

SCIENCE - AND - INVENTION

THE POISON IN PROHIBITION MOONSHINE

PRECAUTIONS TAKEN by the pre-Prohibition moonshiner to insure the purity of his product are now thrown to the winds, we are told, by J. M. Doran and G. F. Beyer, of the United States Internal Revenue Bureau. In a paper on "The Character of Moonshine Liquor," read before the Food and Drug Section of the American Public Health Association, they assert that most of the modern illicitly distilled liquor produces so authentic a "punch" that a knockout is by no means infrequent. The poisons always present in raw liquor, which are properly reduced by aging or by redistillation, are retained, owing to haste to market the valuable product; and the results are as stated above. The most casual survey of the public press must impress every one, the writers say, with the vicious if not deadly character of the illicit liquor that is now being dealt in and consumed for beverage purposes. It is doubtful what percentage of cases of alcoholism show after-effects or involvements more serious than those prior to Prohibition, but they believe there is ample evidence in the shape of fragmentary reports by the press, heads of hospital staffs and public officials, to show that while alcoholism is less prevalent, its attendant and after effects are more serious. They say:

"We may eliminate from the present consideration the seemingly periodic and deadly wood alcohol or methanol drinking epidemics. The results measured in deaths and total blindness are ghastly. That methanol is the cause is at once apparent, but the criminals all too frequently escape. We must assume that the manufacture of illicit liquors with methanol is a matter of ignorance on the part of the compounder, and while he is a law-breaker at heart, it is inconceivable that he is also a murderer. The same is true even, tho it be in a less degree, of the illicit compounder of liquors who uses any one of the denatured alcohols which contain a varying percentage of methanol ranging from 2 to 10 per cent.

"Neither is it necessary to dwell at any great length on the illicit beverage use of liquors prepared from rectified or redistilled denatured alcohols of the many authorized formulas, the drinking of tincture of ginger, proprietary remedies, or toilet-waters. The character of the beverage is known and quite accurate deductions may be made. These abuses are apparently becoming much less as time goes on.

"The laboratories of the Internal Revenue Bureau have examined not less than 75,000 samples of illicitly distilled liquors alone subsequent to Prohibition, and the chemist is able to point out some definite outstanding facts when the question of the effect on the public health of so-called 'pure corn liquor' or straight-out 'moonshine' is seriously considered. A large element of the present drinking public is disposed to resort to the liquor of seemingly known and recent origin under the impression that it is at least safe and pure. The results of our analyses show that

this may be a fallacy. The evident stupefying or knockout effects of this liquor point to the same conclusion.

"For generations the moonshiner knew that the heads or first running of the distillation and the tails should be thrown away. He also knew that the middle run must be redistilled several times to make what to him was a passable mountain dew. He was extremely careful of his yeast and guarded it jealously. He did not know that the heads were high in aldehydes or that the tails were high in fusel oil. Neither did he know that redistilling over and over still further eliminated aldehydes and fusel oil, yet he knew by experience that unless he did do these things

even the strong man of the hills could not stand up under the load.

"Even the distillery product was not considered potable when first made, but was aged in wooden barrels for years before being considered fit for sale as beverage liquor.

"The chemists of the Internal Revenue Laboratory now note that samples which come into the laboratory in connection with raids on moonshine distilleries usually show a high content of acetaldehyde. The 'ranker' the liquor the higher the aldehyde content. The reason is the impossibility of fermentation control by the moonshiner. The simple pot still and the eagerness for more profits in not discarding heads and tails did the rest, and the

liquor presented to the trustful purchaser had everything that is needed to deliver a complete knockout.

