

C. A. Wood

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Blindness

POISONING BY WOOD ALCOHOL.

CASES OF DEATH AND BLINDNESS FROM COLUMBIAN SPIRITS AND OTHER METHYLATED PREPARATIONS.*

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CHICAGO.

AND

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With the kind assistance of the profession in the United States and Canada, we have been able to report the following instances of methyl alcohol intoxication, most of them hitherto unpublished.

The list of deaths and cases of blindness following the ingestion of "Columbian spirits" and other forms of wood alcohol, as well as methylated "Jamaica ginger," lemon "extract," "bay rum," "cologne water," "witch hazel," essence of peppermint, essence of lemon, etc.; not to mention all sorts and kinds of other official, domestic and proprietary remedies into which alcohol enters, has lately grown to alarming proportions. This record of death and blindness has been made in recent years only, since the cheap, "deodorized" methyl alcohol [untaxed, retail price 50 cents a gallon; ethyl alcohol, taxed, retail price \$2.60 a gallon] has been put on the market.

Wood alcohol and methylated spirits made by the old processes subserved useful as well as harmless purposes. They possessed practically all the solvent and other properties required for the various arts in which they were employed, and no one thought of drinking them or employing them as adulterants in foods or drugs. Indeed, so abhorrent to the organs of taste and smell was even a small percentage of wood spirit in any mixture, that no person in his senses would drink so nauseous a compound, however diluted and disguised, or however much he craved an alcoholic drink.

*Read at the Fifty-fifth Annual Session of the American Medical Association, in the Section on Ophthalmology, and approved for publication by the Executive Committee: Drs. Frank Allport, John E. Weeks and R. L. Randolph.

With the advent of preparations like "Columbian spirits," "colonial spirits," "eagle spirits," *et hoc genus omne*, the principal safeguard against poisoning by methylic alcohol has been removed. Some of these deodorized alcohols are with much difficulty distinguished by the laity from pure ethyl alcohol. Hence it is that in spite of ordinary precautions, such as labeling bottles of these preparations "not to be taken internally," they have been and are now, through accident and design, much used as substitutes for grain alcohol.

The appended histories by no means constitute a complete list of deaths and blindness from wood alcohol poisoning. A more careful canvass will, we are sure, bring to light numerous additional instances of this intoxication that we have not been able to gather during the limited time at our disposal. The remarks of Dr Moulton properly apply to many localities where grain alcohol beverages are difficult to procure:

Cases (of wood alcohol poisoning) are of frequent occurrence in Indian Territory, where the sale of ethyl alcohol is strictly prohibited by the United States government, so that those who crave stimulants drink anything they can get. I can safely say that in that country at least fifty deaths have occurred from this cause in the last few years.

The same remarks apply, though in a less degree, to methyl alcohol blindness. A circular letter on this subject was addressed by Dr Wood to a large majority of the ophthalmic surgeons in the United States and Canada, and there is good reason to believe that, as a result of these inquiries, descriptions more or less complete of most of the well-defined and recent cases of wood alcohol amblyopia and amaurosis will be found in this report. At the same time, since blindness from methylated liquids was practically unknown until the recent introduction of this "purified" product, medical men may well be excused for not recognizing, for attributing to other causes or for afterward forgetting cases that several years ago came under their notice.

For purposes of subsequent reference we have divided these histories into four classes:

Class A.—Published cases of blindness or blindness followed by death, due to the drinking or inhalation of methyl alcohol. The cases comprised in Class A were collected, abstracted and tabulated by Dr. Buller.

Class B.—Cases (hitherto unpublished) of blindness or blindness followed by death from drinking methylated liquids.

Class C.—Cases (hitherto unpublished) of blindness from methyl alcohol absorbed through the lungs or skin, or both.

Class D.—Cases (hitherto unpublished) of death from methyl alcohol poisoning, without history of previous blindness.

The cases detailed under Classes B, C and D have been collected and edited by Dr. Wood. The sources of the information in the last three classes, arranged in alphabetical order, will be found at the head of each history.

SUMMARY OF PUBLISHED CASES.

