other head-affection where prolonged recumbency is a necessary part of the treatment, I scarcely know how to dispense with one of these couches, or one of these contrivances. On an ordinary bed, such a patient is very apt to sleep too much in the day and too little at night—too little at night because he has been sleeping too much in the day; and, before long, there is no small danger that, for this reason, night-draughts of various sorts may be introduced into the treatment. On the couch, on the contrary, or on the contrivance which takes its place, all these difficulties are, for the most part, fully met. By raising the head in the day time, the patient remains awake sufficiently to be able to sleep at night; by depressing the head at bedtime, the conditions are rendered more favourable to sleep during the night; and, as a rule, *sleep is to be conciliated in this way—an incalculable advantage—without the help of narcotics.* At all events, the facts fully justify these statements. It is possible to fight successfully against either undue drowsiness or undue sleeplessness in this way. In particular, it is possible to fight against undue sleeplessness in this way, and that, too without the equivocal help of narcotics; and, in short, all that I can now do, and must do, is to make plain statements, and leave you to draw your own inferences from them.

CONCERNING SPINAL EXHAUSTION.

When I began, I did not intend to do more than make a passing allusion to spinal exhaustion; and, certainly, at this late moment, I have left myself no alternative. All that I can do, indeed, is to skip the few details into which I had proposed to enter, and to say broadly that the two affections, cerebral exhaustion and spinal exhaustion, are usually associated in a way which makes it difficult to disassociate them altogether; that they have many symptoms in common; and that very many of the peculiar symptoms belonging to spinal irritation—on which disorder what I have to say will be found in the article on the subject in Reynolds's *System of Medicine*—will also be found to belong to spinal exhaustion. The subject is, no doubt, sufficiently intricate, and the diagnosis not always certain; and this must needs be, for as with cerebral exhaustion, so with spinal exhaustion, it may be taken for granted that any grave organic disorder closely related to it, may be simulated by the state of exhaustion—that the exhaustion, in short, may mark an early stage of this disorder—a statement which is tantamount to saying that these several disorders may not be so grave at first as they may seem to be; that they only become organic at a later stage; that, in short, the early stage, though fully foreshadowing in its symptoms the more serious disease which is about to be established, may be nothing more, and not lead to much more, than what may be spoken of as *exhaustion*.

No one, Mr. President and Gentlemen, can be more sensible than I am to the short-comings of the present lectures. Much that I wanted to say I have left unsaid; much that I have said, I well know, might have been more to the point. I can, therefore, only thank you for the patient attention with which you have listened to me, and hope that I may have not spoken altogether in vain, even to those of you who are the least disposed to sympathise with what I have said.

AN IMPROVED MEANS OF PLUGGING THE POSTERIOR NARES.

By A. GODRICH, M.A., M.R.C.S.

I BEG to submit to professional notice an instrument that I have had constructed by Messrs. Louis Blaise and Co., of 67, St. James's Street, for plugging the anterior and posterior nares in cases of epistaxis. I have long been struck by the unsatisfactory means at our disposal in dealing with such cases. There is, in the first place, owing to its large curve, no little difficulty in passing Bellocq's sound, the point of the instrument often hitching on the posterior edge of the floor of the nasal fossa. In the next place, the adjustment of the posterior plug, requiring, as it does, the passing of the surgeon's finger into the fauces,

short time. Three or four ordinary thin deal planks are joined together so as to make a support long enough and wide enough to bear upon it the bed or mattress upon which the patient has to lie; and then, having first sawn across this support in two places—the one in a line corresponding to the bend at the hips, the other in a line corresponding to the bend at the knees; these three separate pieces are connected by hinges, so as to allow them to be moved upon each other as the three separate pieces forming the invalid bedstead are moved upon each other. This jointed support is placed between the bed or mattress and the ordinary bedstead; and, being so placed, the head or knees of the patient can be easily raised or depressed, as they are raised or depressed upon the ordinary invalid bed, by placing underneath it, in the right positions, anything which may serve to keep the joints bent at the requisite angles.

not only causes much distress to the patient, but often entails a more or less severe bite on the operator, as I have found to my cost; and, lastly, when the plug is in position, the string passing from it through the mouth causes so much irritation of the soft palate and fauces, that but few patients have the courage to submit to it.

