water gruel—with what results of depressed vitality you can easily imagine. In this group of cases the medical adviser may with advantage insist on a gradual return to ordinary diet; and he will often find that the stomach, after a certain recalcitrancy, will submit, and consent to digest ordinary food, perhaps to the astonishment of the patient, and certainly to the common advantage of the organism. Patients of this class should be given to understand that there are some things worse than an aching stomach—namely, impoverished blood, failing strength, and enfeebled brain and nerve. Moreover, the lower the vitality is reduced by insufficient feeding the more prone is the stomach to neuralgic pains. An enforced administration of more and better food is often the surest as well as the shortest road to deliverance from gastric hyperæsthesia.

The last point I shall advert to is the necessity for a *revision of the diet to meet those changes in the type of nutrition which naturally take place as the individual travels on from youth to age*. Senescence invades the several organs and tissues in a varying order of time; and this want of synchronism is sometimes a source of trouble. When the hair falls off or turns grey before its time, our vanity but not our health is touched. When the teeth decay prematurely, we find succour in the invaluable art of the dentist. But if the prime organs and functions of the body age with unequal steps, the matter is more serious and less easily remedied. As years roll on the balance of nutrition alters; the exchange of material shrinks, and the organs concerned therein become correspondingly less active and less capable. In the normal course the palate and appetite adjust themselves automatically to these altered conditions, and there is a lessened intake of food. But sometimes this adjustment lags behind. The power of taking food continues unaltered, while the assimilative powers are on the wane; you have the palate and appetite of 30 with the liver and kidneys of 60. Some form of nutritive disorder necessarily follows. In most of these cases, but not in all, there is a tendency to stoutness. There are indications of digestive difficulties and of engorgement of the abdominal organs, and signs of that vague condition which is termed latent or undeveloped gout. The early recognition of this condition is very important, for thereupon depends the prevention or postponement of degenerative processes which hereafter prove formidable. In this conjuncture the observant medical adviser may render invaluable service in detecting the maladjustment, and in taking timely steps for its correction. The most obvious indication is to lessen the quantity of food, and this is a task of varying difficulty. In many cases of this class—perhaps the majority—the maintenance of an undiminished ingestion of food rests on the force of habit. The accustomed quantity of food and drink is taken, though with a somewhat flagging appetite and lessening gusto. The still small voice of the dietetic conscience is unheeded; or even there may be a little forcing in of the supplies, from a mistaken notion that a falling off might prove disadvantageous, or of evil augury. In these cases an authoritative hint from the medical adviser is sufficient, and is readily accepted and acted on. Full feeders are rarely aware that they eat too much. People constantly delude themselves on this point. I do not know how it is; men often are aware and acknowledge that they drink too much, but they hardly ever allow that they eat too much. They will tell you that they eat much less than most other men they meet with, and insist that they consider themselves to be moderate, or even small, eaters; and it is difficult or impossible to persuade them to the contrary. Possibly they are apt unconsciously to compare themselves with younger men. The medical adviser must in this matter rely mainly on his own judgment and on collateral evidence. In some cases, however, there is much more difficulty in controlling the intake of food. The appetite is really strong, and the powers of digestion—at least of gastric digestion—are abnormally active. Unsatisfied hunger is a painful and an urgent guest, and, with plenty in hand, is hard to resist. The less concentrated forms of food are here a useful resource—green vegetables, salads, and thin soups—which help to fill the aching void without adding materially to the albuminoid and fatty ingredients of the meal. Tea and coffee are also serviceable in allaying an unseasonable craving for food. A stiff cup of tea or coffee shortly before dinner certainly takes the edge off a troublesome appetite. It is, however, well to proceed cautiously and tentatively in this direction, for the promptings of Nature, however apparently to us misdirected, are not to be lightly set aside. The effects of a contracted diet should be carefully and

patiently watched, with an open mind for every sign or suggestion, whether of warning or retreat or of encouragement to advance. I need hardly add that in regard to this middle-life revision of the dietary, as it may be termed, particular attention should be given to the quantity of alcoholic beverages. As a very general rule the tolerance for these articles diminishes with advancing years, and it is necessary nearly always with persons who have used them freely to reduce their quantity when middle age is reached.

In regulating the diet of substantially healthy persons, it is imperative to beware of hard-and-fast lines. Cases of this group are very diverse; scarcely any two are exactly alike, and their management is complicated often by moral and social considerations which are difficult to justly estimate. We can only hope to avoid serious errors by a patient investigation of each particular case, and by bringing to bear upon it a full knowledge, combined with a large infusion of common sense.

AN ADDRESS ON ETHER-DRINKING; ITS PREVALENCE AND RESULTS.

Delivered before the Society for the Study and Cure of Inebriety.

BY ERNEST HART.

History: Geographical Distribution: Details of the Trade Methods of Drinking: Dose, etc.: Effects, immediate and remote; Remedies.

THE allegation of the use of ether as an intoxicant in Ireland is not a new one, but the references which have from time to time been made to the existence of such practice have been received with a good deal of indifference, if not incredulity. Moreover, the practice, so far as it has existed, was said to have largely died out. Lately, however, some very circumstantial statements which have appeared in the English and Irish press excited my interest so much that I determined to supplement some little personal knowledge which I had acquired of the facts on previous occasions by a detailed investigation conducted with a view to obtain all the available information as to the prevalence of the practice, its origin, localities, sources of supply, and the observed results. For this purpose, I applied for information directly to those in the best position to know all the facts accurately, that is to say, to the doctors and priests of the incriminated districts. Subsequently, I drew up a schedule of questions relating to the time at which ether drinking came into fashion, as to the prevalence of the habit, as to the quantities taken, and its effects on the health, both of body and mind, and on the duration of life, which I placed in the hands of persons likely to have personal knowledge. Detailed replies to the questions have been received from twelve doctors, four Roman Catholic priests, and one clergyman of the Church of Ireland. I have also been able to obtain information from other sources of the places of supply and manufacture. To all these gentlemen I take this opportunity of expressing my thanks for their courtesy. The results of the inquiry are embodied in the present paper.

