. The dotted line, fourth to the twenty-fifth days, shows the normal rate of increase through practice. The decreasing height of columns on the alcohol days shows how the amount of work done progressively declined. The amount of work done on the twelfth alcohol-day (Day 18) was about 70 per cent less than it should have been, and was even less than the amount done on the first day, showing that as the effects of daily drinking accumulated they not only wiped out the gains by practice, but produced a decided decrease in the average ability to memorize.

On dropping the alcohol, memorizing ability at once began to steadily improve, although it was not until the third day after discontinuing it (Day 21) that the amount of work equaled that done on the experimenter's best day (Day 4) before taking the alcohol.

When the alcohol was resumed (Days 26 and 27) the number of figures committed to memory immediately decreased again.

"Ordinary memorizing is retarded under the influence of moderate daily drinking."<sup>26</sup>

### 25. ALCOHOL REDUCES MENTAL RAPIDITY

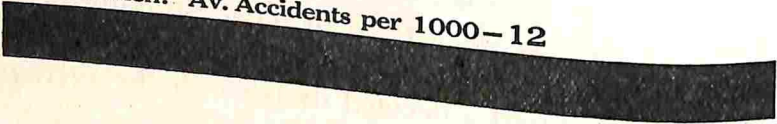
Other experiments were conducted by Professor Smith to test the effect of alcohol on such habitual associations of ideas as are involved in adding figures.



# ABSTAINERS HAD ONE-THIRD LESS ACCIDENTS

In the Roeschlingsche Iron and Steel Works  
Völklingen, Germany

All Workmen: Av. Accidents per 1000—12



Abstainers: Av. Accidents per 1000—8



## Drink Increases Danger of Accidents

Because  
Alcohol

- Dulls senses and alertness in perceiving danger.
- Impairs judgment of distances and thus of danger.
- Impairs ability to decide quickly and accurately how to avoid danger.
- May cause unsteadiness of hand or foot.

Statistics from Die Alkoholfraße I. VI., 1909.

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The conditions of the experiment were similar to those of the memorizing experiments. (See description Fig. 24.) Ability to add was markedly impaired, about 35 per cent at the end of the twelfth alcohol day.\*

"The idea that alcohol stimulates one to his mental work is surely not corroborated by the facts."<sup>26</sup>

### \* On Fig. 25 "Figures learned" should be "Figures added." 26. THE BETTER CHANCES OF THE SOBER WORKMAN

In 1897, the United States Department of Labor conducted an investigation authorized by Congress in the course of which 77 per cent of over 7,000 employers reporting stated that in hiring employees they wanted to know what were their habits as regards drink. The red portion of bars (Fig. 26) shows the percentage of employers as a whole who considered the drinking habits of employees, and in various classes of occupations. The more complex and responsible the work (as railroad work) the more careful the employer to have sober workmen.

Many refused to hire any but abstainers. The number, if known, would be larger today than it was in 1897. Knowledge that drink impairs working ability, increases liability to accident, interferes with system in operation, is fast putting up bars of industry against the drinker who wants a position worth while.

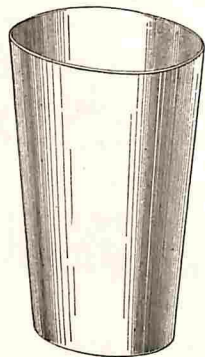
### 27. THREE ACCIDENTS MONDAY—TWO OTHER DAYS

Employers and insurance companies are noting the important relation of drink to accidents. When experiments showed that even so-called moderate amounts of alcohol interfered with steadiness of nerve action so that the drinker was more liable to make

# ALCOHOL GOING FROM THE MEDICINE CHEST

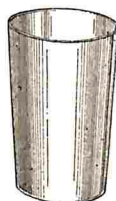
Statistics from Massachusetts General Hospital

1897



Spent for Alcoholic Liquors  
\$0.46 per patient

1906



Spent for Alcoholic Liquors  
\$0.13 per patient

**Expense For Drugs fell off 45 per cent.**  
**Expense For Liquors fell off 70 per cent.**  
*There was no change in prices*

**"It indicates a rapid and striking change on the part of the physicians on the hospital staff since it has become known that Alcohol is Not a Stimulant but a Narcotic."** — Dr. Richard C. Cabot

Cabot: Boston Medical and Drug Journal, April 15, 1909.

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missteps or other false motions and so to incur accident, and that the alcohol impaired the judgment which the worker would naturally use in risky situations, it became evident that drink is a frequent cause of accident. Figure 27 illustrates statistics compiled from the accidents in the building trades in Zurich, Switzerland, during seven years, 1900-1906.<sup>31</sup>

The heavy black line shows that on the average 22.1 per cent of the accidents of the week occurred on Monday. The other days on the average had only 15.7 per cent each. In other words, there was an average of three accidents on Monday to two on other days.

The greater number of accidents on Monday is believed to be partly due to the drinking on Saturday night and Sunday which impairs the skill and carefulness of the workers. Laboratory experiments have shown that the effects of alcohol tend to persist twenty-four hours or longer. (See description Fig. 23.) The excessive "Monday accidents result from the paralyzing effect of the Saturday night and Sunday debauch, the 'hang-over' which may last for twenty-four hours and longer. The victim with the 'hang-over' appears normal to the casual observer; he is not, however, in complete control of his faculties and is, therefore, more liable to have an accident.

"The habitual drinker presents, perhaps, the greatest danger.

"The intoxicated man's condition is promptly recognized and he is promptly dismissed, but serious damage may have been done long before the man is actually drunk.


"It is the forms of alcoholism which are not signalized by intoxication that are the most serious as a predisposing cause to accidents."<sup>32</sup>




# Where Drink Did Its Worst Among Insured Men

## DEATHS FROM ALCOHOLISM IN EACH 100 DEATHS


Bartenders 6.7 Deaths



Saloonkeepers 4.4 Deaths



Glassworkers, Plumbers, Masons 1.9 Deaths



Printers 1.6 Deaths



Cigarmakers 1.5 Deaths



Average 20 Occupations 1.5 deaths



Statistics from 103,434 Deaths of Men Policy-holders of Prudential Insurance Company (U. S.) 1907-1910

Alcoholism Carried off 1522 Policy-holders of this One Insurance Company in Four Years

## ALCOHOL-CAUSED DEATH IS PREVENTABLE DEATH

Statistics from exhibit of Prudential Insurance Company, International Congress on Hygiene, 1912.  
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BOSTON, MASS

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## 28. ABSTAINERS HAD ONE-THIRD LESS ACCIDENTS THAN DRINKERS

German statistics have shown the association of drink with accidents. The Leipzig Sick Benefit Club report covering a large number of workers representing 952,674 insurance years showed<sup>34</sup> that at all age periods the workers classed as drinkers (those in whom physicians saw the effects of their alcohol-using) had from two to three times as many accidents as the average workman.

The Rochlingsche Iron and Steel Works at Volklingen, Germany, found, as shown in Fig. 28, that their abstaining employees averaged 8 accidents per 1,000 workers, while the general rate in the works was 12 per 1,000.<sup>35</sup> Thus the abstainers' rate of accidents was 33 1-3 per cent lower than the average for the works.

See also Fig. 50.