The instrument consists of a small elastic bag stretched on the end of a hollow style, by means of which it is pushed through the nasal fossa into the pharynx. It is then dilated with ice-cold water by means of the ordinary ear-syringe, the nozzle of which is inserted into a piece of India-rubber tubing tied to the other end of the style. A small piece of thread or twine tied round this prevents the water from escaping. The bag, thus dilated, is now to be drawn well forward into the posterior nares, into which, by its elasticity, it will accurately fit. The anterior India-rubber plug is next to be slid along the style (this is more easily done if the style be previously wetted) into the anterior nares, which it fits like a cork. The cohesion between this plug and the style will, I think, be sufficient to hold both plugs in position; if not, a piece of string tied round the style in front of the anterior plug will ensure perfect security.

When it is necessary to remove the plug, all that the surgeon has to do is to cut the string tied round the piece of India-rubber tubing, when the water will be expelled by the elasticity of the bag, and the instrument may be removed without difficulty.

The instrument, even at its thickest end, where the elastic bag is stretched over the style, is not larger than a No. 6 catheter; and it can consequently be passed through the nasal fossa without the least difficulty, and with very little discomfort to the patient, as I have proved by frequently passing it through my own nose. The style being made of elastic material—in fact, a gum-elastic catheter, and therefore capable of being bent to any curve required—also facilitates the introduction of the instrument. When once the instrument is in position, and quiet, it is almost impossible to tell by the sensations alone that there is any foreign body in the nasal fossa at all; the dilatation of the bag causing but little discomfort, being above the sensitive soft palate and fauces.

In designing this instrument, it has been my object to combine simplicity and cheapness with perfect efficiency. If I have not fully accomplished my object, I ask any one to suggest any alterations that may bring this instrument nearer to perfection, and enable us to do away with our present barbarous and unsatisfactory plan of plugging the nares.

METEOROLOGY IN ITS BEARING ON HEALTH AND DISEASE.*

By J. W. MOORE, M.D. Univ. Dub.,

Diplomate in State Medicine, and Ex-Schol. Trin. Coll., Dub.; Junior Assistant Physician to Cork Street Fever Hospital, Dublin.

IN bygone days Meteorology was limited in its application to appearances in the sky, whether atmospheric or astronomical in their character. Now, however, the word is used to denote a branch of natural philosophy which deals with weather and climate. Its astronomical relations are, to a great extent, severed, whilst many terrestrial phenomena are included within its vast domain, and are studied and explained under some of its many branches. Until the last twenty years, the study of meteorology was confined to individuals, amongst whom we notice the names of Aristotle, Theophrastus, and Aratus, in Greece; Lucretius, Virgil, Pliny, and Cicero, in Italy; and more lately, within the last two hundred years, those of the discoverer of the barometer, Torricelli; and of Fahrenheit, Reaumur, and Celsius, the fathers of thermometry. Later still, were Wells, Dalton, and Daniell, whose names are inseparably connected with hygrometry. Finally, the investigation of the isothermal lines was commenced by Humboldt, and almost perfected by Dové.

Within the last twenty years, however, meteorological societies have been founded, first in America, and, more recently, in several countries in Europe, and have collected a vast amount of trustworthy material, which leading meteorologists, as Dové, in Germany; Buys Ballot, in Holland; Maury, in America; and Lloyd, in our own country, have not been slow to utilise. In 1854, Dr. Lloyd, the present distinguished

* This paper is an abstract of a lecture—one of a series termed "Afternoon Scientific Lectures"—which was delivered before the Royal Dublin Society, on Saturday, March 8th.