History.—There is some difference of testimony, or rather of opinion, as to the date of the origin of ether drinking, and as to the causes which led to its introduction. The most generally received belief is that it came into use after Father Mathew's preaching had banished whisky from a considerable part of the North of Ireland. The "new drink" is supposed to have been introduced as a beverage which might be taken without "breaking the pledge"—in fact, as a liquor on which a man might get drunk with a clear conscience. Mr. H. N. Draper¹ says ether drinking was first practised at Draperstown, co. Derry, about 1842, while ether was sold for the first time at Maghera between 1845 and 1850, and the practice became very common there five or six years after its introduction, reaching its climax about 1869. Dr. B. W. Richardson says ether was introduced into Draperstown about 1846 or 1847, and for thirteen years at least it was sold freely. Dr. Walter Bernard, of Londonderry, whose personal experience extends over forty-two years, informs me that during all that time he has known ether drinking to be practised; he considers its

¹ *Medical Press and Circular*, May 30th, 1877.

introduction to have been an indirect effect of the success of the teetotal movement. On the other hand, Dr. James L. Nevin, of Ballymoney, writes to me that: "It is rather puzzling to get at the origin of its use, but I do not believe in the 'Father Mathew teetotal movement' cause. My own opinion is," he says, "that in a country whose people in the past have been notoriously addicted to illicit distilling, the impossibility of indulging in it now, owing to the present Inland Revenue watchfulness, has driven the people to ether as the best substitute for poteen."

In a further communication, Dr. Nevin adds: "Before the new excise arrangements and the increase of constabulary, that part of co. Derry was notorious for illicit distillation." A medical practitioner, near Cookstown, to whom I am specially indebted for the fulness of his replies to my questions, but whose name I am not at liberty to disclose, says that he has known of the prevalence of the habit in that place for twenty years or more; "in fact," he writes, "the odour of ether on folks' breath is a very early recollection indeed.....The habit must have been in full swing in this district (including that of Moneymore and Draperstown) about 1870-72. How long it may have been in vogue before then I personally cannot say, but have been told it had been common many years before that period." He adds: "I have been told that some of the older medical men here and in the neighbouring towns (Moneymore, Magherafelt, Draperstown, etc.) were strong believers in its efficacy as a medicine and stimulant, and that they even sold it in draughts over the counter on fair days, etc., to any one coming in to ask for it. Then I believe small country grocers and publicans bought quantities of it from these medical men, and at a later date from the pharmaceutical chemists and town publicans, and retailed it to the country people throughout the district."

Another of my correspondents attributes the origin of ether drinking to its cheapness, adding that "the people living in the mountainous districts here are fond of white whisky owing to its great warmth; and ether being the same colour, they often get it perhaps when white whisky would be out of stock." The Rev. Peter O'Kane, P.P. of Knockloughrin, co. Derry, states that ether drinking first came under his notice in 1865. He adds: "It was given by the doctors as medicine, and some of them sold it to the people in general. Then the public-houses sold it."

The Rev. Edward Gallen, C.C. of Granahan and Maghera, co. Derry, who first heard of ether drinking when appointed curate at Draperstown in 1871, gives me the following account of the origin of the practice: "About eight or ten years previous to 1871 a drug shop in Draperstown, belonging to a proprietor having little to do in the ordinary way, gave 'draughts' of ether as a stimulant cheaper than whisky to healthy people. The evil soon spread." As we have seen, however, the habit was fully established many years before that time. Dr. F. Auterson, of Magherafelt, who has known of the existence of ether drinking since 1853, gives the following account of its origin: "A few years prior to the above date an unqualified medical man named Kelly practised at Draperstown, and kept a drug store. He drank more whisky than was good for him; he was prevailed on to give up the whisky, and then used the ether, and taught the people to use it also." This narrative seems to bear the stamp of intrinsic probability, and it may commend itself to historical critics as combining in itself the two theories above-mentioned as to the origin of ether drinking. As regards the history of the practice, therefore, it may be taken as proved that it began something less than half a century ago at Draperstown in South Derry, that town being, in the words of one of my informants, the Rev. Edward Gallen, "the centre point and spring of ether drinking." From Draperstown the habit spread over certain parts of the county of Londonderry, the borders of the neighbouring counties of Antrim and Tyrone being also infected to a certain extent.

I cannot doubt, however, from the evidence before me that great impetus was given to the use of ether as a beverage by the Act 18 and 19 Vict., c. 37, passed in 1855-6, which had the object of allowing spirit of wine to be used duty free in the arts and manufactures, and for this purpose provided that such spirit should be rendered unfit for use as a beverage by the addition of not less than one-ninth of its bulk of wood naphtha—a mixture termed methylated spirit. I find in the *Pharmaceutical Journal* of that year that Mr. MacFarlane, of Edinburgh, states that both chloroform and ether could be produced from methylated spirit in a state of great purity; the chloroform was entirely free from any flavour derived from the naphtha, and the ether he thought was as good as much that is made in the usual way from spirit of

wine. This was confirmed by Mr. Redwood. The "methylated ether," then, which we hear of as being sold as a beverage is altogether a different thing in point of flavour and odour from the nauseous methylated product known as methylated spirit. It is an ether prepared from methylated spirit, but in which nearly all the methyl products have been removed by purifying processes. I have here, however, the pure ether prepared from rectified spirit, and two grades of "methylated ether," that is, ether prepared from methylated spirit. The difference is not very marked to the ordinary observer, except in price. The pure ether costs wholesale about 5s. a lb., the methylated ethers respectively 1s. 4d. and 8d. a lb.; so that the price of one is about seven times the price of the other. It is to the introduction of this cheap ether, which can be retailed at a nominal price, and to the simultaneous activity in hunting down the illicit stills, that the prevalence of ether drinking may, I believe, be traced; and I believe that Father Mathew's name and the alleged indirect influence of "taking the pledge" against alcohol have been drawn into the history with more picturesqueness than historical accuracy.