The tabulated records (to appear later in this article) of 54 of the published cases show the ages of individuals to be from 21 to 65 years; mostly about middle life. Of 51 we note: Sex; males, 47; females, 4. Habits of life; 8 were, or had been, hard drinkers; 9 admitted occasional indulgence, 3 habitually temperate, 30 habits not stated, but no doubt most of them were more or less addicted to alcoholism. Six are reported

to have used tobacco in excess, as well as alcohol. Occupations: Artistic painter, 1; attendant, 1; bricklayer, 1; barber, 1; carpenter, 2; china decorator, 1; convicts, 3; dressmaker, 1; farmer, 2; housewife, 2; hotel keeper, 1; miner, 1; millhand, 1; workmen, 4; mechanic, 1; soldier, 1; sailor, 3; woodsman, 1; watchmaker, 1; upholsterer, 1; not stated, 20.

As to the mode of occurrence: In most instances the trouble occurred as a result of a spree, generally together with friends or associates; in a few instances the alcohol was taken by accident. The preparations nearly all undoubtedly contained the drug, methyl alcohol, as the sole or chief toxic ingredient. In 28 cases methyl alcohol was specified; in 12 Jamaica ginger; in 4 Columbian spirits; in 2 essence of lemon or cinnamon; in 1 cologne spirits, so-called; in 1 an unknown alcoholic mixture; in 3 methyl alcohol vapor was inhaled.

As to the quantities consumed: The methyl alcohol series varied from half an ounce to 16 ounces. The Jamaica ginger from 3 ounces to 25 ounces, the larger quantities usually in divided doses over a period of several days. Columbian spirits from 6 ounces to 8 ounces and in 2 cases quantity unknown. Essence of lemon, 5 or 6 ounces in one case, in the other quantity unknown. Cologne spirits less than 8 ounces. Of the unknown strong alcoholic liquor, 15 ounces. Of the three inhalation cases quantity inhaled conjectural.

As to general effect: Headache was mentioned in 19 cases as a conspicuous symptom; gastric pain, in 11; nausea and vomiting in 26; dilated pupils in 20.

The results as to visual disturbance were 16 total blindness; 3 total blindness of one eye; 15 partial recoveries; 7 recoveries; 10 remaining cases terminated fatally; sight became dim in three hours in one case; six hours in 1 case; eight hours in 1 case; ten hours in 1 case; twelve hours in 2 cases; twenty hours in 1 case; twenty-four hours in 19 cases; forty-eight hours in 5 cases; three days in 2 cases; six days in one case; seven days in one case; sight became lost in twenty-four hours in 10 cases; in thirty hours in 2 cases; in twelve hours in 2 cases; in forty-eight hours in 3 cases; in three days in 3 cases; in four days in 3 cases; in five days in 2 cases; in six days in 2 cases; in seven days in 1 case; in eight days in 1 case; in seventeen days in 1 case. Of the remaining 21, facts in this connection are not definite.

Certainly few members of the medical profession, and practically no one of the general public, are as yet aware that methyl alcohol taken into the system in moderate or considerable quantity not infrequently causes death, after the manner of the cases just cited. More than this, the people are still less cognizant of the fact that a certain proportion of those who survive the poisonous effect of the drug are condemned ever afterward to the miseries of greatly impaired vision, and, indeed, not infrequently to absolute blindness. It is a remarkable circumstance that, notwithstanding the accumulated evidence of many similar recorded facts, there still exists a widespread unbelief in the toxic action of wood alcohol. Not long ago, with the object of discovering cases of methyl alcohol poisoning known to have occurred in Canada, Dr. Buller wrote to thirty or more Canadian oculists, asking each one for his experience in this direction. One sent this reply which is worthy of record: It runs as follows:

I have not met with any case of blindness from drinking wood alcohol nor heard of any; notwithstanding the fact that

mouth, pupils dilated, no reflexes. Had him taken to city jail, where, after heroic rubbing, applying of hot packs, and hypodermic injections of strychnia, he was sufficiently aroused to answer his name. Recovery. Vision, as well as his gait, was affected for several days.

CASE 6.—(From Dr. A. H. Brundage and Dr. James W. Ingalls, Brooklyn, N. Y.)