Provost of Trinity College, Dublin, demonstrated the cyclonic character of most of the gales experienced in Ireland, and so foreshadowed what is universally known as "Buys Ballot's Law," a law on which the whole of modern Meteorology turns. It may be expressed thus (as applicable to the Northern Hemisphere): "If at the same moment of time there be a difference between the barometrical readings at any two stations within a reasonable distance from each other, a wind will blow on that day in the neighbourhood of the line joining those stations which will be inclined to that line at an angle of about ninety degrees, and will have the station where the reading is lowest on its left hand side." That is to say, if on any day a person stands with his back to the wind, the reading of the barometer will be lower at all stations on his left hand than it is where he is at the time. Currents of air move either in a *cyclonic* course, round an area of low barometrical pressure against the hands of a watch, or in an *anticyclonic* course, round an area of high barometrical pressure, with the hands of a watch. The wind system of the Continent of Europe and Asia is cyclonic in summer, and anticyclonic in winter; while that of the Atlantic Ocean is anticyclonic in summer, and cyclonic in winter. The changeable weather of the British Islands again, is mainly caused by the incoming from the Atlantic of successive cyclonic systems, or areas of barometrical depression.

The principal meteorological data which influence disease and death amongst the population of Dublin are, perhaps, mean temperature, rainfall, and humidity. I purpose to treat of the subject under three headings:—First, the influence of season on thoracic and abdominal affections respectively; second, the influence of season on the progress of epidemics of recent years—namely, cholera and smallpox; third, the influence of season on four principal endemic and epidemic diseases—namely, measles, whooping-cough, scarlatina, and fever. Owing to the absence of a system of registration of disease in this country, we must be content to deal with mortality alone.

At the outset of our inquiry into the influence of meteorological conditions on the death-rate from thoracic and abdominal affections, we may lay down the following propositions.

A.—*In summer the tendency to sickness and death is chiefly connected with the digestive organs—diarrhoea and dysentery being the affections which are especially prevalent and fatal during this season. In winter a similar tendency is noticeable in connexion with the organs of respiration—bronchitis, pneumonia, and pleuritis being the affections which are principally met with at this season.* B.—*In summer, a rise of mean temperature above the average, increases the number of cases of and the mortality from abdominal affections. In winter, a fall of mean temperature below the average increases the sickness and mortality from thoracic affections.*

In proof of the truth of the first of these propositions, from a study of the Registrar-General's returns of deaths in Dublin, since 1864, we find that during the whole of this period the death-rate has been uniformly highest during the first quarter of the year, and lowest during the third quarter, with the exception of 1868—a year of warmth and drought. We may take it, then, that the first quarter of the year is the most deadly, and the third quarter the least so. As to deaths from thoracic affections, it is found that they arrive at their maximum in the first quarter, and at their minimum in the third, and further, that they have a pronounced influence in determining the total mortality, especially during the winter months. With regard to deaths from abdominal causes, it is found that during the same period they reached their maximum in the third quarter, with one exception—1866—and their minimum in the second quarter. In the year 1866, a fearful epidemic of cholera occurred, which was accompanied by a considerable amount of diarrhoea.

So far, the dependence of the thoracic death-rate on season points to a period of low mean temperature, of a high percentage of humidity, and generally of an increased rainfall as coinciding with its maximum; and similarly the maximum of abdominal death-rate followed a high mean temperature, a low percentage of humidity, and generally a smaller rainfall.

Our death-rate is influenced by two factors especially—namely, the presence of an epidemic and the meteorological conditions, and when we find it in an abnormal condition, we may look for an explanation to either of these causes. Thus, in 1866, an epidemic of cholera, which caused 1,186 deaths; and in 1872, an epidemic of smallpox, which proved fatal in 1,350 instances during that year, fully accounted for an increased mortality in these years.

We are told that cold weather is bracing and tonic. Doubtless so it is to the young and strong—to those in robust health and in the prime of life. These classes of the community are invigorated by the cold of winter, and may set the heat of summer at defiance. But far otherwise is it with the very young, the weakly, and the aged. Children under five, and the aged, go down like grass before the scythe when

the keen frost-wind of winter, or the fiery heat of summer, sweeps across the land.