## 29. ALCOHOL GOING FROM THE MEDICINE CHEST

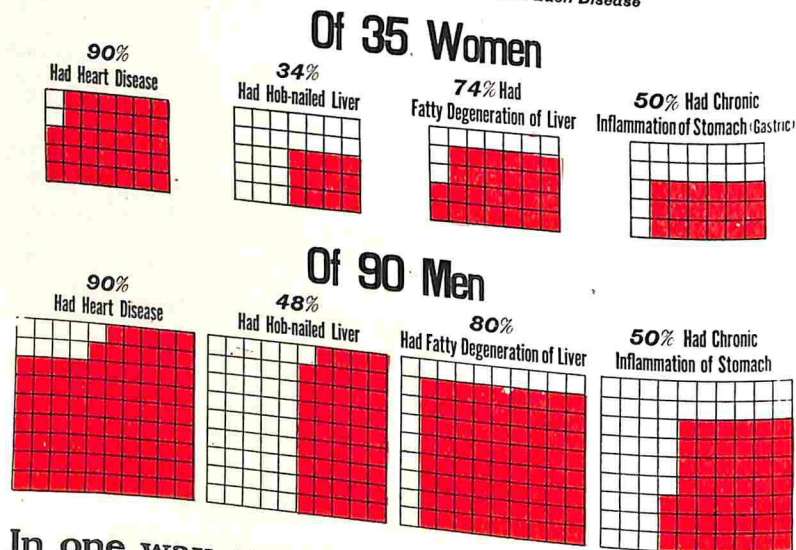
The medical use of alcohol has rapidly declined in recent years as shown by the statistics of hospitals and the testimony based on experience of physicians (Fig. 29). The comparative size of the two measuring glasses shows the decrease in the expenditure for alcoholic liquors per patient in the Massachusetts General Hospital from 1897 to 1906. During this period the expense for drugs per patient fell off 45 per cent. The expense for liquors decreased 71 per cent. As there was no change in prices this greater decrease in the expenditure for liquors "indicates a rapid and striking change on the part of the physicians of the hospital staff since it has become known



# SOME DISEASES OF Chronic Drinkers

FOUND IN POSTMORTEM STUDIES  
Bellevue Hospital, New York

Red Shows the Percentage of Drinkers who had Each Disease



In one way or another Most of the Organs  
and Tissues of the Body may become  
the seat of Morbid Changes charge-  
able to the poisonous action  
of Alcohol

—WM. H. WELCH, M.D., Professor of Pathology in Johns Hopkins University.  
Med. Surg. Rept. Bellevue Hospital, N. Y., 1904, Vol. I.  
Welch: Physiological Aspects of the Liquor Problem, 1903.

No. 31]

that alcohol is not a stimulant but a narcotic" (Cabot).<sup>36</sup>

All physicians are agreed that if alcoholic liquors are to be used at all in medicine it should be only on the prescription of a careful physician as other dangerous drugs are prescribed. All physicians use alcohol in medicine far less than years ago. An increasing number of physicians do not prescribe it at all.

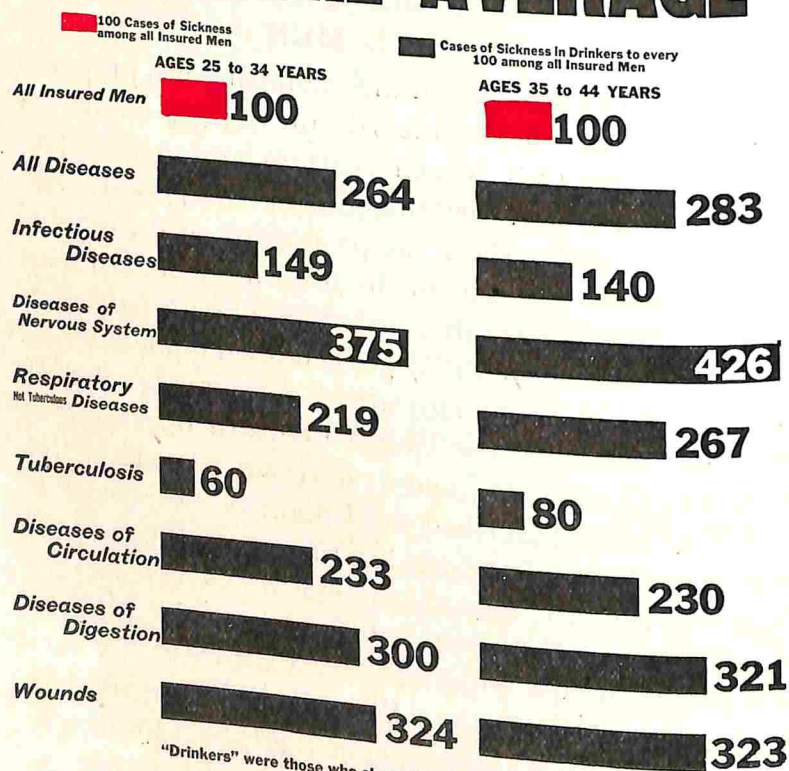
## 30. WHERE DRINK DID ITS WORST AMONG INSURED MEN

The Prudential Insurance Company has prepared tables<sup>38</sup> based on the records of 103,434 deaths of occupied men over fifteen years of age in the company's industrial experience during the period 1907-1910. The tables show the proportion of deaths due to various diseases out of the total number of deaths in each occupation. For example, out of 1,163 bartenders who died, 78 or 6.7 per cent died of alcoholism. This "proportionate mortality" rate is of value in showing what are the causes of death operating in different occupations, and at different periods of life.

The deaths ascribed to alcoholism were those in which alcohol was regarded as the principal cause, not those in which it was a contributory factor only, as sometimes in heart or liver diseases. Figure 30 shows that in all occupations noted, alcoholism caused 1.5 per cent of all deaths. But saloonkeepers and bartenders died from alcoholism at the rate respectively, of 4.4 per cent and 6.7 per cent, more than two and three times as many deaths proportionately as occurred in any other occupation, even of the occupations shown in the illustration which exceeded the average. Alcohol carried off 1,522 insured men by



# DRINKERS HAD MORE SICKNESS THAN THE AVERAGE



"Drinkers" were those who showed signs of chronic alcoholism

The records showed that between 25 and 44 years of age, "drinkers" were sick on the average 2.7 times as often as insured men in general.

Statistics of Sickness Benefit Societies, Leipsic, Germany, 1910.

alcoholism alone in four years from the policyholders of this one company. Saloonkeepers and bartenders also had the highest death-rate in liver diseases. Saloonkeepers led in urinary diseases and in suicide.

Both groups lost heavily from all diseases in the prime of life. Between ages 25 to 44 years, the percentage of deaths occurring in all occupations was 31.7. Of saloonkeepers, 48 per cent died in this age period; of bartenders, 72 per cent.

The drink-selling business had more victims from alcoholism, had high or highest death-rates from diseases which frequently follow the use of alcohol, lost a larger proportion of men from all causes in the prime of life.

## 31. SOME DISEASES OF CHRONIC DRINKERS

Dr. William H. Welch, professor of pathology, of Johns Hopkins University once wrote that "In one way or another most of the organs and tissues of the body may become the seat of morbid changes chargeable to the poisonous action of alcohol."<sup>37</sup>

This does not mean, of course, that all drinkers have all these "morbid changes," but that every drinker runs the risk of some one or more of the changes due to the effects of alcohol.

Ninety alcoholic men and 35 alcoholic women—chronic drinkers—whose deaths occurred at Bellevue Hospital, New York,<sup>19</sup> showed various organic changes, some of which are indicated in Fig. 31. The colored portions of the squares indicate the percentage of men or of women who had the various diseased conditions.