Mrs. M., living at East Brooklyn, N. Y., aged about 35, was addicted to the excessive use of alcoholic drinks and occasionally drank grain alcohol with water and sugar. Having heard that wood alcohol was about the same thing but much cheaper, she purchased half a pint and drank most of it.

She was found partly unconscious and sweating profusely. She was nauseated, vomited severely and was delirious, with pupils dilated. Seemed chilly. Vision gradually became blurred. Died in about thirty-six hours from the time the wood alcohol is supposed to have been drunk.

Treatment.—Free siphonage of the stomach, cold effusions to head, caffeine, digitalis, pilocarpin, external heat, oxygen, rectal injections of hot coffee, and also of normal salt solution.

CASE 7.—(From Dr. Henry D. Bruns, New Orleans, La.)

A man, about 50 years of age, came to the clinic in 1902 with the following history: He had made toddy one evening with Columbian spirits, of which he took several drinks, using at least an ounce of the wood alcohol. Shortly afterward his vision completely failed him. He then regained much of his sight for a brief period, but finally became totally and permanently blind.*

CASE 8.—(From Dr. Henry D. Bruns, New Orleans, La.)

This case,* is that of a man of middle age who ingeniously concocted a "highball" whose spirituous portion consisted of a popular "antiseptic." He promptly became blind, but when seen a week later had somewhat improved in vision. He left the clinic and it is not possible to say whether the improvement held or not. Dr. Bruns had the proprietary article employed by this patient analyzed by the chemist of the board of health. It contained a large percentage of wood alcohol.

CASE 9.—(From Dr. A. E. Bulson, Jackson, Mich.; Dr. Pray, physician to the State Prison, Michigan; Dr. J. F. Byington, Battle Creek, Mich.)

John C., convict, aged 48, appeared March 5, 1903, at morning sick call and asked to be excused from work. He walked unsteadily and the pupils were somewhat dilated. He said he had eaten no breakfast and had vomited. On accusing him of having taken some drug he admitted that he had drunk wood alcohol. This was used in the prison shirt shops for dampening collars for the purpose of turning them. The mixture was equal parts of wood alcohol and water with glycerin, 2 ounces to the pint. On March 3 patient consumed 10 ounces of this mixture, and on the next day 4 ounces. He was sent to the hospital and treatment, consisting of large doses of bismuth, given to quiet the intense burning pain in the stomach. At 7 p. m., although the electric light at the head of his bed was turned on, he asked to have a light; in other words, he was apparently blind. Dr. Pray says the blindness came on quite suddenly. He instituted alternate hypodermics of pilocarpin and strychnia every four hours (1/10 gr. pilocarpin, 1/30 strychnia), and potassic iodid grs. 20. On March 10 the patient could distinguish the hand held close to his eyes. March 15 he could see quite plainly. March 18 again failing vision, and on March 24 very poor vision. Discharged from hospital March 27. Strychnia and potassic iodid continued in pharmacy. Vision 7/30. Dr. Bulson examined this case later and found only light perception in the right eye with blue white discs and marked retinal changes, the former more pronounced on the temporal side. In the left eye V. = 3/20 for central vision; about the same changes in the papilla. There was a decided contraction of the peripheral field. In September, 1903, Dr. Byington again examined this man who, then a blind pedler, presented himself with the request that the physician, as a matter of charity, give him a "statement of his case" so that he could the better dispose of his small stock in trade. Dr.

* This case, as well as the next one, is entered in the tables published by Dr. Bruns in the annual report for 1902 of the New Orleans Eye, Ear, Nose and Throat Hospital.

Byington made only the superficial examination demanded by the patient and found V. = finger counting at 3 to 4 inches in each eye, associated with white atrophy of both nerve heads—each lamina cribrosa being distinctly visible at the bottom of a shallow atrophic excavation.

CASE 10.—(From Dr. Homer Collins, Duluth, Minn.)