Cholera tends to prevail in the warmer months of the year, especially in August and September. In 1866, the epidemic began to be severe in Dublin, towards the close of August, and it reached its acme in the middle of October, immediately after a rise of some degrees in mean temperature, a very deficient rainfall, and a spell of calm, damp, foggy weather, with a high barometer, and but slight ozone reactions. In December the epidemic died out rapidly, and no deaths occurred later than the 29th of that month, on which day the intense frost of January, 1867, was ushered in by a sudden fall of temperature, amounting to 15° in a few hours. In discussing the influence of season upon the progress of the recent epidemic of smallpox, we cannot, as with cholera, compare the meteorological conditions of the week before with the death-rate of any given week. Smallpox has a definite period of incubation, during which the disease lies dormant in the system, and it seldom kills before some days have elapsed from the earliest development of the symptoms. It is necessary, therefore, to compare the deaths of a given week with the weather of three weeks before. Smallpox is essentially a disease of winter and spring, being checked by a rise of mean temperature above 50°. In connexion with the late epidemic in Dublin, one of the most remarkable evidences of the dependence of the disease on climatic influences is found in the fact that in March, 1871, a well-marked tendency to an epidemic was noticeable. Local outbreaks of the disease took place in various parts of this city, and fatal cases occurred in Cork Street Fever Hospital. By the increasing temperature, however, the disease appeared to be held in check, notwithstanding the importation from England of many cases, until with the advancing autumn it blazed into an epidemic.

I shall now briefly consider the influence of season upon the four principal endemic and epidemic diseases—endemic alas! for their home is ever in the midst of us, and the graphic term, "fever-nest," is a significant and no less truthful recognition of the mournful fact. These diseases are measles, whooping cough, scarlatina, and fever.

With regard to measles, the first thing to be noticed is the periodical epidemic character assumed every second year or so by this disease, and the remarkable tendency to prevail in the second and third quarters of the year, which is shown by it. At present we have to do only with this last peculiarity. In epidemic years, on three occasions, the greatest mortality fell in the third quarter, and in one in the second quarter. The non-epidemic years displayed an opposite tendency, the acme falling in the first quarter on four occasions. In three of these instances this acme was really only the dying out of an epidemic, namely, 1866, 1868, and 1870. Practically, we may disregard these years, and we may look upon measles as essentially a disease of the spring and summer quarters. From a careful analysis of the weekly returns of deaths in Dublin, extending over a period of nine years, I find, that on an average, the highest mortality occurred from measles in the 28th week of the year, and the lowest in the 51st week; and that a temperature higher than 59 degrees, or lower than 42 degrees, is unfavourable to the spread of this disease. Proceeding from these results, we see that the cold spring and summer of 1867 were especially favourable to the spread of the epidemic of that year, and that while, on the whole, the summers of all the epidemic years were comparatively cool, those of the non-epidemic years were hot and dry—namely, 1864, 1868, and 1870.

Whooping-cough, as might be anticipated from the frequency of chest complications attending it, has invariably prevailed most in winter, the greatest mortality generally falling in the first quarter of the year. Three epidemics of whooping cough have occurred during the last nine years, and all of these reached their acme in January and February. It is curious to observe that the epidemics occurred in comparatively mild seasons—namely, those of 1866, 1868, and 1871. Intense cold appeared to check the disease, while moderate cold, on the other hand, favoured its prevalence. The lowest death-rate from whooping cough was met with in the 28th and 29th weeks, or about the middle and end of July, and the mortality from this disease, as a rule, was found lowest in the third quarter of the year. A remarkable fact was further noticed in the case of Dublin, and has been also alluded to by various writers—that another minimum coincides with the 21st week of the year. This is followed by a recrudescence of the disease, which continues for some weeks, and which has been described by Dr. Ballard as the June development of the disease in Islington.