Geographical Distribution.—The point of greatest prevalence of ether drinking is the southern part of the county of Londonderry; in the northern division of the county it appears to be practically unknown. Thus a well-known practitioner of Coleraine writes to me: "In an experience extending over the last seventeen years I have not met with a single case..... I only knew of ether drinking during my apprenticeship about 1866 or 1867. It was then mainly confined to that portion of South Derry about Draperstown and Maghera. Since then I understand the practice of drinking ether has extended to other districts around there, such as Bellaghy, Magherafelt, and the mountainous portion of the Moneymore district." Dr. H. S. Morrison, of Coleraine, also writes: "The habit is practically unknown in my district. Although some time ago a grocer in this neighbourhood had it for sale, no one, so far as I can find out, except a very few patronised him. They were so few in number in this part of the county that keeping it did not pay, and it is now a thing of the past." Dr. Caldwell, of Coleraine, writes: "I never knew a single case of ether drinking in this district, neither in my capacity as coroner, although my division is within three miles of Maghera." Dr. T. M. Bryson, J.P., of Limavady, another coroner, says: "Ether drinking is not known, nor has it ever been practised in this part of co. Derry." Dr. J. W. Watson, of Limavady, writes: "The practice has not extended to this portion of North Derry." All the testimony I have received goes, therefore, to show that the chief centres of ether drinking are Draperstown, Maghera, Magherafelt, Tobermore, Desertmartin, and Moneymore in co. Derry, and Cookstown in co. Tyrone. The habit is also prevalent, though to a less extent, in a district of South Derry, included by a line drawn from Ballyronan through the villages of Castledawson, Knockloughrin, Gulladarr, and Clandy to Portlengone, and bounded on the other side by Lough Neagh, Lough Beg, and the Bann. With regard to Cookstown I may quote the words of Dr. M. J. Cordier Marmion, J.P., of Dungannon: "About three years ago I was practising in a small town named Pomeroy, about eight miles from Cookstown. The district for about five square miles is very mountainous and thickly populated with a poor class of farmers. There was scarcely a house in the various districts around but ether was largely indulged in." He adds: "I am at present practising at Dungannon, and although my practice extends over a large area, with very few exceptions I have not found ether indulged in." With reference to Dungannon, again, the Rev. P. J. Byrne writes: "As ether drinking is quite unknown in this parish or district I return your queries unsigned. I believe the practice does exist about ten miles distant from this." I may add that, from private information which I have obtained from a trustworthy source, a good deal of ether is sent from Belfast to Dungannon and Omagh; not much of it, however, seems to be consumed in these towns, which are rather local centres of distribution to other places.

Details of the Trade.—The fluid used is, as I have said, the ordinary methylated ether of commerce. I have taken some trouble to ascertain whence and in what quantities it is supplied to the ether-drinking districts, and although the dealers are not communicative and the difficulty of the inquiry was increased by the fact that an excise officer and an official of the Inland Revenue Board had in nearly all cases recently gone over the ground before me and thus put people on their guard, I have collected a mass of important information from which pretty accurate inferences can be drawn as to the amount of the intoxicant that is consumed in

the North of Ireland. I have been assisted in the investigation by gentlemen whose names would be sufficient guarantees of their competence as witnesses in this matter, but I regret that I am not at liberty to mention them. It is obvious also that I cannot publicly mention the firms engaged in this traffic, but I have no objection to furnish information on this head privately to any authorities interested in the subject. It would certainly be desirable that the heads of these firms should be examined before the Select Committee. No other appears to be manufactured in the north of Ireland, and one gentleman, with exceptional means of knowing, assures me that none is made in any part of Ireland. Mr. H. N. Draper, however, in one of the articles already referred to, asserts that one Dublin manufacturer sent 4,000 gallons yearly to Belfast, and the name of a firm who now make it in the same city has been supplied to me. The great bulk of the ether consumed in Ireland is, however, undoubtedly sent there from England. One firm in London supply about 150 Winchester quarts (half-gallon stoppered bottles) yearly to one druggist in Belfast. Another London firm send 50 "drums" (metal vessels, each containing about 10 gallons) a year to the North of Ireland; this is not nearly so much as they used to send fifteen years ago. The books of a very important firm near London, I am told, show extensive sales of methylated ether. The names of large Irish buyers are especially noticeable, and markedly influence the consumption. The amount sold was largest in 1876, and fell off more than one-third in a few years; latterly, however, it has again increased, so that in 1889 it was only about one-tenth less than in 1876. This firm, to its credit be it said, called the attention of the Excise years ago to the consumption of methylated ether in Ireland, but little heed was taken of the communication. Another firm near London sends methylated ether to Belfast both in "drums" and in Winchester quarts, but their trade in the article has fallen off rather than increased of late years—"the Excise looked after them too well," as the head of the firm said rather sorrowfully. Another London firm stated that their sales of methylated ether for drinking had diminished of late, though their actual sales had increased. There is also a firm at Newcastle, or rather Gateshead, which is known to send large quantities of ether to Ireland. A representative of a large Edinburgh firm stated that they do not make much methylated ether, and what they do supply is chiefly for anæsthetic purposes. They cannot compete with the price of the London makers. This gentleman added that very little ether is made in Edinburgh or Leith by other makers. These seven firms appear to comprise all the important manufacturers of ether in this country. The trade is chiefly in the hands of three of them, of which two are said to be "above reproach," though not, it would seem, *sans peur*, if one may judge from their dread of publicity in connection with this particular branch of their trade.