"These histories were chosen not because they showed any given lesions, but because the patients

# Drinkers' Sickness Lasted Longer Than the Average

**Ages 25-34 Years**

Average Insured Man, Sick 7.53 Days



"Drinkers," Sick 19.29 Days



**Ages 35-44 Years**

Average Insured Man, Sick 10.03 Days



"Drinkers," Sick 27.13 Days



*Drinkers Those Who Showed Signs of Chronic Alcoholism*

**At Every Age Period**

Drinkers' Sickness Lasted about 2 1-2 times as long as that of the Average Insured Man

**Time Lost from Work by Sickness Means Money Lost from the Pay Envelope**

Report Leipsic Sick Benefit Societies, 1910.

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BOSTON, MASS

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gave a definite history in varying degrees of alcoholic excesses."<sup>19</sup>

Beginning with the heart, 90 per cent of both men and women had heart difficulty of some sort. In only 8 men and 2 women was the heart considered normal. The illustration also shows the extent to which hob-nailed liver, fatty degeneration of the liver and chronic gastritis prevailed among these alcoholics.

The studies showed also affections of the blood-vessels, lungs, spleen, pancreas, kidneys, central nervous system and other parts of the body. The effects produced varied greatly in different individuals; in some, the circulatory system showed the most marked effect; in others, the liver; in others, the central nervous system. "In others there is for years no apparent lesion, and then some sudden strain on the organism occurs, its equilibrium is upset and the whole organism crumbles." (Lambert.)<sup>19</sup>

## 32. DRINKERS HAD MORE SICKNESS THAN THE AVERAGE

Records of the Leipzig Sick Benefit Clubs published in Berlin in 1910<sup>34</sup> compared the average sickness and mortality records with a group of insured men classed as drinkers because the physicians were able to detect in them some physical effects of their drinking.

The investigation covered 952,674 insurance years. The 630 "drinkers" had 4,879 insurance years. At the age period 25-34 years, for every 1,000 insured years, the average number of cases of sickness was 368; but drinkers had 973, or 2.64 times the average. (Fig. 32.) At age period 35-44, the drinkers had 1,196 cases to 422 in insured men as a whole, or 2.83 times the average.



# MORE DRINKERS DIED EARLY

Bars show the proportionate Number of Deaths per 10,000 insurance years

## AGES 25-34

All Insured Men — 53 Died



Drinkers — 122 Died



## AGES 35-44

All Insured Men — 97 Died



Drinkers — 284 Died



**Death Carried Off in the Prime  
of Life From Two to Three  
Times as Many Drinkers  
as Other Insured Men**

Statistics Leipsic Sick Benefit Societies, 1901.

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Between 45 and 64 years, drinkers had 2.6 times as many cases of sickness proportionately, and in old age, 65-74 years, 2.93 times the average.

When the drinkers' sickness was studied by classes of disease, Fig. 32 shows that between 25 and 34 years of age drinkers had larger proportion of sickness in every disease and group of diseases except tuberculosis and urinary and sexual diseases. There was 3.75 times as much nervous disease. This increased in age period 35-44 years to 4 1-4 times as much as was found among insured men in general. It is significant, perhaps, that the amount of urinary and sexual disease in drinkers which at ages 25-34 was only six-tenths that of the average, increased seven-fold in the years 35-44, so that drinkers had 3 1-2 times as many cases of these forms of sickness as the average. (See also Fig. 49.)

### 33. DRINKERS' SICKNESS LASTED LONGER THAN THE AVERAGE

The Leipzig statistics<sup>34</sup> also showed that sickness in "drinkers" (see description Fig. 32) lasted longer than the average at every age period.

Figure 33 shows that between 25 and 34 years, insured men were sick, on the average, 7.53 days, but the drinkers were sick 19.29 days. In the next age period, 35-44 years, the average duration was 10.03 days, drinkers 27.13.

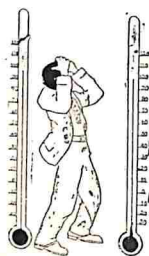
At other periods the duration of sickness was as follows:

	Average	Drinkers
45-54 years	13.29 days	33.32 days
55-64 years	18.38 days	40.79 days
65-74 years	29.52 days	76.84 days

In each period, the drinkers not only had more

# KEEP COOL

## DRINK INCREASES DANGER FROM SUNSTROKE



### 465 Cases of Sunstroke, 1896

Heavy Drinkers 30%

Moderate Drinkers 50%

Abstainers 20%

Drinkers Furnished 80% of the Cases

### 70 Deaths from Sunstroke, 1896

Heavy Drinkers 60%

Moderate Drinkers 30%

Abstainers 10%

Drinkers Furnished 90% of the Deaths

**ALCOHOL** [Makes One Careless About Exposure to Heat Disorders the Body's Natural Means of Protection Against Heat]

Statistics U. S. Weather Review, November, 1896.

No. 35

cases of sickness, but their sickness lasted longer, so much so that they lost from work by sickness between two and three times the average amount of time.

### 34. MORE DRINKERS DIED EARLY

The Leipzig statistics showed also the proportionate number of deaths among drinkers as compared to the average.

Figure 34 shows that for every 10,000 insurance years at age 25-34, the average death-rate was 53; among "drinkers," the death-rate was 122, more than twice as high.

At the next age period, 35-44 years, the drinkers' death-rate was 284 per 10,000 insurance years; the general rate only 97.

The heaviest loss of life proportionately occurred in this prime of life period, 25-44 years. During succeeding years the comparative rates were as follows:

	Ave.	Drinkers	
45-54	167	372	122 per cent greater
55-64	298	364	22 per cent greater
65-74	580	746	30 per cent greater

Thus the drinkers had more cases of sickness, lost more time from sickness, had a heavier death-rate proportionately than the average.

See also Figure 49.

### 35. KEEP COOL—DRINK INCREASES DANGER FROM SUNSTROKE

In August, 1896, there was a period of exceedingly hot weather in the United States involving many cases of sunstroke and death. Records of 841 cases of sunstroke and 149 deaths were obtained and reports made upon them. In 465 cases of sunstroke and 70 deaths it was possible to learn the habits of the vic-



# DEATH-RATES IN PNEUMONIA INCREASE WITH ALCOHOLIC HABITS

Of ABSTAINERS Sick 18.5% Died



Of MODERATE DRINKERS Sick, 25% Died



Of IMMEDIATE DRINKERS Sick, 52.8% Died



**THE DRINKER** [Is More Liable to Have Pneumonia  
Is More Liable to Die From It

Osler and McCrea—Nat. Temperance Quarterly, December, 1911.

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BOSTON, MASS.

No. 36

tims as to the use of alcoholic beverages.<sup>39</sup> Figure 35 illustrates the extent of the drink habit (1) in cases of sunstroke and (2) in death from sunstroke.

Of the victims of sunstroke only 20 per cent were abstainers. Of those who died only 10 per cent were abstainers.

Because of its effects upon the nervous system, its impairment of judgment, alcohol tends to make one careless about exposing himself to heat, so that he fails to exercise natural precaution or give himself proper protection.

On the other hand, alcohol disorders the body's natural mechanism of protection against heat.