J. A., aged 46, carpenter, Cromwell, Minn., was in the habit of going on several spree yearly, but avoided liquor between these sprees. Used tobacco, smoking or chewing about "ten cents' worth a week." On Nov. 22, 1901, with a companion, he drank about one dozen bottles of Jamaica ginger bought at Cromwell. The following day the companion vomited freely, but his eyes did not suffer. The patient vomited "everything" the next day and his eyesight began to fail at once. On the second day he could distinguish only light from darkness, and remained in this condition for two days. Then improvement of vision began and continued until about Dec. 12, 1901, when V. = 2/200 (white letters) in either eye. Right half of each field was covered by a scotoma, the most acute vision being eccentric, to the nasal side of the fixation point. In the left eye the field is very little contracted; central vision is best. There is some tenderness above and behind the eyeballs. The patient gave the history just outlined and stated that immediately after the poisoning he had considerable pain in his eyes, which were too sore to touch. He was put on pilocarpin treatment, under care of the county physician, and on December 22 thought he could see a little better, but tests showed no improvement, and there has since been little change in his condition. Bilateral post-neuritic optic atrophy.

CASE 11.—(From Dr. Coote of Quebec, and Dr. Frank Buller, Montreal, Canada.)

A man between 28 and 30 years of age, well built and healthy in appearance, without any history of a serious illness, while working in a lumbering camp, caught a slight cold. To cut the trouble short he took what he considered a big dose, about a wineglassful of methylated Jamaica ginger. He commenced to suffer from violent headaches and retching shortly afterwards. Some twelve or fourteen hours later his sight commenced to grow dim. A second dose was then taken and his sight grew worse. He was taken home and, with the exception of his eyes, he was shortly well again. About three months later, when he appeared at the hospital, central vision in both eyes was completely lost. Toward the periphery of the field of vision in both eyes a few patches of retina remained sensitive to light and fingers could be seen at a couple of feet. The pupils reacted to light and on convergence. Both discs were pale (not white) and the margins well defined; the arteries and veins were contracted, but not equally; the media were clear. He was kept in the hospital for some weeks, but the treatment was of no avail.

CASES 12 and 13.—(From Dr. Homer Collins, Duluth, Minn.)

In the year 1900 (exact date unobtainable), an Indian from one of the Minnesota reservations, accompanied by an Indian attorney (G. H. B.), consulted Dr. Collins. The history of the case showed that at least six Indians, having procured a supply of essence of lemon, drank freely of it. Three died promptly, evidently from the direct effects of the beverage, one of them becoming blind before death. Two others suffered considerably, but recovered without apparent damage to any of their organs. The sixth Indian, the patient under discussion, survived, but became totally blind. An ophthalmoscopic examination revealed marked atrophy of both optic nerves.

3. Through the kindness of Dr. J. W. Chamberlin of St. Paul, Mr. G. H. B. wrote me the following note, giving further information regarding this matter: "Your letter of inquiry reached me at White Earth, Minn. In reply, an Indian trader, named Malone (afterward prosecuted by the U. S.), sold to several Mille Lac Chippewa Indians a number of bottles of essence of lemon on June 28, 1907, which they drank in lieu of alcohol, when that had been exhausted. A large number of Indians drank alcohol; only six or eight drank the essence of lemon. The latter were all taken seriously ill within an hour after they began to drink the essence, and three of them died before morning. I can recall the name of only one of those who died, a chief, Mah-kew-kew. Another Indian, Bud-dub-ay-kehshig, became blind and has not since recovered his sight. He is still living at Mille Lac, Minn. The others, although very sick, recovered without any bad effects. It was thought at the time that the death of the Indians was due to the wood alcohol in the essence of lemon." C. A. W.

CASE 14—(From Dr. W. G. Craig, Hartford, Conn.)

M. J., colored, aged 50, was given as a beverage a mixture of sugar, water and Columbian spirits, about three fluid ounces in all. This was on April 30, 1902. The dose was followed by nausea and vomiting and in twelve hours by complete loss of vision. She recovered her sight to some degree, but a month later it was only 1/4 in each eye. Nerve heads chalk white.

CASE 15—(From Dr. M. M. Cullom, Nashville, Tenn.)