The result of these inquiries is to show that, beyond all question, a quantity of common methylated ether is sent from England, and particularly from London, or rather its eastern suburbs, very much larger than is consumed in England in proportion to the population. Of course, it cannot be concluded that all the large supply sent to Ireland is used as an intoxicant. There are many other legitimate medicinal and industrial purposes for which it may be employed. When purified, it is now largely used as an anæsthetic, and it is used therapeutically as a diffusible stimulant, a carminative, etc. In pharmacy it is used for collodion, for making salicylic corn solvents, etc. It is also used in ice making, and for purposes of refrigeration in various ways, especially in the large breweries; and it is employed largely to abstract fats and oils from various substances, even from fish manure. For all these purposes I am assured the use of ether has very much increased in recent years. Again, it is used in photography. Still, when liberal allowance has been made for all these possible legitimate uses of methylated ether, the consumption of that substance in the North of Ireland, and particularly in the districts which have already been specially referred to, shows a large balance which can only be accounted for by its extensive use as an intoxicating drink.

A large part of the ether exported to Ireland is sent to Belfast, whence it is distributed to Draperstown, Maghera, Cookstown, Pomeroy, Omagh, and Dungannon. A most trustworthy informant assures me that the amount of ether supplied to all the rest of Ulster is a mere nothing compared with that supplied to these towns. One large dealer states that, roughly speaking, he distributes about 2 cwt. of methylated ether each month, that is, over 1 ton in the year. He says this amount is scattered through

Ulster moderately evenly; he allows that a fairly large proportion goes to South Derry and Tyrone, but not in such quantities as to lead him to believe that it is used for drinking. He adds that, from his experience, the practice of ether drinking is dying out. This, gentleman, however, answered without reference to his books, and evidence from other quarters throws doubt upon his inferences. From another Belfast firm it was elicited that they sold to one retail dealer at Maghera from 10 to 15 gallons, and to one at Draperstown from 5 to 8 gallons, a month. Larger amounts are sent to Cookstown. Omagh was said by Mr. H. N. Draper in 1870 to take 450 Winchester quarts (equal to 225 gallons) yearly. Another Belfast dealer says he sells from 25 to 30 cwt. of methylated ether in the year, and the great bulk of it goes to the towns already mentioned in South Derry and Tyrone. From another wholesale dealer, who is not by any means the largest dealer in Belfast, specially interesting information was obtained. He buys 7,124 lbs. of methylated ether in the year; this is calculated on an average of six months as verified by his books. This amount is distributed over the whole of the northern half of Ireland, but not less than 5,074 lbs. go to the comparatively small ether-drinking district. The difference between these two amounts would represent the legitimate medicinal consumption, all the rest going to the few small towns so often mentioned. In Londonderry, as Dr. Walter Bernard informs me, the druggists used, fifteen or sixteen years ago, to supply large quantities of ether to the ether-drinking districts. This trade, however, they have now, according to him, given up. It should be added that, as regards population, the ether-drinking district compared with the area supplied contains a mere handful of inhabitants. All the evidence which I have collected tends to prove that the amount of ether sent to that district from Belfast is out of all proportion to that supplied to the remainder of the North of Ireland. An informant, who has special opportunities of knowing the facts, however, tells me that from what he has seen, the bulk of the ether consumed in South Derry and Tyrone comes direct from the English makers. One man at Cookstown habitually purchases fifty gallons and upwards at a time direct from the makers. I have the names of several of the ether buyers in Cookstown, Draperstown and Maghera, but for various reasons suppress them here. The ether brought from England is conveyed by three companies; that is, if the information given me is correct, only three companies will carry the "drums" which are known to contain ether. These are the Clyde Shipping Company (from London to Belfast, direct); the Carron Shipping Company (from London to Belfast, *via* Leith); and the Antrim Ore Company, also *via* Leith. The Leith route perhaps accounts for the statement made by some of my informants who say that ether is sent to Ireland from Glasgow. The rate charged by the Clyde Shipping Company for ether to Belfast, including collection here, is 84s. 2d. a ton. Much of the ether which finds its way to Ireland, however, is smuggled, in order to avoid the extra carriage rate to which ether, as an explosive which must be carried on deck, would be subject. It is rebottled out of the "drums" into Winchester quarts and, under cover of this device, goes as "drugs."

The customers in the towns of the ether-drinking districts, who buy the drug in considerable quantities, either from the English makers or from the Belfast importers, are grocers, who are also in many cases in these sparsely populated places druggists and general dealers. They retail the methylated ether over the counter, and in some instances supply it to still smaller dealers in the villages. This is proved by the fact that some of them, when getting their supply from Belfast, insist on an exact and uniform weight being put into each bottle, showing that they sell these bottles (each containing half a gallon) unopened. The price at which the three principal English manufacturers supply methylated ether is 8½d. per pound, in quarts, or 8d. in "drums." Considering the light specific gravity of the liquid this means very much less than ½d. an ounce. It will be seen from this that no other intoxicating drink can compare with methylated ether as regards cheapness. Its retail price is about 1d. per two drachms, or even ¾d. for a drachm and a half. It is possible, therefore, to get rapidly intoxicated for a very few pence. The retail dealers, however, often dilute the ether which they receive from the makers to a considerable extent, and thus, according to the Rev. Dr. Carter, Rector of Cookstown, clear a profit of cent. per cent. Dr. Carter also says: "In small poor grocery shops ether is sold without restriction. It is hawked about by beggar women and sold to the peasantry for eggs and farm pro-