## 36. DEATH-RATE IN PNEUMONIA INCREASED WITH ALCOHOLIC HABITS

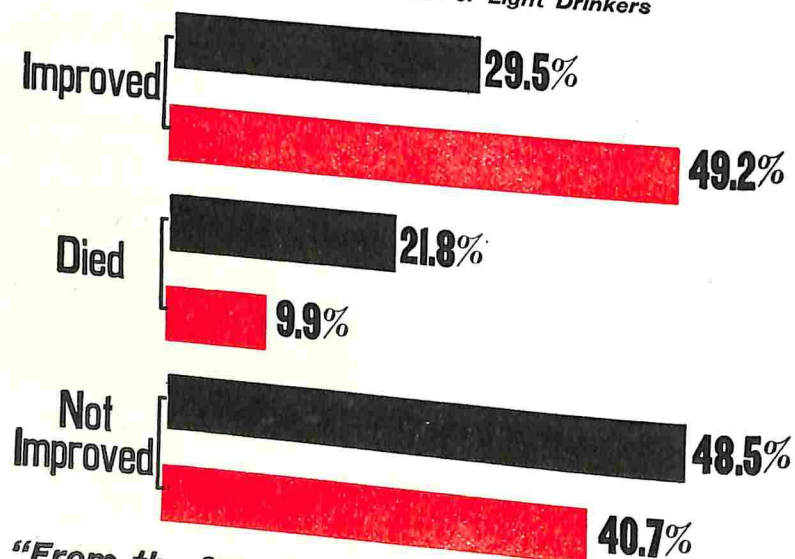
Bodily health depends in very large degree upon ability to resist disease, especially the germs of disease. Germs are all about us, but if resistance is good, they fail to gain a foothold or are defeated in their attack on the body. In other words, "our resistance not only keeps off the enemy but defeats him if he has by any chance effected a landing." (Somers.)

Alcohol has been proven by experiment and careful observation to be one of the most important causes of impaired resistance. It has become well-known that in pneumonia, for instance, the disease on the average is much more likely to progress unfavorably if the sick person is a drinker. Figure 36 illustrates statistics by Drs. Osler and McCrae<sup>40</sup> showing that the death-rate increased with the drink habit, that of the abstainers studied who had penumonia, 18.5 per cent died; of the "moderate drinkers" 25 per cent; of the heavy drinkers, 52.8 per cent. "In drunkards the chances are against recovery.

# TUBERCULOSIS PATIENTS HANDICAPPED BY ALCOHOLIC HABITS

Investigations at Phipps Institute, Philadelphia

Alcoholic Patients whom Alcohol had Obviously Harmed  
 Patients who were Abstainers or Light Drinkers



*"From the facts before us, alcohol is exceedingly dangerous to the tuberculous"*

*"The Only Safe Rule is to Abstain Altogether"*

Report Phipps Institute, 1907-1908.

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## 37. TUBERCULOSIS PATIENTS HANDICAPPED BY ALCOHOLIC HABITS

The fact is generally known that the drink habit often prepares the way for tuberculosis. Experiments with animals at the University of Vienna showed that when animals were infected with tuberculosis the animals which were not given alcohol lived much longer than the alcohol animals even when the latter were given no more than an amount, proportioned to body weight, equivalent to what a man weighing 150 pounds would get in one eight-ounce glass of 3 1-2 per cent beer a day.<sup>41</sup>

At the Henry Phipps Institute in Philadelphia records<sup>5</sup> were kept for several years on the relation between alcoholic habits and the response to treatment for tuberculosis.

Figure 37 shows the results of the records for the two years 1907 and 1908. Unfortunately separate records were not kept of those who were absolute abstainers from alcoholic drinks. Those patients (247) were classed as "alcoholic" who had "used enough alcohol to do themselves some physical harm." The others (934) were all classed as non-alcoholic.

Although this was an imperfect classification, the alcoholic patients showed a markedly more unfavorable response to treatment than the non-alcoholic. The black bars (Fig. 37) represent the alcoholic; the red bars the "non-alcoholic."

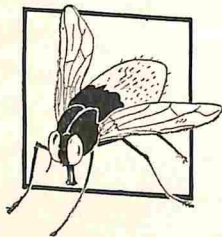
Improved health or arrest of disease were shown in 29.5 per cent of the alcoholic; in 49.2 per cent of the non-alcoholic. The percentage of deaths was more than twice as great in the alcoholic. The alcoholics had a larger percentage (48.5 per cent) who were un-



# MORE MEN DIED FROM ALCOHOLISM

(and Hob-nailed Liver due to Alcohol)

## THAN FROM TYPHOID FEVER or SMALL POX In Nine Years



**Typhoid, 32,163  
Deaths**



**Alcoholism,  
and Liver Cirrhosis**  
(Alcohol estimated an important  
Cause in 75%)  
**33,187 Deaths**

**SMALLPOX!**  
**2,217 Deaths**

Men Were 25 to 65 Years of Age

**ALCOHOL  
CARRIED OFF** [More than Typhoid  
15 Times as Many as Small Pox

These Statistics from the Registration Area Represent Only About  
One Half of the United States.

## Alcohol-Caused Disease is Preventable Disease

Statistics of Alcoholism and Hob-nailed Liver from U. S. Mortality Reports 1900-1908.  
Hob-nailed Liver due to Alcoholism estimated at 75 per cent.

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improved by treatment than the non-alcoholic (40.7 per cent.)

Thus the non-alcoholic on the average showed much more encouraging results from treatment for tuberculosis.

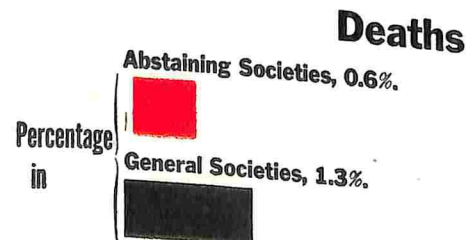
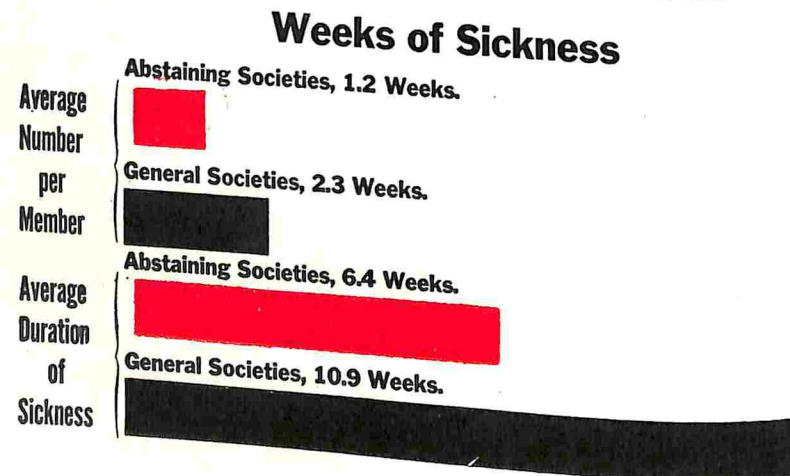
"It is Alcoholism," said Dr. Roubinovitch, of France, [in its relation to tuberculosis] which gives up the key to the house and permits the sacking."

### 38. MORE DEATHS FROM ALCOHOL THAN FROM TYPHOID OR SMALLPOX

It is impossible in the United States at present to obtain the exact death-rate in any disease. This is especially true of alcoholism since by no means all deaths due even to extreme alcoholism are reported as such. Consideration for the family undoubtedly often results in recording alcoholic deaths under some other heading for which the condition of the patient may give some justification.

Dr. T. C. Stevenson is quoted by Phelps<sup>43</sup> as saying in "his authoritative Analysis of the Causes of Death in England and Wales," that "the deaths actually assigned to alcoholism or to delirium tremens form an imperfect measure of the mortality caused by alcoholic intemperance, and the best available indication is probably furnished by the combined mortality from alcoholism and cirrhosis of the liver." To this, Phelps adds: "I find that all the American physicians with whom I have discussed the subject agree with Dr. Stevenson that this method of attempting to measure the mortality of alcohol is much more reliable than one taking into account only the deaths actually charged up to alcoholism in the death certificates."