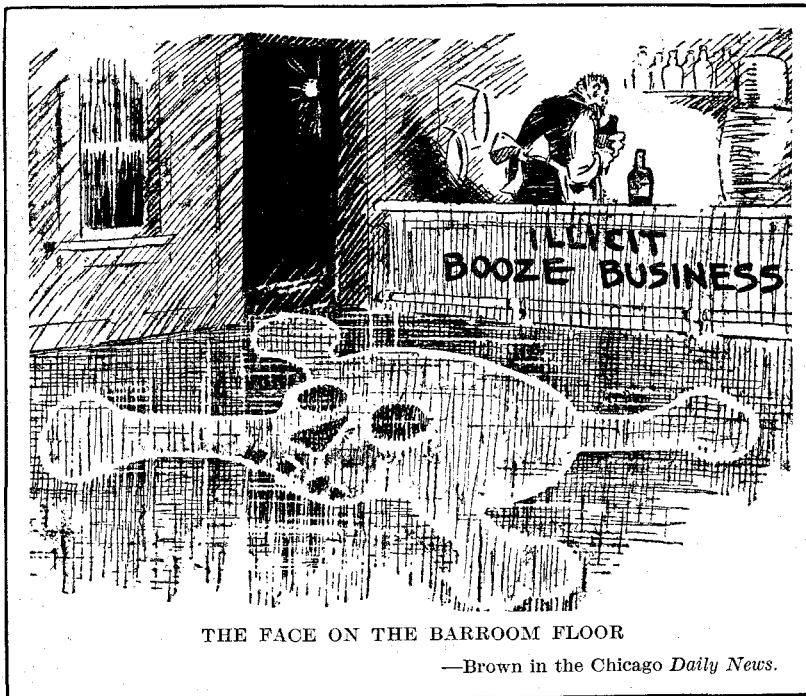
"The presence of copper and zinc salts is by no means unusual in these illicit liquors. The condenser of the still or the vessels in which the liquor is handled are the source of these metallic salts. The effects of these salts when taken internally are so well known as to require little comment. Many a case of poisoning or acute gastritis is no doubt due to this factor alone.

"The medical and chemical literature contains very little data on the toxicity of acetaldehyde. Holland's Medical Chemistry and Toxicology states 'Acetaldehyde is a rapid intoxicant, inducing profound stupor and deleterious after-effects, such as attend the drinking of high wines (raw spirits) which have not been deprived of it as they should be before taking internally.'

"The U. S. Dispensary states that acetaldehyde possesses marked antiputrescent properties, meat being preserved for months by its aqueous solution. The intoxication caused by it in animals is characterized by a very great loss of sensibility, rapidity of action and deleterious after-effects. Upon the respiration it exerts a powerful influence: in small doses quickening it, in large doses depressing it. The temperature is much diminished.

"It would be extremely interesting and instructive if a thorough study could be made of the action of the various aldehydes in varying percentages in alcoholic solution, as more light could then be thrown on a question which at present rests to some extent on speculation. It is hoped that this problem may be pursued further in the chemical and biological laboratories.

"One statement may be made definitely, however, and that is that the harmful constituent or constituents of new whisky if they be aldehydes is and can only be removed in one of two ways: either by fractionating in an alcohol column or long



THE FACE ON THE BARROOM FLOOR

—Brown in the Chicago Daily News.



HOW THE RADIO BRINGS PLEASURE TO THE DEAF

Members of the New York League for the Hard of Hearing, 126 East 59th Street, New York City, enjoying a musical number.

aging in a wooden barrel. Neither of these ways appears to be open or available to the present-day moonshiner.

"Public enlightenment on these matters is necessary. The work of the chemist is rendered ineffective unless other professions interested in public-health matters lend their efforts toward bringing a fuller knowledge of these basic scientific facts before all.

"The public is entitled to know these things in order that it may act with intelligence in its own protection."