duce." I am afraid I must add that it is occasionally sold over the counter by medical men, who keep "open surgeries." A practitioner at Limavady, where, as has been seen, ether drinking is comparatively rare, informs me that his assistant is occasionally asked for a "draught of ether," and he has had to give instructions that the drug is not to be sold under any circumstances unless the purchaser is known and it is required for medicinal use. Another correspondent writes: "More than 20 years ago I served my apprenticeship in a 'medical hall' in a town in South Derry, and even then I frequently sold on market days what was called a 'dram' of ether, which consisted of $1\frac{1}{2}$ drachm of good sulphuric ether, for which $\frac{3}{4}$ d. was charged." Another practitioner, writing from Cookstown, says: "The small retail country grocers seem to obtain unlimited supplies of it and to find a very ready sale for it here. I have also been told (this I will not personally vouch for) that both it and methylated spirit of wine can be obtained in the surgeries of some medical men in the district, the people coming in, ordering it, paying for it, and drinking it there, just as they would do whiskies, beer, etc., in a public-house." This, however, is a painful subject, and I content myself with this passing allusion to it here, as it involves an imputation which I trust is very seldom deserved.

Method of Drinking, Dose, etc.—Mr. H. N. Draper² says: "The usual quantity of ether taken at one time is from 2 to 4 drachms, and this dose is repeated twice, thrice, or even four and six times daily. It is taken unmixed with water; indeed, its very slight solubility in that fluid would make this a useless precaution; but the usual practice is to take, first a mouthful of water, then the dose of ether, and again a mouthful of water." Dr. Richardson describes the process as slightly more elaborate. According to him, "the drinker first washes out his mouth with water 'to cool it; next he swallows a little water to cool his throat; then he tosses down the glass of ether; finally, he closes in with another draught of water to keep the ether from rising, or, in other words, to cool the stomach." The ritual of ether drinking is, however, not always the same. Dr. C. H. P. D. Graves, of Cookstown, informs me: "It is always the methylated spirit that is drunk, the usual quantity being about 2 drachms in water, but an experienced drinker can, by holding his nose, consume a large quantity undiluted." Another Cookstown doctor informs me that the ether "is commonly sold in 'draughts,' that is, quantities rather less than half a spirit glassful. This is generally drunk neat at one gulp, and followed by a mouthful of water in the case of the novice, but the *habitué* scorns the water. This dose is repeated in varying frequency, according to the desire or habits of the individual. I have known about six or seven 'draughts' to be taken by one person in about an hour, but have often heard wonderful tales of some who consider about a pint not an extraordinary allowance for one individual during an ether debauch." With regard to the amount sufficient to produce intoxication, the same gentleman says: "The dose varies much according to constitution, age, and addiction to the habit. I have heard some boast that they could drink a dozen to twenty draughts in an evening, but a quarter of this amount would more than intoxicate an adult unused to the drug. In fact, one draught—less than half a wineglass—will produce ether intoxication in anyone unaccustomed to it."

On the other hand, Dr. Hetherington, of the District Lunatic Asylum, Londonderry, says: "Two drachms is usually taken, which costs about 1d., and three or four of these intoxicate, but old hands can take much larger quantities." Dr. Nevin, of Ballymoney, says that as much as ten ounces may be habitually taken in the course of the day; he has heard of several ounces being taken at one dose. Dr. J. W. Watson, of Limavady, has heard men boast that they could drink a "noggin" (equal to five ounces) at a draught, but has never seen this feat actually performed. The largest quantity he has seen a man drink has been one ounce. These statements show that, as might *a priori* have been expected, the quantity of ether that can be drunk with impunity and the dose sufficient to produce intoxication vary, just as in the case of alcoholic stimulants and drugs of all kinds, according to individual idiosyncrasy, induced tolerance, physical condition, etc. The special danger of ether as compared with other intoxicants lies in the fact that, as the immediate effect passes off very quickly, and leaves behind little or no discomfort in the shape of nausea, headache, dry mouth, etc., what Dr. Norman Kerr calls the "drama" of intoxication can be repeated several times in the day. As Dr. Graves, of Cookstown, says, "An ether drinker will get drunk half a dozen times a day." This, of course, is con-

sidered one of the chief advantages of ether by its victims and votaries.