# ABSTAINERS Have Less Sickness Smaller Death Rate



Statistics of H. Dillon Gouge, Public Actuary, South Australia, 1890-1892.

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"While animal experimentation with alcohol has not yet produced cirrhosis of the liver, clinically we find a well-defined history of excessive alcoholic indulgence in the great majority of patients suffering from cirrhosis of the liver, and the occurrence of it here in Bellevue Hospital in over one-third of the women and in almost one-half the men alcoholics would certainly indicate its alcoholic origin."<sup>19</sup>

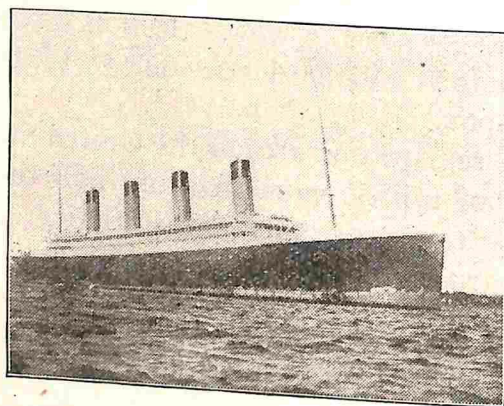
Figure 38 represents an estimate of the comparative number of deaths of men due directly to alcohol and to liver cirrhosis in which alcoholism was an important factor, and the deaths due to typhoid fever and small-pox.

In the registration area of the United States, covering in 1908 a little more than one-half the population, fairly complete mortality statistics are taken. The comparison in Fig. 38 deals with the deaths of men 25 to 64 years of age for the nine years, 1900-1908. Of the total number of deaths from liver cirrhosis alcohol is estimated to have been an important cause in 75 per cent of the cases of men during the age periods named. This estimate was based upon the opinion of physicians consulted and upon the statistics stated by Pfister (Virchow's Archiv, 1908) to be afforded by physicians' death certificates in the city of Basel, 1892-1896. Since any such statistics must necessarily be estimates, it is believed that for the ages named, 25-64 years, 75 per cent may be regarded as a reasonable percentage of the deaths from liver cirrhosis to which alcohol contributed.

The number of deaths ascribed directly to alcoholism in the registration area for the nine years added to the 75 per cent of deaths from liver cirrhosis gives a total of 33,187 deaths from these two forms of alcohol-caused disease, while at the same time typhoid



# THE TITANIC CARRIED DOWN 1503 PEOPLE



**DRINK CARRIES OFF 1503 Men  
and Women EVERY EIGHT  
DAYS in the Year**

*At Least One Man in Every Seven and One-Half Men who Die in the  
United States Loses His Life as the Direct or  
Indirect Result of DRINK*

**No Man Need Die of Alcohol-Caused  
Disease**

Estimates based on E. B. Phelps' The Mortality of Alcohol, 1911.

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carried off more than 1,000 less (32,163), and the dreaded smallpox a total of only 2,217.

These deaths traceable to drink by no means tell the whole story, for alcoholism and hob-nailed liver due directly or indirectly to alcohol are only two of the many causes of death into which alcohol may enter. The life insurance physicians who contributed the estimates on which E. B. Phelps<sup>43</sup> made up his recent estimate of 65,897 deaths annually due directly or indirectly to drink accounted alcohol one factor in 106 out of 180 different possible causes of death.

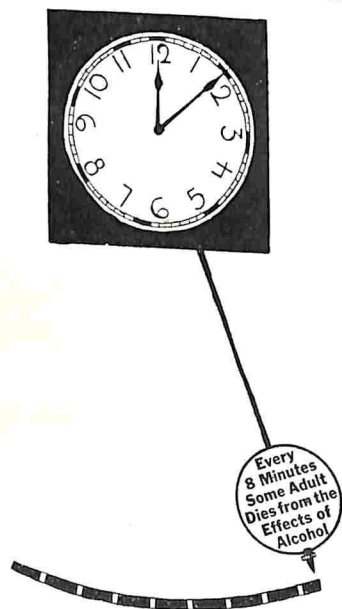
The term alcoholism has so far been used in this section as referring to the extreme cases of the effects of alcohol. Many of the foreign scientific students of alcohol use the term as defined by Kraepelin, "The setting in of the effects of a new dose of alcohol before those of the previous one have entirely disappeared" so that the cumulative effects of alcohol develop, as they may, with even comparatively small doses (p. 55). Using the term apparently in this sense, Dr. Conrad Wesselhoeft 2nd of Boston has said:

"It is well for us to bear in mind that alcoholism is more prevalent and more of a menace to this country than any other disease, even including tuberculosis and syphilis."<sup>55</sup>

Typhoid and smallpox are preventable diseases. Physicians, boards of health and private families know this to be true and are waging incessant health campaigns against them on that basis. But alcohol-caused disease is also preventable disease, and even more easily preventable.

One may contract small-pox or typhoid unawares. No one need have alcohol-caused disease.

# ONE ADULT DEATH FROM ALCOHOL EVERY EIGHT MINUTES



**Drink is one Cause of Not Less Than  
65,897 Deaths Every Year in  
the United States**

Indulgence in Alcoholic Drinks Stands Almost if not Altogether in the Front Rank  
of the Enemies to be Combated in the Battle for Health  
—PROF. W. T. SEDGWICK, Massachusetts Institute of Technology, at Yale University, 1908.

Statistics based on Phelps' estimates: Mortality of Alcohol, 1911.

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## 39. ABSTAINERS HAVE LESS SICKNESS SMALLER DEATH RATE

The sick benefit societies in England and Australia which have only abstaining members have steadily shown more favorable records than societies which do not require abstinence. Figure 39 illustrates a report on societies of South Australia.<sup>44</sup> According to the report of the public actuary of South Australia, Mr. H. Dillon Gouge, F. S. S. (1892), "There are in South Australia three societies which may be regarded as being conducted on strictly abstinence principles—The Albert District of Rechabites, the South Australian District of Rechabites, and the Sons of Temperance. For the purposes of comparison I have selected the three of the largest of the mixed societies, the Foresters, the Odd Fellows (M. U.), and the (G. U.) Odd Fellows." Societies not requiring abstinence are represented by black bars, abstinence societies by red bars.

The first two bars compare the average duration of sickness per member taking the societies as a whole. Abstinence societies averaged 1.2 weeks per member; non-abstinence societies 2.3 weeks. Persons actually sick showed about the same relative difference; abstainers were sick 6.4 weeks, members of societies not requiring abstinence 10.9 weeks.

The third group of bars shows the percentage of deaths in these societies 0.6 per cent in abstaining, 1.3 per cent in non-abstaining societies. The abstaining societies had an advantage of nearly two to one.

## 40. THE TITANIC'S LOSS REPEATED EVERY EIGHT DAYS

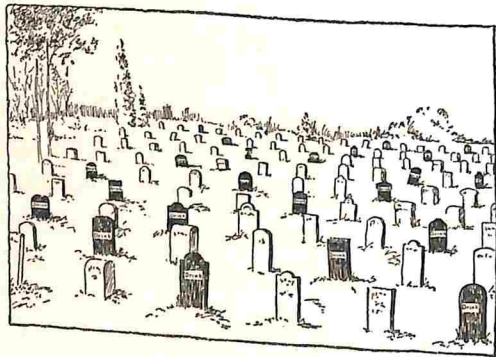
The Titanic carried down 1,503<sup>45</sup> people. Phelps estimates<sup>43</sup> that alcohol carries off directly or indi-



# AT LEAST 14,411 SUICIDES IN TEN YEARS

1901-1910

## To Whose Deaths Alcohol Contributed



**Black Gravestones Represent the  
Percentage (23%) of Suicides of  
which Drink is Estimated  
One Cause**

Percentage estimate E. B. Phelps. Mortality of Alcohol, 1911.