"Scarlatina," observes the Registrar-General of England, "discovers a uniform, well-marked tendency to increase in the last six months, and to attain its maximum in the December quarter, the earlier half of the following year witnessing a decrease." An analysis of the weekly death-rate from scarlatina in Dublin, during a period of nine years, shows that the disease was, on the average, most fatal in the 46th

week, and least fatal in the 24th week. Scarletina showed a tendency to increase when the mean temperature rose much above 50 degrees, while a fall of mean temperature below this point in autumn checked the further rise of the mortality. Why, then, if a fall of temperature below 53 degrees tended to arrest this disease, does it happen that the mortality is undoubtedly so high in winter? In Dublin it continues very high until the 9th week, and high until the 19th week of the year. Here we are brought face to face with one of the most important factors in all sanitary problems—namely, overcrowding. Scarletina is not only one of the most contagious diseases in existence, but the *materies morbi*—whatever it may be—remains in an active state for a lengthened period. Hence the difficulty of disinfecting the bedchambers of scarlatina patients. In these facts is contained the solution of the problem. As winter approaches, the instinct is to diminish the sources of ventilation, and among our poorer fellow-citizens—badly clothed and with inadequate supplies of fuel—unrestrained freedom is given to this instinct, but with most deplorable consequences. Every chink and crevice through which the outer air might gain access to the overcrowded tenement is eagerly sought out and effectually closed. It is under these circumstances that scarlatina, favoured by the high and unwholesome temperature of the rooms, runs like wildfire among many families in the poorer parts of the city. But the mischief does not end here, for the contagious powers of the disease are called into full play, and the richer and more affluent quarters of the city suffer in their turn from this dire pestilence. We must not forget, also, that in winter the throat complications of scarlatina are likely to be more severe and fatal than in summer and autumn.

Fever in Dublin may well be described as both an epidemic and an endemic disease. In 1865 and 1866 it prevailed as an epidemic disease, but it is never absent from this city, and so its title to be considered an endemic disease also is clearly established. The first thing to be noticed with regard to fever is its remarkable tendency to prevail in the first quarter of the year. Fever appears to depend especially on the weather. In the consideration of fever it would be desirable to isolate two forms of the disease—typhus and typhoid, or enteric, fever—and with the former we may, for this investigation, group the so-called continued fever. Fever in general has proved most fatal in the 3rd and 4th weeks of the year, and least fatal in the 28th and 29th weeks. The disease was most severe about the period of the greatest cold, and least so early in July. It again appeared to become very fatal in autumn, when the mean temperature fell below 54 degrees. The mortality continued to rise with the falling temperature until January and February were past. Early in March the mortality declined, but rose again at the beginning of May, coincidentally, it would seem, with a lower humidity. The decline was then very rapid, and the minimum was reached in July, and the first half of August. A temperature higher than 54 degrees seems to have a controlling influence on the prevalence of fever, whilst temperatures below 54 degrees seem to favour its development. With regard to typhoid fever, a striking increase was to be noticed in its percentage amount towards the close of the year; whilst, on the other hand, the highest percentage of typhus fever occurred in the seasons of winter, spring, and early summer. The reason for all this is not far to seek. Typhus is intimately related to overcrowding, and bronchial or thoracic affections are amongst its most frequent complications. Typhoid fever is connected with a specific contamination of air or water by sewage matter, and its secondary phenomena are developed generally in connection with the digestive system. Hence a greater prevalence of this form of the disease was to be looked for in the warmer seasons, and more particularly at a time when the first autumn rains had washed into drinking wells, and other sources of water-supply, the decomposing matter which had hitherto remained innocuous.

All these considerations, novel and important as they are, form but one chapter in the study of the relations between meteorology and health. Among other cognate inquiries I would particularise only the works of Dr. Angus Smith on *Air and Rain*, of Dr. Cornelius Fox on *Ozone and Antozone*, and of Professor Buhl, of Munich, on the *Relation between Typhoid Fever and the Height of the Underground, or Subsoil, Water*. The *Influence of Light on Health*, first shadowed forth by our great countryman, Dr. Graves, has been ably handled by Dr. Forbes Winslow. In his essay on the *Influence of Light*, Dr. Graves wrote this eloquent and touching passage:—"I need not observe that the flowers and leaves of all plants court the light. Indeed, this tendency is manifested sometimes in a very curious manner. This is exemplified in the various flowers which adorn the dark and comfortless abodes of the tradesmen in the Liberties of Dublin. These poor creatures (for however poor the being is, or however confined by the nature of his employment, he never forgets the green freshness and living loveliness

of nature) delight in flowers and birds; and in their windows will frequently be seen a geranium, almost as sickly as its owner, turning its lank and stunted leaves with unvarying constancy towards the light."