Prevalence of the Evil.—Some idea of the magnitude of the consumption of methylated ether in South Derry and Tyrone may be gathered from the details that have been given as to the quantities supplied by certain large firms. There can be little doubt, however, that the actual trade is far larger than these figures would indicate. The whole business, however, is so shrouded in "decent obscurity" by most of those who have an interest in the traffic that it is at present impossible to obtain anything like trustworthy statistics on the subject. One can only judge of the extent to which the habit prevails from the statements made by competent observers, who speak from personal knowledge. Thus the Rev. Dr. Carter, Rector of Cookstown, has publicly stated that "more than two tons of ether are openly passed along the railways each year into this district, while a larger quantity is conveyed secretly by rail or by private conveyances into the localities mentioned..... In two small villages I know of two traders who sell over 500 gallons each annually..... The habit grips whole families, and becomes hereditary and spreads with rapidity. Since I began my inquiries and called attention to the subject it has seized a new district." Again, the same authority says: "It is given by traders to school children and messengers, and in some towns and localities causes on Sundays the largest part of intoxication." In a letter to me, Dr. Carter says, with reference to these statements (which were made in the *Dublin Daily Express*): "On every item mentioned I have abundant proof from most reliable authorities." All my correspondents, who are able to speak from personal experience, have confirmed the statements made as to the prevalence of ether drinking at Cookstown, Draperstown, Maghera, and the other towns so often mentioned. Dr. C. H. P. D. Graves, of Cookstown, writes: "Being medical dispensary officer of the Cookstown District, I am brought into close contact with all classes. I find ether drinking more prevalent among the very poor than among the well-to-do, I suppose on account of cheapness; but even if a person who is comfortably off begins drinking ether, he is sure to reduce himself to poverty, the habit being as pernicious as opium eating..... On Saturday evenings (market day) the atmosphere along the roads is simply impregnated with the fumes of ether, so many of the market people drink it." Another informant, speaking of South Derry, says that the doctor to whom he was apprenticed some twenty years ago told him that "the practice of drinking ether in the district prevailed to such an extent that there were scattered over the country what was known as ether houses, where a cheap and impure article was sold." My correspondent goes on to say: "From information received from a reliable source, I believe the practice of drinking ether has grown considerably since then." Another correspondent, speaking of the districts surrounding Cookstown, Moneymore, and Draperstown, says: "Its odour is often to be felt in people's breath, and even the very atmosphere is loaded with it in some places, and especially about fair times. Its odour seems to cling to the very hedges and houses for some time." Dr. Cordier Marmion, J.P., writing from Dungannon, says: "The coroner for this division of the county held an inquest some few months ago in or about Pomeroy, where a person's death was caused by an overdose of ether. He commented strongly in his address to the jury on the frightful abuse of ether drinking in this part of the North." A practitioner at Cookstown writes: "I have noticed its odour in the breath of hundreds of people. I know and have known perhaps well on to a hundred people who take it pretty freely..... You would be surprised to know how many comparatively respectable people take it, and do not seem at all ashamed to do so. Of course, these generally say they take it for 'wind in the stomach,' 'pain in the head,' 'giddiness,' etc., using it as a domestic medicine, and often keeping a considerable supply in their homes. It is often drunk to intoxication at wakes and dances, especially in the more backward and mountainous districts." Dr. Hetherington, of the Londonderry District Lunatic Asylum, writes: "Its use was kept in check for some time, but is now largely on the increase..... It is drunk by both sexes, young and old; not so much, however, as yet among young girls..... It appears to take a great hold on the people." One of the guards of the Derry Central Railway from Coleraine through the ether drinking districts informed Dr. Walter Bernard that the smell of ether in the third-class carriages on market days from the women coming from Maghera is "disgusting and abominable," and the odour is even worse on the last Tuesday of each month,

² *Loc. cit.*

the fair day at Maghera. Dr. Bernard also tells me that, for the last two years, ether-drinking has been greatly on the increase in the southern portion of the county of Londonderry "among all denominations belonging especially to the small farming and labouring classes."

On the other hand, the few priests who have favoured me with replies show a tendency (perhaps not altogether unnatural) to minimise the extent of the evil. Father B. Nugent, of Cookstown, says: "Ether drinking in this parish is a reserved sin for Catholics for the past seven years. It is not sold by them, nor used to my knowledge except by the advice of a physician in case of sickness." Father Edward Gallen, C.C. of Granahan and Maghera, writes: "Ether drinking has almost died out in my particular neighbourhood. About fifteen years ago a man fell dead on the street of Draperstown from ether. The Catholic clergy immediately after denounced both the selling of it in the little shops and the drinking of it. It died away to a considerable extent for many years. It revived much a few years ago. Our attention reverted to the suppression of it anew. In this parish I publicly from the altar banned it a year ago. Both sellers and drinkers obeyed my proclamation. There is no drinking of it here now. I believe the same is true of other parishes near me." But how are we to reconcile this opinion with the circumstantial evidence to the contrary from other quarters? It is a remarkable coincidence that a similar statement about Maghera (which seems always to have enjoyed a "bad eminence" in respect of ether-drinking) is quoted by Mr. Draper writing in 1877. He says "In the same town (Maghera) and in the adjoining parishes the use of ether is dying out owing to the fact that it has been, as the people say, 'cursed' by the parish priest, and it is said that now 'no Catholic dar' sell it." Probably this was the time of the first conversion alluded to by Father Gallen, and from these repeated relapses it may be gathered how firmly the habit has taken root in that district.

It is a curious fact, if it be true as alleged, that ether-drinking flourishes chiefly among Roman Catholics, the Protestant communities being comparatively free from that particular vice. Dr. Morrison, of Coleraine, says: "I think it very questionable if with the exception of an isolated case Protestants are at all addicted to the habit." With regard to Ireland especially one has always to be on one's guard against being misled by statements coloured or distorted by *odium theologicum*, but the assertion here referred to comes to me from so many quarters that it is almost impossible to suppose that there is not at least some sort of foundation for it. In contrast, however, with this statement that there is no ether-drinking among Protestants are the information and reports which led the General Synod of the Church of Ireland some time ago to forward a petition to Parliament praying for the regulation of the ether traffic. The Synods of the dioceses of Armagh and Derry also adopted similar resolutions on the urgent representations of clergymen and magistrates of the counties referred to.

Effects, Immediate and Remote.—The immediate effects of drinking ether are similar to those produced by alcohol, but everything takes place more rapidly; the stages of excitement, mental confusion, loss of muscular control, and loss of consciousness follow each other so quickly that they cannot be clearly separated from each other. It is only the "immoderate" ether drinkers who drink themselves into stupor; many are content not to go beyond the stage of exhilaration, when they become very talkative and laugh hysterically. The effect wears off almost as speedily as it comes on. What De Quincey said of the terrible attractions of alcohol is still more true of ether. The endeavour to renew the state of exaltation induced by the first dose drives the drinker to take more and more of the stimulant, till it becomes a tyrannical abuse, leading to effects precisely opposite to those first arrived at.