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rectly 65,897 adults annually. This means 1,503 men and women every eight days the year round. This takes no account of the children under 20 years old whose lives are cut off because of enfeebled vitality due to parents' drinking habits or because of neglect or inadequate care by drinking parents. Thus one death in every 20, counting men, women and children, is conservatively estimated to be wholly or partly due to drink; one death in every thirteen of adults (7.7 per cent); one death in every seven and one-half deaths of men.

### 41. AN ADULT DEATH FROM ALCOHOL EVERY EIGHT MINUTES

On the basis of Phelps' estimates<sup>43</sup> alcohol is responsible wholly or partly for carrying off one adult about every eight minutes, night and day the year around, through alcoholism itself and through 106 other causes of death into which alcohol may enter as a prime or contributing factor.

"When one considers in detail the relation of indulgence in alcoholic drinks to disease, the many important ailments of which it is the direct cause, to say nothing of the indirect influence on human misery and degeneracy, one can hardly avoid realizing that it stands almost if not altogether in the front rank of the enemies to be combatted in the battle for health."<sup>46</sup>

### 42. 14,411 SUICIDES IN TEN YEARS

During the years 1901 to 1910 there were in the United States 62,660 persons who committed suicide.<sup>42</sup> Drink was directly or indirectly responsible for not less than 14,411 of these cases of self-destruction, if we apply the estimates of insurance medical directors who considered drink one cause of 23 per



# INSURANCE RECORDS SHOW THAT DRINK SHORTENS LIFE 11 %

## AT 30 YEARS OF AGE

*Av. Insured Abstainer may expect to live 38.8 yrs. Longer*

*Av. Insured Drinker may expect to live 35 years Longer*

## AT 40 YEARS OF AGE

*Av. Insured Abstainer may expect to live 30.3 yrs. Longer*

*Av. Insured Drinker may expect to live 27.3 years Longer*

**"ABSTAINERS SHOW MARKED SUPERIORITY TO NON-ABSTAINERS throughout the entire working years of life for every class of policy, and for both sexes, however tested"**

Statistics of United Kingdom Temperance and General Provident Institution, 1841-1901. Reported to the British Parliamentary Interdepartmental Committee On Physical Deterioration, 1904.

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cent<sup>43</sup> of the suicides, that is, of one suicide in nearly every four.

The Prudential Insurance Company, while not giving direct evidence on the relation of alcoholism to suicide, showed<sup>38</sup> that five of the seven occupations given which had an excessive death-rate from alcoholism, had also mortality from suicide higher than the average. No occupation recorded had a larger proportion of suicides than was to be found in this group. Saloonkeepers were at the head of the list of occupations in the proportionate number of deaths by suicide.

## 43. HOW LONG MAY A MAN EXPECT TO LIVE? INSURANCE RECORDS SHOW THAT DRINK SHORTENED LIFE ELEVEN PER CENT.

R. M. Moore<sup>47</sup> Actuary of the United Kingdom Temperance and General Provident Institution testified before the British Interdepartmental Commission on Physical Deterioration, 1904, that records of this company, which for more than sixty years has maintained a separate section for abstainers showed that (Fig. 43) at 30 years of age the average insured drinker had 35 years more life before him. The average insured abstainer had 38.8 years (11 per cent) more.

At 40 years of age, the average insured drinker had 27.3 years of life expectation; the abstainer 30.3 years, again an advantage of 11 per cent.

"The non-abstainers were good average lives generally equal to the best accepted standard of assured lives. . . ."

"The abstainers showed a marked superiority to non-abstainers throughout the entire working years of life for every class of policy." (Moore.)



# Do You Know? One Insane Person in Every Four Owes His Insanity to Drink



It Costs \$5,332,307 Every Year  
to Care for these Alcoholic Insane  
in the United States

**YOU PAY THE BILL**

Percentage of insanity due to alcohol estimates of Rosanoff:  
McClure's Magazine, March, 1909.

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The figures covered the years 1841 to 1901, and were based upon 466,943 "years of life" in the non-abstainers' section, and 398,010 years of life in the abstainers' section.

The figures are cited by Mr. Moore as evidence of "the general increase in the length of life which may be claimed as following on the practice of abstinence.

"If an increased collective vitality (and what may reasonably be associated with it, namely, increased working capacity) to the extent of over 10 per cent be an advantage to the community, these figures should be a striking testimony of the benefits that would arise from a general adoption of total abstinence at an early age and the retention of the practice through life."<sup>54</sup>

The practical advantage to the abstainer in this British insurance company which maintains a separate section for abstainers, appears in the recently published statement of the profits of the United Kingdom Temperance and General Provident Institution for the five years 1906-1910.

According to the duration of the policy, the drinker's profits ranged from \$437 to \$775; but the abstainers' profits were from \$525 to \$1,160.

Thus the net cost of abstainers' life insurance was less because they proved better insurance risks.

#### 44. ALCOHOL A CAUSE OF INSANITY.

The effect of alcohol upon the brain differs widely with individuals. All authorities in all countries are agreed that it is often responsible directly and indirectly for producing such changes in the brain as result in insanity. In the United States it is estimated by different authorities that on the average

# Assaults and Drink

1,115 Assaults in Heidelberg, Germany, 1900-1904

66.5% Committed in Saloons



8.8% Committed in Street



7.8% Committed in Workshop



7.7% Committed at Home



9.2% Place Unknown



[Many assaults committed outside the saloon were also due to drink]

**The Sober Man Thinks  
Before He Acts  
Alcohol Makes a Man Act  
Before He Thinks**

**It causes irritability; weakens the judgment  
and self-control needed to hold  
irritability in check**

*"Our statistics [from the United States] point to the conclusion that  
Intemperance is the one most prolific source of the criminal condition"*  
— Committee of Fifty.

Kurz: Monats f. Krim, Psychol, 1905.  
Economic Aspects of the Liquor Problem, 1899.

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from 20 to 30 per cent of all insane patients admitted to asylums each year owe their condition wholly or partly to drink. The percentage ascribed to drink is larger among men than among women.

In the New York State Hospitals in 1910, alcohol appeared in 60 per cent of the men and 20 per cent of the women as a cause of insanity or as a habit disorder among the 5,245 patients admitted for the first time from whom positive statements of the use or non-use of alcohol were secured. Alcoholic insanity, as such, appeared in 15.7 per cent of the men and in 3.9 per cent of the women.<sup>48</sup>

In the Norristown, Pa., State Hospital for the Insane (April 1, 1907-April 1, 1909) of 520 new male patients, alcoholism was one factor in 46 per cent of the cases.<sup>49</sup>

Taking statistics from various countries it would appear that at a conservative estimate, about one case in every four of insanity (25 per cent) is chargeable directly or indirectly to drink. Figure 44 illustrates this percentage.