While acting as interne in the Manhattan Eye and Ear Hospital, New York City, the following case came under Dr. Cullom's care:

In October, 1897 a workman was brought into the hospital with the following history: Two nights before he drank some wood alcohol in his room. It threw him into a stupor and, as he expressed it, "When he waked it was so dark that he supposed it was still night." He groped his way out into the hall and asked some one the time, and was informed that it was about 9 o'clock in the morning. The following day he was brought to the hospital. His pupils were widely dilated and did not respond to light. He had only perception of light in both eyes. The ophthalmoscope showed both nerve heads to be milk white in appearance and the entire fundus was blanched, the vessels being much smaller than normal. He was put on increasing doses of strychnia nitrate, administered hypodermically, which were carried to the physiologic limit. The vision improved for a short time until with his left eye he could count fingers, but the improvement was soon lost and he was discharged as hopelessly blind. There was no attempt made to secure a sample of the alcohol.

CASE 16—(From Dr. I. F. Dickson, Portland, Ore.)

Two teamsters, strong, healthy men, under 30 years of age, who had been working hard all night, arrived at a friend's house in the early morning, much fatigued. The friend offered them a drink of something that, he said, "would make them feel better." He accordingly prepared a mixture of wood alcohol and water sweetened with syrup. One man died toward evening. The other took only a few mouthfuls and spat some of it out, as he did not like the taste. Shortly afterward he became unconscious and remained so till next morning. When he awoke he could only distinguish light, and within three weeks the sight was entirely lost. About this time the discs began to show signs of atrophy; otherwise the fundi were normal. He was first seen by a physician shortly after taking the drink, when it was noticed that the pupils were slightly dilated, but nothing abnormal was then seen in the background of either eye and no fundus changes appeared for about three weeks. The latest report from the patient is that he is still totally blind.

The following case is of great interest owing to its early occurrence (1898). It was one of the first examples of blindness due to hay rum made from Columbian spirits:

CASE 17—(From Dr. J. A. Edwards, Columbia, Tenn.)

In February, 1898, he was called to Centerville, a town thirty-one miles distant, to see a young lawyer, W. A. K., aged about 26 years, who gave the following history: Living in a "dry" town and being in the habit of going on periodical sprees he called on a friendly physician who was in the habit of giving him a prescription containing alcohol and any other simple drug which would protect the druggist from prosecution for violation of the liquor laws. On this occasion he was given, to supply the needed alcoholic beverage, as well as to protect the druggist against the provisions of the prohibition law, the following prescription:

R. Bay rum 2 fluid ounces.
Alcohol 4 fluid ounces.
Sig.: To be applied externally.

He drank all this in an hour or so, and was afterward seized with violent pains in the stomach, nausea and vomiting, which continued about 24 hours, when he became totally blind. Dr. Edwards found him with pupils widely dilated and some tenderness of the globe on firm pressure. Having obtained the above history of his case the diagnosis of retro-bulbar

neuritis or toxic amblyopia was made. At that time very few reports of such cases had been published, but he was given an unfavorable prognosis, and was told that his vision would probably clear up in from ten to twenty days, but that blindness, either partial or complete, might recur from secondary changes in the optic nerve. The patient promised to call on Dr. Edwards in a few days, but saw, instead, another very competent oculist, under whose care for three or four weeks his vision cleared almost to normal. Very soon thereafter his sight again declined to 20/60, with scotomata in parts of the visual field. He still sees only well enough to read very large print, and that with much difficulty, on account of the scotomata. He practices his profession, but is very much handicapped, his wife being obliged to assist him in his legal work. Investigation developed that the "bay rum" in his prescription with which he was poisoned, was put up by a firm in Buffalo, N. Y., and made of Columbian spirits.

CASE 18—(From Dr. W. E. Driver, Norfolk, Va.)

J. B., male, white, age 25, U. S. sailor, brought July 12, 1898, from the U. S. Naval Hospital, by the surgeon in charge. He gave the following history: One week since the patient and two of his companions, who were in charge of a naphtha launch, indulged freely in the wood alcohol used in starting the engine. He and his companions were made desperately sick, and he became totally blind.