That ether is frequently drunk to the extent of inducing intoxication all my witnesses are agreed. Thus, the Cookstown authority whom I have so freely quoted says: "It is often drunk to intoxication at wakes and dances, especially in the more backward and mountainous districts. Its effects are very rapidly produced and the stage of excitement very marked. Those under its influence will shout, dance, laugh, and act like maniacs, and, if the dose has been heavy, may fall down writhing and foaming at the mouth. They recover generally soon, and feel low, weak, and depressed, and often then will renew the dose, for which they have generally a strong craving. A smaller dose produces exha-

ration and a peculiar feeling of *lightness*, the person imagining he or she could jump up and fly."

The same close observer thus describes the symptoms often produced by ether-drinking: "Profuse salivation often follows the drinking of ether, and then usually rather violent eructations; the face becomes flushed, and may become livid if large quantities are taken; afterwards pallor, weakness, and burning pain at the epigastrium are generally present. Frenzy, maniacal excitement, and ultimately stupor supervene when the dose is large, and taken within a short space of time."

Dr. J. W. Watson writes: "It is usually drunk for the purpose of producing intoxication, people drinking it and 'treating' each other as they do with whisky in other parts of Ireland, or beer in England. The intoxication comes on quickly and passes off quickly. All ether drinkers agree that it is a pleasurable form of intoxication, and others can see that it is a very violent form of intoxication. However, the most violent condition is produced when whisky and ether are both taken." Dr. Watson and others say that ether drinkers are very quarrelsome in their cups, the intoxication being decidedly of the "fighting" type.

With regard to the more remote effects of ether there is not much to be said. Very little appears to be known by pathologists of any injurious effect it may have on the tissues. Dr. Richardson himself is fain to confess with some regret that there is not much to be said against ether-drinking from this point of view. There are no gross lesions like the shrinking and induration of brain and liver characteristic of alcohol; ether is a thief that steals away the brains without leaving any visible mark of his presence. I have made special inquiries as to its effect on the health, and, so far as "moderate" drinkers are concerned, there does not seem to be any evidence that the habit produces anything worse than chronic gastritis and dyspepsia. With regard to the worst cases, however, a careful observer writes: "In ether drinkers who have long followed the habit I have seen general debility, great nervous prostration accompanied by tremors (muscles of neck and forearm mainly affected), indigestion, irregular action of heart, subacute gastritis, a peculiar white sallow complexion, and in some cases (personally observed) a peculiar livid cyanotic face."

Dr. Walter Bernard notes the following among the injurious effects on health which ether drinking gives rise to: "Absence of subcutaneous fat, muscular wasting, feeble circulation, pale lemon and brown coloured skin, reflexes exaggerated, especially knee-jerks." One terrible effect of ether-drinking is the profound degeneration of the moral character, which it often induces; the victims fall into a kind of chronic hysterical condition, lose all self-respect, and, as in the case of nearly all who abuse narcotics, will lie and even steal to procure their favourite stimulant.

Touching the tendency of ether drinking to produce insanity my informants are divided in opinion. Dr. Hetherington, of the Londonderry District Asylum, writes: "I cannot connect cases of insanity directly with its use, though many of my patients have been addicted to the habit. The districts named have always had a large proportion of insane irrespective of ether drinking." Dr. Walter Bernard, visiting and consulting physician to the same asylum, thinks that ether, while not *per se* a cause of insanity, calls into action any dormant tendency to insanity that may exist. My Cookstown authority has himself attended cases in which he considered "the insanity certainly to some extent dependent, both as an exciting and a predisposing cause, on the ether habit." Other correspondents deny that there is any connection, other than accidental, between ether-drinking and madness. The habit seems to lead to crime only through the violence and pugnacity which have already been alluded to as characteristic features of the first stage of ether intoxication.

With regard to the effect of ether drinking on the duration of life very little positive evidence is forthcoming. Dr. Walter Bernard says it tends to shorten life by interfering with nutrition and damaging the glandular system. Apart from this, it is obvious that the ether drinker is a "bad life" from the insurance point of view, as he is exposed to many risks from which other people are free. He may at any time kill himself with an overdose of his favourite drug. There have, I believe, been several sudden deaths in the ether-drinking district which have been attributed to this cause, and inquests have been held on them. I have tried to obtain details of one or two such cases, but have not been successful. The sudden deaths alluded to by more than one of my clerical correspondents, and utilised by them in the pulpit, were probably due to heart disease. One peculiar danger to which

it is alleged that ether drinkers are exposed is that of setting themselves on fire in lighting a pipe, etc. Several cases of this kind, all bearing a somewhat suspicious family likeness to each other, are related by my correspondents, but the fact seems well authenticated, at least in some instances.

I have tried to put the results of my inquiry fairly and dispassionately before you. I have let my witnesses as far as possible speak for themselves, and the paper I have had the honour of reading before you is founded entirely on the evidence with which they have supplied me. It is the testimony of men living in daily contact with the things they describe, and it points to the existence of a very serious evil among a people otherwise exceptionally well conducted. If the physical effects of the habit seem comparatively unimportant it must be remembered that the subject has never, so far as I know, been really investigated by pathologists armed with all the resources of modern science. Moreover, it must not be forgotten that the majority of ether drinkers are robust country people, living under very healthy conditions. The effects of the habit will no doubt be better seen in their descendants, if the evil is allowed to continue. At present, as has been shown, it is confined within relatively narrow limits, but what guarantee is there against its spreading over the length and breadth of Ireland and clouding the spirit and sapping the physique of the "finest peasantry in the world"? Nay, what security is there against the importation of the vice into this country and the hastening thereby of that decay which, as those uncomfortable persons—the political philosophers—are always telling us, must speedily overtake us? Already, as I am told on the authority of one of the largest manufacturers of ether in this country, ether-drinking is practised in Lincolnshire, and I have not the least doubt that the practice must be frequent enough in London. Many isolated instances have been casually reported to me, and possibly more may now come to light. I know personally of two cases, in one of which it led to a fatal termination.