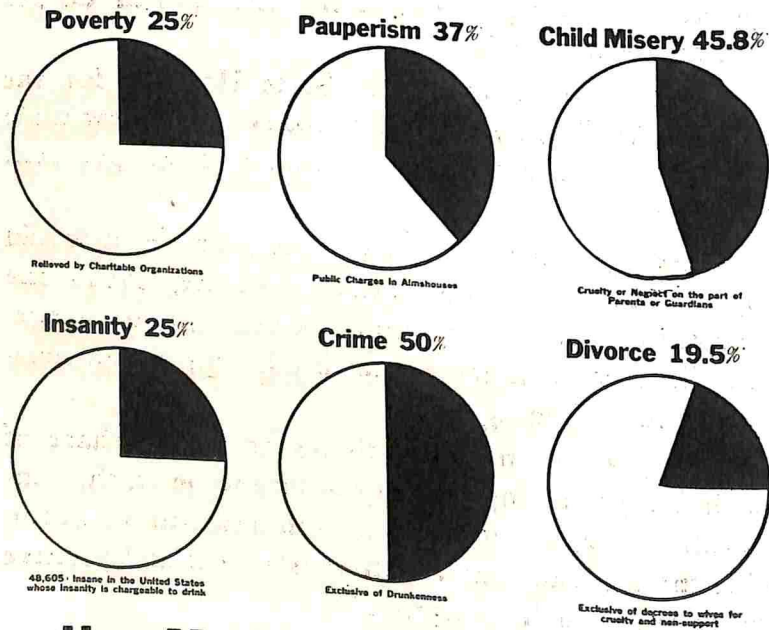
"Any error in the statistics as to the share of alcohol in producing insanity is sure to be on the conservative side, as very few cases indeed will be ascribed to intemperance unless there is a clear and positive evidence for such ascription."<sup>50</sup>

"When we consider the effects of alcohol in bringing about the numerous other factors of the causation of insanity, and recall the frequent instances in which alcoholism in one member of a family has carried other members into a condition of insanity we realize that it is well-nigh impossible to fully estimate its baneful influence." (Hyslop.)<sup>50</sup>



# Tax Payer and Philanthropist Pay Drink's Bills

Black Sections show percentage due directly or indirectly to drink



## How Much of This Do You Pay?

*"If the alcohol question were solved there would still remain other social questions to be solved, but it is also true that as things stand today no other question of social welfare can be taken up with any prospect of securing effective results until the alcohol question is solved."* — Judae Hermann Popert, Hamburg, Germany.

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## 46. TAXPAYER AND PHILANTHROPIST PAY DRINK'S BILL

The social waste through drink has to be borne largely by the sober portion of society. Fig. 46 presents the results of careful inquiries as to the extent of drink's injury to society in a few directions.

The poverty, pauperism, child misery and crime statistics were compiled by the Committee of Fifty.<sup>13</sup> The divorce statistics (see also Fig. 17) are taken from a special United States Government report\* on marriage and divorce.<sup>17</sup> The insanity estimate was that of Dr. Rosanoff<sup>26</sup> after a review of statistics from various countries. In the case of each of these social studies, the results are believed to be conservative in representing the proportion of cases due directly or indirectly to alcohol.

The statistics as to poverty represent the class of poverty which comes under the view of charity organizations and societies dealing chiefly with adults, and referred to 29,923 cases. The poverty of children was studied through special children's societies (see description Fig. 14).

The pauperism study covered 8,420 inmates of almshouses in 50 institutions in 10 states. In both poverty and pauperism investigations, special pains were taken to correct and verify information as far as possible.

The study of the relation of drink to crime related to 13,402 convicts in 17 prisons in 12 states. Drink alone was believed to be the cause of 16.87 per cent of crime; a principal cause in 31.18 per cent of cases; and one cause of crime in 49.95 per cent (the percentage represented in Fig. 46). From a cost point of view, these figures do not, of course, include the pub-

\* Divorce reference on Poster 46 should be 1909 not 1908.

# DRINK

## THE LARGEST CAUSE OF UNHAPPY HOMES

### IN CHICAGO

---



**Drink, 46 per Cent.**



**Immorality, 14 per Cent.**



**Disease, 12 per Cent.**



**Ill Temper and Abuse,  
11 per Cent.**



**Intemperance of Parents,  
7 per Cent.**



**Miscellaneous Causes,  
10 per Cent.**

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Statistics from the Records of the Chicago Court of Domestic Relations, 1913.

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lic expense involved in convictions for drunkenness which, under the present method of dealing with it, is handled by the police and judicial systems and constitutes a very heavy portion of public expense for police courts and minor penal institutions.

Through all these social burdens run the consequences of the individual drink habit. "Society can only exist by virtue of a full and normal recognition on the part of each individual of the mutual rights of one another. One of the early effects of alcohol upon the novice is a lessening of that appreciation of the right relation of things which makes him a normal being. When a large number of individuals through the influence of a drug environment begin to have a lessening of the perception of right and wrong, then the real foundations of society are in jeopardy." (De Witt G. Wilcox, M. D., Boston, October, 1913.)

#### 47. THE LARGEST CAUSE OF UNHAPPY HOMES IN CHICAGO.

The various influences that caused the breaking up of homes in the city of Chicago were tabulated from the official records in 1913 by Judge Gemmill, of the Court of Domestic Relations. The comparative sizes of the houses in Figure 47 shows the proportion which drink bore in his records to all other causes, nearly one-half.

An investigation by the Brooklyn Court of Domestic Relations, reported in 1914, revealed nearly the same proportion of family separations due to drink, namely, 45.8 per cent.

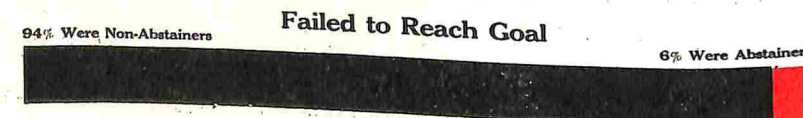
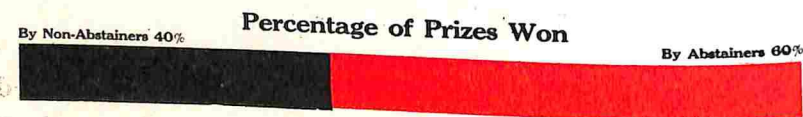
In England still larger proportions are attributed to drink as a destroyer of homes. "If you eliminate the drink question you eliminate 90 per cent of the cases we have," said John R. Roberts, editor of Stone's "Justices' Manual."



# Abstainers' Advantage In a Championship Walking Match

Match Held at Kiel, Germany, 1908

59 Non-Abstainers, 24 Abstainers Entered



Abstainers won 1st, 2nd, 3rd, 4th, 8th and 9th Places  
Non-Abstainers Won 5th, 6th, 7th and 10th Places. Two of these men had lived abstinent lives for months in training for the contest.  
Half (29) of the Non-Abstainers fell out by the way;  
Only Two of Twenty-four Abstainers fell out.

J. Peterson: Die Enthalsamkeit, July, 1908.

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The financial cost of taking care of the wives and children deprived of their proper means of support in the breaking up of the Chicago homes amounted to over \$150,000. The proportion due to drink, according to Judge Gemmill's figures, would be \$69,000; but this is only a part of the total expense, for good home training is the best preventive of the costly criminal class. The early home is the most telling influence in the formation of character.

"What the city should encourage at all costs is the home and the proper environment for the children," says the Chief Clerk of the Manhattan Court of Domestic Relations.

The first message of King George to his subjects contained these words: "The foundations of national glory are set in the homes of the people, and they will only remain unshaken while the family life of our race and nation is strong, simple and pure."