"Die Pflanze selbst kehrt freudig sich zum Lichte."—Schiller.

In conclusion, as to the practical bearing of these investigations, we find that some of the diseases we have been considering tend to prevail in the warm seasons of the year—others in the cooler seasons. There is, further, only too good reason for believing that the mortality of many diseases included even in the former class, is increased by overcrowding and its attendant evils, while the influence for evil of this flagrant breach of sanitary law on winter maladies is almost beyond belief. Overcrowding, alas! is but another name for poverty, and poverty means—want of fuel, deficient food, deficient clothing. Is it not incumbent upon us, sanitary reformers and pioneers of preventive medicine, to obviate, so far as lies in our power, the ill-effects of cold? In the case of scarlatina, again, and other infectious diseases, let refuges be provided for the still healthy members of families stricken with disease. As regards summer maladies, too, the providing of wholesome food, the interdicting of unripe fruit and putrid vegetables, the free use of suitable disinfectants in sewers and latrines, and, above all, a pure water supply, will have the happiest results. Of all the diseases, fever, however, is, perhaps, the most preventable, depending, as it does, so largely on overcrowding and bad ventilation. How are we to deal with it from a preventive point of view? The English Registrar-General said on this point:—"Fire is a necessity of life in this climate, and a warm hearth mitigates the severity of winter. Fire is as much required by the poor as by the rich, and a tax on coals, like a tax on salt, presses with undue severity on people of small means." And so it is—our poorer fellow-citizens have to do battle with snow and ice, hail and tempest. Their weapons of defence in this otherwise unequal warfare must be raiment, food, and warmth. Lo, there, on the journey of life, lies the wounded, the helpless wayfarer, cold, and naked and hungry. Be you the good Samaritans.

A VISIT TO A LEPER-VILLAGE.

By ARTHUR LEARED, M.D., F.R.C.P.,
Senior Physician to the Great Northern Hospital.

THE leper-village El Hara is just outside the Donkkela Gate of the city of Morocco. It is of considerable size, and fenced in with earthen walls. There is only one entrance, close to which is the sanctuary of the patron saint, Seedi Ben Nor. On account of this proximity, an objection was made to my going into the village; but a number of the inhabitants soon made their appearance, and were friendly and communicative. Many of them were well developed, well nourished people; and some showed no outward sign of disease. They form a community apart, having a mosque, a prison, and a market of their own. They also cultivate land, and buy and sell like other people. The whole population was stated to be two hundred. Many of them come from long distances—from Haha, from Suse, and even from the Sahara. Many of them are negroes. Some have been resident for thirty years, and there are a few very old people amongst them. There is a Jewish quarter, with a synagogue; but, although there were five Jew residents a few years ago, there was not one at the time of my visit.

Notwithstanding this separation of the leper population, the general opinion amongst the Moors is that leprosy is not contagious. They not only go into the leper-village freely, but will eat and drink, and even sleep in the same room, with those affected by the disease. The lepers themselves are allowed to enter, but not to stay in the city. About the city gate we saw many wretched creatures, in whom the disease was so far advanced that begging, which is vociferously conducted, was their only resource.

In the group which surrounded us at the village, one thing which particularly struck me was alteration of the voice. Many spoke with that characteristic huskiness which denotes that the disease has attacked the windpipe. In some cases, a tubercle or two on the forehead or at the side of the nose was all that rendered it imperative for them to separate from the healthy. One boy had lost the fingers and thumb of his left hand; the little finger of his right hand had also disappeared, and the remaining fingers and the thumb were crippled and useless. Several had lost toes to a greater or less extent. In some cases, there were foul unhealthy ulcers; and in one such instance that I examined, the thick skin of the back of one heel had the appearance of having had a large piece punched out. No application seems to be made to the sores, nor do they try any medicines. Washing at the