The sale of ether as an intoxicant must be "stamped out" by the law, but how is this to be done? I am not here to answer that question; I can only say that some obvious remedies lie near at hand. The difficulty is to restrict the sale of ether as an intoxicant without interfering with its legitimate use as a surgical anæsthetic or for various manufacturing purposes. It has been suggested that the sale of it should be confined to qualified pharmaceutical chemists, or that retailers should be required to take out a licence. As most of those who indulge in ether-drinking buy it in "draughts" at a time, I would suggest that the sale of it in smaller quantities than, say, a gallon should be made an offence punishable by a graduated system of fines, the amount increasing with the frequency of conviction. This would strike at the root of the traffic in ether as a cheap intoxicant, and would go far to put an end to the evil. It is earnestly to be hoped that the Legislature may at last be roused into taking some action in the matter, and that a remedy may be found for an evil of the existence of which few people are aware.

FEMALE PHYSICIANS IN RUSSIA.—The status of female medical practitioners in Russia, about which there has been so much trouble and discussion, has, says a telegram from St. Petersburg, now been definitely and legally settled by a decree just published in the official *Gazette*. Lady doctors may now practise freely in all parts of the empire, and will wear a certain decoration denoting their profession. They acquire the special right of practising in all institutions and gymnasia and schools for young ladies, and in all benevolent establishments and hospitals for women. They also have the privilege of practising in hospitals, dispensaries, and ambulances belonging to the Zemstvos, and are exempt from the obligation imposed by law upon their male colleagues of attending when called upon as experts in criminal trials.

ITALIAN PÆDIATRIC CONGRESS.—The following is the official programme of the subjects discussed at the first Italian Pædiatric Congress which met at Rome on October 16th:—Intubation of the Larynx in Croup (introduced by Professor F. Massei, of Naples, and Dr. Egidi, of Rome); Infective Splenic Anæmia of Infants (Professor Fede and Dr. Somma, of Naples); Endemic Thrush in Nurrlings (Drs. Blasi, of Rome, and Berti, of Bologna); Clinics of Children's Diseases (Dr. Bianchi, of Florence); Children's Hospital (Dr. Guidi, of Florence).

REPORTS TO THE SCIENTIFIC GRANTS COMMITTEE OF THE BRITISH MEDICAL ASSOCIATION.

REPORT ON AN EXPERIMENTAL INVESTIGATION OF THE ACTION OF CHLOROFORM AND ETHER.

Read in Abstract in the Section of Medicine at the Meeting of the British Medical Association at Birmingham, July, 1890.

By JOHN A. MACWILLIAM, M.D.,

Regius Professor of the Institutes of Medicine in the University of Aberdeen.
(Continued from page 835).

PART III.

Relation of the Results described above to what occurs during the Inhalation of Chloroform in the Intact Animal.—How far are these results applicable to the intact animal inhaling chloroform in the ordinary way? It is, of course, obvious that in certain respects the conditions of experimentation above described are widely different from what obtain when an uninjured animal takes in chloroform by its natural respiratory movements in the ordinary way. In those experiments the thorax was laid open, rendering spontaneous breathing impossible, and artificial respiration by pumping air into the lungs was substituted. With artificial respiration of this kind, although the amount of air and the percentage of chloroform entering the pulmonary air cells may be the same as in natural breathing, still there is a certain difference to be considered, namely, that when air is pumped into the lungs the pressure within the lungs is a positive pressure during the phase corresponding to inspiration (that is, when the lungs are inflated with air); whereas, during the inspiration of air in natural breathing the pressure within the lungs is negative. (It is not probable that this difference is of importance, for there is much evidence obtained by different workers which tends to show that the effects of chloroform depend upon the amount of it reaching certain parts in a given time, the exact mode of its introduction not making any essential difference. But direct proof on this point will be adduced presently.) Further, in the experiments above described, the pericardial sac was laid open, the heart was exposed, and recording apparatus was brought into connection with it.

How far such abnormal conditions may invalidate the results obtained, as far as their application to the ordinary inhalation of chloroform is concerned, has now to be considered. I hold that they do not materially interfere with the applicability of the conclusions arrived at. It seems to me that there is conclusive evidence showing that the action of chloroform, in the respects above detailed, is essentially similar in the conditions under which my experiments have been conducted, and during ordinary inhalation in the intact animal. I shall now proceed to state briefly some proofs of this conclusion.

1. With regard to the possible influence of the presence of recording apparatus upon the cardiac action, it is important to notice that the more considerable changes in the state of the heart can be verified by direct inspection of the exposed heart without the use of apparatus, though, of course, such a mode of examination is insufficient to detect the finer changes that go on. The broad fact of the occurrence of cardiac dilatation I have often verified by simple inspection of the heart without the use of any recording apparatus. Hence it is plain that this change is not dependent on any interference with the organ from the application of the recording apparatus; and, indeed, there can be no doubt that when the recording apparatus is used, the action of the heart can hardly be disturbed in any serious degree, for it continues to work during long periods with very remarkable regularity and efficiency. Moreover, for comparative purposes (for example, the relative effects of chloroform and ether) the influence of the apparatus cannot interfere, as it is constant.

2. In regard to the opening of the pericardial sac, I shall only remark here that I have been able to observe distinct changes in the heart, of the nature already described, even through the intact pericardium.

3. With reference to the altered respiratory conditions present