The pupils were widely dilated, but there was no visible pathologic change in the fundus. The diagnosis was wood alcohol amblyopia. Treatment was potassium iodid, ten grains three times a day at first; increased doses later. July 16, 1898, pupils still widely dilated. Had something more than light perception in each eye. Optic nerve, each eye, decidedly paler than at the previous visit. July 23, 1898, decided improvement in vision of each eye. Can now recognize large objects. Both pupils widely dilated. Eyes very bright. Both optic nerves show decided pathologic changes, and very much whiter than at previous visit. Dr. Driver learned from the Naval Hospital that soon after the last visit to his office, the patient was discharged from the Navy and nothing further was heard of his case. His two companions died during the debauch from the effect of the intoxication.

CASE 19—(From Dr. W. E. Driver, Norfolk, Va.)

A. H. S., male, white, aged 25, came Feb. 2, 1903. Referred to Dr. Driver by Dr. Holland of Holland, Va. The patient became suddenly blind ten days before. When he went to bed he could see as well as ever; on waking was totally blind. Had been drunk from cider purchased from a country store.

Right eye: Cornea very bright and glistening. Pupil widely dilated. Optic nerve pale, but no other pathologic change in fundus. No light perception. No reaction of pupil to light.

Left Eye: Cornea clear and bright. Pupil widely dilated. Nerve white. No reaction of pupil to light.

Diagnosis: Wood alcohol amblyopia.

Patient was sent to hospital and given potassium iodid, 10 grains three times daily, and twentieth of a grain of strychnin. On February 9 vision began to return in left eye. Has light perception. No improvement in right eye. February 15, counts fingers one foot from left eye. Light perception only in the right eye. Optic nerve, each eye, decidedly paler than normal. February 23 patient went home, with no improvement in the right eye, but counts fingers at three feet with left eye. Nerve each eye, white, bluish tint. Pupils widely dilated. Corneal reflex extremely bright.

This man has consulted Dr. Driver three times since he left the hospital the first time. There has been no improvement in vision of the right eye. With left eye vision is 6/200.

CASE 20—(From Dr. William H. Dudley, Easton, Pa.)

Ralph W., single, aged 39, an essence pedler, about June 15, 1903, took for a "cold," diluted with water, four ounces of what he says he bought for grain alcohol. Two days later his vision became very bad, and when seen three months later, his optic discs were quite white; fields were narrow; vision 1/200 right and left. Seven months later his condition remained practically the same. Patient states that as soon as he had

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drunk the alcohol he discovered his mistake, realizing then that he had taken wood alcohol.

CASE 21.—(From Dr. H. P. Engle, Newton, Iowa.)

G. F. of Mingo, Iowa, aged 45, drank at least half a pint of Columbian spirits diluted. He lived forty-eight hours, but before death there were present gastrointestinal irritation, blindness, delirium and collapse.

CASES 22, 23 and 24.—(From Dr. W. H. Ford, Sulphur, Ind. Ter.)

As detailed elsewhere in this report, four men, aged from 30 to 40 years, went on a spree with methylated bay rum. Two, who consumed large quantities of the poisonous perfume, died. There is no history of blindness in one case, but the other, S. B. B., age 24, who succumbed to the poison, lived about eighteen hours, and suffered the most excruciating pain in stomach and bowels. Even though heroic doses of morphia, administered hypodermically, were given him, he had to be held in bed. He was totally blind most of this time. About an hour before death his pulse became imperceptible at the wrist, his heart being very rapid all the time. The odor of methyl alcohol was very noticeable in the perspiration, which was very profuse. The two that survived, aged 29 and 37, suffered for some twelve to fourteen days with marked ocular disturbances. Vision was very indistinct; it seemed at times as if they were "looking through a moving screen." Again, in a few hours there would be a total loss of the outlines of objects. After two weeks vision appeared to return.

CASE 25.—(From Dr. P. G. Goldsmith, Belleville, Ont., and Dr. Sprague, Stirling, Ont., and from the North Hastings Reporter, June 15, 1904.)

William Sutherland of Montegale met his death under very distressing circumstances on Monday night. He had returned from working with the chemical company near Orillia and brought a bottle of wood alcohol with him to let his neighbors see it. Not suspecting its poisonous nature he let some of them taste it. Finding it too strong, they were all satisfied with merely tasting it. But Sutherland, it is estimated, took about a wineglassful. In a short time he complained of difficulty in breathing, then of blindness, and asked for a physician, who was sent for. He soon lapsed into unconsciousness and died before medical aid could arrive. Deceased was a respectable farmer about 45 years of age, and a widower, having two sons. The sad event cast a gloom over the community.