## 48. ABSTAINERS' ADVANTAGE IN A CHAMPIONSHIP WALKING MATCH

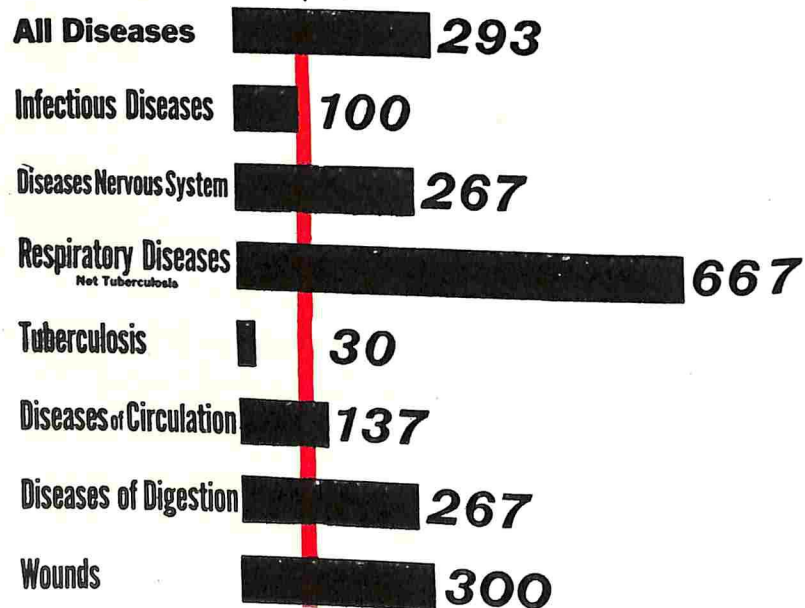
On June 28, 1908, 83 contestants to decide the championship in long distance walking among German athletes started from Kiel on a walk of sixty-two miles.

The invitation to enter the contest was issued to all German athletes irrespective of their habits as to alcohol, but all were asked to give the committee full information on this point.<sup>56</sup> The illustration (Fig. 48) shows the relative number of abstainers (29 per cent) and non-abstainers (71 per cent) who entered the match. No one used alcoholic drinks while on the march.

Seiffert, the leader, covered the 62 miles in 11 hours, 16 minutes and 28 seconds. The first four to

# Death Rate from Various Diseases in Drinkers and General Class

Red vertical column represents 100 deaths in General Class.  
Black bars represent proportional number of deaths in Drinkers for each 100 in General Class.



Persons were classed as "drinkers" in whom the physician found signs of chronic alcoholism.  
Men Studied Were in the Prime of Life, 35-44 Years of Age.

**"In the Tug of War between Life and Death, Drink Pulls on the Graveyard End."**

Sickness and Mortality Conditions. Leipzig Sick Benefit Clubs, 1910.

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end the march were abstainers. Abstainers won also the eighth and ninth places. Of the 10 prize-winners, 60 per cent were abstainers, although the abstainers constituted only 29 per cent of the contestants. Two of the remaining prize-winners, though not habitual abstainers, had lived abstinent for months while training.

The significance of the result consisted less in the abstainer's winning than in the fact that more than half of the non-abstainers (30) fell out by the way. Of the 24 abstainers only 2 fell out, so that of the 32 contestants who failed to reach the goal 94 per cent were non-abstainers, and only 6 per cent abstainers.

## 49. DEATH RATE FROM VARIOUS DISEASES IN DRINKING AND GENERAL CLASS

See descriptions Figs. 32, 33, 34.

## 50. DRINK MAKES ONE MORE LIABLE TO ACCIDENT

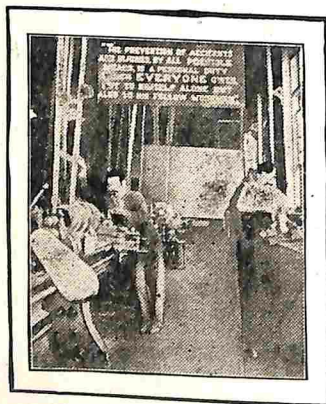
The responsibility of the workman for his fellow-workmen is indicated in the closing sentence of the quotation from the pamphlet of the Fidelity and Casualty Company (Fig. 40), "He endangers not only his own life, but the life of others."<sup>33</sup>

Recognition of the fact that alcohol makes the user more liable to cause accident to himself and to others lies behind the rule of the Brotherhood of Locomotive Engineers that every member must be an abstainer on or off duty. "In these days of fast time, congested traffic, and heavy trains," says Warren G. Stone, Grand Chief of the Brotherhood, "the engineer in the locomotive needs all the brains he has, and he cannot afford to have them muddled by alcohol."

It is for the same reason that employers who now carry a large financial responsibility for industrial



**DRINK  
Makes One More Liable  
To Accident**



## WHAT THE ACCIDENT INSURANCE COMPANY SAYS:

**"A man whose nerves have been made unsteady by a recent debauch or by the habitual use of alcohol, should not be permitted to operate dangerous machinery or to carry on dangerous work. *He endangers not only his own life, but the lives of others.*"**

Fidelity and Casualty Co.: Prevention of Industrial Accidents.

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accidents will find it necessary to eliminate any conditions liable to contribute to accident. The experience of railroads and of German accident benefit companies showing the excessive number of accidents among drinkers; the knowledge of the effects of alcohol in impairing steadiness of nerve, power of judgment and quick decision, in causing recklessness and in dulling the sense of touch, are necessarily leading employers "to select their employees with greater care, declining to take chances with defectives of all kinds and weeding out undesirables as fast as they become known. Modern practical psychiatry clearly demonstrates that the man addicted to the use of intoxicating liquors is more liable to accidents and to cause accidents than the man who is at all times sober."

The warning given by accident insurance companies (Fig. 50) is one evidence of the disadvantage at which the drinking workman in the near future will find himself.

The Ohio Manufacturers' Association lately sent to the several hundred manufacturers who are members various suggestions for increasing safety. Among them this order was proposed:

Among them this order was proposed.  
 "The use of intoxicants by employees while on duty is prohibited.  
 the frequenting of places

"Their habitual use or the frequenting of places where they are sold is sufficient cause for dismissal."

A number of employers reported that they had immediately posted the rule; others that they had already had it in force for some time.

The railroads are fast moving from this position to the strict requirement of abstinence at all times on the part of employees. "The purpose of the rule is solely that stated—the prevention of accidents,"<sup>51</sup> for

the protection of workment or those for whose safety they may be responsible.

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## ADDRESS GUIDE LIST

As a guide to those who may wish to prepare addresses to be illustrated by the posters, the following lists have been prepared, showing the posters best adapted for use on the various topics. Of course, these lists are not all inclusive, but merely suggestive. As a rule, fifteen posters will be about all that can be used profitably in a 45-minute address.

General Survey: Posters Nos. 48, 21, 47, 12, 24, 27, 28, 26, 29, 40, 39, 43, 10, 9, 3, 2, 5, 46.

For Children and Young People: Posters Nos. 48, 12, 13, 18, 21, 22, 25, 26, 27, 32, 33, 37, 40, 41, 47.

For Parents on Child Life: Posters Nos. 1, 2, 3, 5, 6, 7, 10, 9, 11, 12, 14, 18, 19, 20, 26.

For Workmen: Posters Nos. 21, 22, 24, 25, 26, 27, 28, 47, 50, 32, 33, 39, 43, 41, 46.

For Employers: Efficiency, Posters Nos. 21, 22, 47; Mental Keenness 24, 25; Accidents 27, 28, 50; Sickness Time Loss 32, 33, 49, 35, 37; Overhead Expenses 45, 46.

Alcohol a Public Health Problem: Posters Nos. 1, 2, 3, 11, 30, 31, 32, 33, 34, 49, 36, 37, 38, 41, 43.

Sociological: Infant Mortality, Posters Nos. 2, 3; Defective Children 6, 8; Tuberculosis 7, 37; Dependent Children 14, 15; Spoiled Homes 16, 17; Sickness 32, 33, 42, 40, 44.