HOW FLU RECURS

FURTHER EVIDENCE OF PERIODICITY in outbreaks of influenza is afforded by a recent increase in the number of cases of the disease in London and other English cities, according to Dr. George W. McCoy, director of the U. S. Hygienic Laboratory. But the recurrence of the disease in England does not necessarily mean an epidemic here, he said, as quoted in Science Service's *Daily Science News Bulletin* (Washington). We read:

"The reports from overseas stated that the first increase in the number of cases of influenza in English cities was noted during the third week in September. This was nearly 33 weeks from the date of the last outbreak there, a period which is coming to be associated with revivals of the disease. This period was first observed by Dr. Brownlee, statistician of the British Medical Research Council, and it has been recently confirmed, so London reports state, by the health authorities of Liverpool. Commenting on these reports, Dr. McCoy said: 'There is much evidence for a recurrent periodicity in influenza epidemics for a period of some years following a general world epidemic such as was experienced in 1918-1919. This period seems to be close to eight months or 33 weeks from the beginning of one epidemic to that of another, altho irregularities sometimes occur. This is particularly true if a recurrence is due during the warm months. In such a case only a few cases are usually noted, and no real epidemic develops. For example the 33 weeks' period since the outbreak of the last epidemic here ended late in August, but there has been no outbreak. The next date for recurrence, if the period holds good, is late next spring, but the lateness of the season will probably prevent much of an outbreak.'

"Dr. McCoy called attention to a periodicity in epidemics of other infectious diseases such as measles and scarlet fever. 'It has been found in New York,' he said, 'that measles is much more prevalent on alternate years, while for scarlet fever the period seems to be four or five years. Why this is so, we do not know.'

"Some medical authorities in England have hazarded a guess that influenza recurs periodically and spontaneously in some individuals who have suffered from the disease and have cited the outbreak of the disease on ships which have been long at sea as favoring such a theory, but it has as yet not found general acceptance."

RADIO'S PROMISE TO THE DEAF

RADIO WILL NOT CURE DEAFNESS. It will, however, enable the partially deaf person to hear that which he could not hear in the ordinary way. He who is hard of hearing may often "listen in" perfectly well, with his brothers and sisters whose ears are unimpaired. In order to clear up the facts about radio and deafness, which he asserts have been misrepresented in the public press, Dr. Harold Hays, president of the American Federation of Organizations for the Hard of Hearing, contributes to *What's in the Air* (Chicago) a plain statement of what radio already means to those whose hearing is affected. Writes Dr. Hays:

"Ill-advised current reports in the press heralding the curing of deafness by means of radio are likely to be misunderstood, with the result that too much may be hoped for. I have not made the statement that radio would actually be the means to improve or restore hearing. As to that only the future will tell.

"But radio offers a source of happiness to the deafened which at present is unrealizable. Our eyes were opened to its possibilities by the following case: One of the directors of the New York League for the Hard of Hearing has been hopelessly deaf for years; so much so that he can only understand when an electric device is attached to each ear. Altho in the music-publishing business, he had not been able to hear music for over twenty years. He never went to a concert or a banquet. He never mingled in social activities. A friend suggested a radio receiving set. To his amazement, he could hear so well that now he sits in his easy-chair of an evening, with headphones clapped on his ears, and hears concerts, speeches, market reports, jazz, and bed-time stories. When he told me about it, his eyes filled with tears of happiness and he said: 'Doctor, I never expected to hear the human voice again—I feel as tho I were reborn—my life is made over again.'

"What does this mean for the future? It means two things—first it means untold happiness to those whose minds have been in darkness for many years, and secondly, it means that they or the experimenters in radio may discover some new method for alleviating deafness.

"At present the New York League is experimenting with a radio set, working in conjunction with skilled radio engineers. They wish to amplify sound so that the hearers will not only be entertained, but their ears will receive exercise at the same time.

"However, I wish to stress particularly the fact that in 90 per cent. of cases, deafness begins in childhood. In many cases, it is preventable at that time. It is not preventable later in life and, unfortunately, neither radio nor any other means has been found to later increase the hearing.

"I sincerely hope that radio will solve the problem to some extent, but if it does nothing more than give that added happiness of which the deafened have so little, it will have done a great deal."