CASE 26.—(From Dr. A. H. Gordon and Dr. Frank Buller, Montreal, Quebec.)

B. K., aged 40, female, domestic alcoholic. On Jan. 18, 1904, had been drinking for two days. Drank one quart of whiskey, a half-pint mixture of gin and spruce gum, as well as nearly eight ounces of wood alcohol. Vomited all one morning, and in the afternoon became excited, partially delirious. Complained of severe headache, pain in arms and fell to floor unconscious. Later, general convulsion and death in half an hour after convulsion. Half an hour before falling she groped about the room calling for light, evidently completely blind. Pupils widely dilated and inactive. The cause of death was undoubtedly the wood spirit drunk within twenty-four hours of her death. The autopsy showed no brain or kidney lesion.

(To be continued.)

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(Continued from page 977.)

CASES 27 and 28.—(From Dr. Frank A. Gray, Munising, Mich.; Dr. T. W. Scholten, Munising, Mich.)

J. R. and S. R., nationality French, occupation woodmen. Date of death, Nov. 14, 1898. L. R. aged 40, nationality French, occupation woodman, date of death, Nov. 14, 1898.

Symptoms in both cases, great suffering from pain in abdomen, especially in region of stomach, vomiting, severe headache, total blindness and severe prostration. The post-mortem findings consisted principally of a marked congestion of the gastric mucosa, also of liver, kidneys and vessels of brain. The conclusions arrived at were that while the local changes produced by this alcohol were quite prominent, death was undoubtedly due to the systemic effect of the poison. These two men who died from the poisoning were brothers. They came to Munising, went to a saloon and, as they stated, called for "good" alcohol. The saloonkeeper says he understood them to say "wood" alcohol. He not having alcohol in stock, went to a drug store and bought two quarts of wood alcohol for each. He delivered it to them and they left town in the evening and walked to camp. The alcohol was not labeled "poison." They both reached camp and were soon taken sick and Dr. G. M. Gould, formerly of Munising, was called to attend them. He found they had drunk a little less than two quarts between them. One of the men died about fourteen hours after they bought the alcohol and the other about seventeen hours after.

CASE 29.—(From Dr. Herbert Harlan, Baltimore.)
Storekeeper in Dorchester County, Maryland, went on a spree with Jamaica ginger. He became entirely blind, but is so ashamed of his performance and, believing his case to be hopeless, declines to see an oculist or to discuss his case with one. Dr. Harlan obtained the report from his family physician, whom he knows to be a competent and reliable observer.

CASE 30.—(From Dr. Herbert Harlan, Baltimore; Dr. P. B. Barringer, Charlottesville, Va., and Dr. Francis Lee Thurman, Keswick, Va.)
W. H. J., aged 38, a respectable and well-to-do merchant of Keswick, Va. Some five years ago, on a certain Sunday (July 15, 1899), not feeling well, took a drink of Gilbert's Jamaica ginger. After taking one dose he felt no better and took a second, later in the day taking several others. On the following day he took one more dose, drinking in all two or three ounces of the "ginger." On Monday he complained of nausea, weakness, vomiting, intense headache, giddiness and, later in the day, became blind. The blindness increased so much that in three days he could not perceive light from darkness. Then his vision gradually improved so that in another ten days it reached the acuity it at present exhibits. There has been no change in the fundus conditions during the past four years. He was then treated by Dr. Thurman and saw an oculist in Richmond, Va., whose name he did not recall. Two years afterward, when examined by Dr. Harlan, he had marked optic nerve atrophy, with some vision in the periphery of each field sufficient to allow him to get about in familiar localities.

Analysis of the Jamaica ginger taken by this patient showed that it was 70 per cent. wood alcohol.

CASE 31.—(From Drs. Alvin A. Hubbell and Lucien Howe, Buffalo, N. Y.)
Dr. B. W. S., Stockton, Chautauque County, N. Y., consulted Dr. Hubbell in April, 1901. In March, 1899, he accidentally drank about an ounce and a half of wood alcohol. This dose was repeated the next two days—three doses in all—after which his vision became dim in both eyes. He could see well enough to get about, but was unable to read print. V. R.

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$= 5/30$, and no Jaeger; V. L. = perception of light. As Dr. Hubbell saw him once only and as he failed to keep his promise to return, the visual fields were not measured. The fundi showed well-marked atrophy of both discs. Dr. Howe saw him before this, on June 12, 1899, and adds that, at that time, the patient thought his sight in the right eye had gradually improved. The right pupil was torpid, arteries small, discs pale; V. = 20/50 and Sn. three, field slightly contracted. In the left eye the same condition, only more exaggerated. Disc decidedly atrophic; V. = fingers at six feet; Sn. 20 at twelve inches; field regular, about two-thirds normal limit. In a letter to Dr. Howe from the patient six months later he reported his condition to be about the same.

CASE 32.—(From Dr. M. A. Hughes, Salt Lake City, Utah.)
J. A., aged 40, stone mason, consulted Dr. Hughes in January, 1902, for a sudden attack of almost complete blindness. The history showed that he, with several companions, had drunk freely of wood alcohol on a certain Sunday. When he awoke next morning he found that he could scarcely see. On examination his vision was reduced to 10/60 in the right eye and 10/40 in the left. Under increasing doses of strychnia, given hypodermically, his sight improved slightly. A year after the poisoning he was, however, unable to resume his trade and the damage to sight seemed permanent.

CASES 33 and 34.—(From Dr. Edwin E. Jack, Boston, Mass.)
"I have seen two cases of atrophy following the ingestion of methyl alcohol in the crude form. One, J. P., aged 71, old soldier, bought a pint and drank part of it. Both had a long period of insensibility and both were blind on regaining their senses; a neuritis followed by rapid atrophy."

Although Dr. Jack was not able to find, in his hospital records, the detailed case histories of these patients, there is every reason to believe that they have not been published before and that they have not been duplicated in this report.

CASE 35.—(From Dr. Edward Jackson, Denver, Colo.)

A woman, addicted to alcoholism, resorted to a jug of wood alcohol that her employer kept for a lamp. The quantity taken is uncertain. She suffered from severe gastrointestinal irritation, vomiting and impairment of vision. Next morning all "looked black," but she could see a light brought into the room. In three days vision began to improve rapidly. On the eighteenth day V. = 4/60, R. and L. The optic discs were red, hazy and slightly swollen, their outlines hidden. The retinal vessels not much altered. She and her daughter said that before taking the wood alcohol she could thread the finest needle. She was not seen after the twentieth day.

CASE 36.—(From Dr. J. H. Jamar, Elkton, Md.)

A drunken male tramp, aged 37, having procured a quantity of wood alcohol, ostensibly for a different purpose, proceeded with a companion (whose case is elsewhere recorded), to go on a spree by the wayside. His female companion promptly died, but he survived, was placed in jail, there being no hospital in the city, and came under Dr. Jamar's care. The patient was found to be in a highly excited, delirious condition; face purple; decided odor of alcohol about him. Emetics followed by calmatives were prescribed and the patient began to improve. His eyesight was greatly affected for the first day or so, but improved in a few days, when he was discharged. The final outcome of the case as regards vision is not known.

CASE 37.—(From Dr. Dryden H. Lamb, Owosso, Mich.)

J. F., male, aged about 25, one of three men who together went on a spree. After having absorbed all the ordinary alcoholic beverages they secured some Columbian spirits and drank a considerable quantity of it; exact quantity is not known. One died shortly afterward and the others were very ill, both of the survivors suffering from amaurosis. One case was treated by Dr. Lamb, the other elsewhere. There was marked contraction of the fields in both eyes and vision was permanently reduced to 20/100 and 20/80, right and left eye respectively. Previous history good.

CASE 38.—(From Dr. Dryden H. Lamb, Owosso, Mich.)

J. B., aged 30, imbibed an unknown quantity of Columbian spirits and in a short time was totally disabled from loss of eyesight. R. E. V. was 20/200; L. E. V. was 10/200, with

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DRAFT STORY

