be squeezed out of the collapsed vein: to this result the fatigue of the operation not a little contributes. But in the third stage the condition of things is totally changed: the blood has recovered its fluidity and its original quantity—perhaps even in excess; while its distribution throughout the system has not been equalized; and in one or more important viscera it is accumulated in venous congestion, or inflammatory arterial activity.

It is scarcely possible to speak of the treatment of cholera without some reference to the employment of emetics, at one time considered so essential and important. But we cannot commend their use, except in cases where the stomach is supposed to retain undigested food in considerable quantity. The intention with which they have been prescribed, of rousing the system, and re-exciting the action of the heart and arteries, is, we feel assured, fallacious. The circulation is depressed because the vessels are half emptied of their proper contents; and what remains is too viscid to be propelled by the muscular energy of the heart and arteries. It is not the stimulus of emetics by which this state of things can be corrected; and the exertion attendant on this operation can only increase the degree of general exhaustion.

We should, however, greatly exceed the limits of our present purpose, were we to examine, critically, every remedy that has been proposed or employed in the treatment of cholera; and if we have succeeded in directing attention to the true indications of cure, and in pointing out rational means of carrying out these indications, that purpose has been, however imperfectly, fulfilled. Nevertheless it must not be supposed that the opinions and suggestions which we have advanced are expected to do more than claim the candid and philosophical consideration of those who are engaged in the investigation and treatment of cholera subjects, on which we believe that many erroneous and mischievous opinions have been entertained and acted upon.

We have purposely abstained from the relation of particular cases. The diagnostic characters of the disease are so well defined and strongly marked, and the histories of cases, according to their respective results in recovery or death, so much resemble each other, that such details would tend more to lengthen than elucidate the intentions of this paper, in which brevity has been a chief object.

For the same reasons we have entirely abstained from reference to the opinions of other writers, being satisfied with an exposition of the plan of treatment which, in our own experience, has been found most successful, and the reasons which led to its adoption.

Newcastle-on-Tyne, July, 1849.

ON THE INFLUENCE OF THE WINDS; AND APPARATUS EMPLOYED IN METEOROLOGICAL OBSERVATIONS.

By J. C. ATKINSON, Esq., Surgeon, Westminster.

(Continued from vol. i. 1849, p. 535.)

THERE are three important facts connected with ærology, on which the whole superstructure of the doctrine of the winds is founded.

1st.—That the influence of various winds, has a decided and indisputable action on the health of human beings, which is more particularly perceptible when that condition of body is in any way deranged.

2ndly.—That the influence of the winds is characterized by the production of such symptoms on the functions of different organs of life as leave no doubt of its especial action.

3rdly.—That as medicines are regulated in their action by the temperature and pressure of the atmosphere, and as these are under the control of the winds, so it must be clear to demonstration, that the proper remedial effect of medicines cannot be expected to be always the same, when we have changes occurring in the motions of the electro-magnetic currents of the atmosphere, and when these are possessed of distinct qualities.*

Meteorological observations, as applied to medicine, will become of real practical value when proper attention has been

directed to them, and when the truth of the conclusions I have arrived at has been found to be satisfactorily shown.

I shall here introduce a diagram of the compass, as used by the mariner in his navigations over the world of waters, and trust that it may be proved as advantageous to the peripatetic medical philosopher, as it is to the mariner. The follower of Æsculapius is of course well acquainted with the hieroglyphical characters which are of a more abstruse nature than the compass—viz., the emblematical figures he is occasionally called on to employ in his professional writings, commencing with Jupiter, Mercury, &c., but he may not be, nevertheless, able to box the hieroglyphics, as mariners box the compass.

I do not wish to exaggerate the usefulness of this little instrument, but it is really invaluable to the medical man. He will often be able to recommend "change of air" to his patient, without any of the mischiefs which usually result from that expedient. He will, by consulting it, at once discover whether the room in which his patient lies afflicted is suitable or not, by its aspect, for the nature of the complaint under which he at that moment may be suffering; and with this knowledge of the circumstance, the removal to an aspect more congenial to the case, (although with no greater latitude than the same house, and perhaps the same floor,) may be attended with the most beneficial consequences. Place the pocket compass on the table, and allow the magnet to take its natural position—viz., north and south; then fix the index to these points, carefully, and you will see what kind of aspect the room has; and in this way, likewise, you can avail yourself of placing the invalid's bed in such a position as to secure sleep without the aid of a narcotic or sedative under many circumstances, although these are unknown to the profession at present; for different positions have different influences on the nervous and circulatory systems. I shall, at the proper place, bring forward some cases which bear strongly upon this point.

Again, its out-of-door uses are not to be despised, or rather, they are of great importance; by it, wherever you may be located, and have neither the sun's nor moon's light, obscured by clouds, to assist you, you will always be able to recognise your position; and you will discover by setting it, and looking aloft to the clouds, or at any light body floating in the air, from whence the wind proceeds, without referring to vanes and weathercocks.

I have mentioned in a former paper, respecting the equinoctial winds, that they are irregular, and do not blow from any fixed point of the compass for any length of time. It is also necessary to state that the two periods at which they prevail are about March 21, which is called the vernal equinox; and September 23, which is called the autumnal. At these two particular periods, the days and nights are of equal duration, and the winds are boisterous, and of the greatest velocity. The ancients, both Greeks and Romans, and I may say the moderns up to a very late date, were accustomed to bleed and employ purgatives to cleanse the system from the impurities which the blood accumulated at these times, and this without any reference to the nature or character of the seasons, or direction of the winds, believing as they did, that the atmospheric pressure and temperature required

* It is important to observe, lest I should be misunderstood, that when I mention the electro-magnetism of the winds, I mean that they should be considered as blowing from a surface wholly uninfluenced by the neighbourhood of any local swamps, ditches, stagnant ponds, canals, and sewers, containing animal and vegetable decomposition, which may evolve gaseous products of a deleterious tendency.

the wholesome interference of art to control; in this, they were not far wrong, only the means they employed were frequently of too violent a nature. In some of the colleges at Oxford, there exists, I understand, an ancient custom, which grants to each student a few pence for medicines, at a particular period of the year, and specified *ad renes purgandos*. But I feel assured that no sanatory regulation will ever prevent the existence of vernal and autumnal diseases; and it is therefore our duty to watch meteorological phenomena, with a view to act in accordance with the general laws of nature, and not to fall into the error of using the same means of treatment for all patients, under even the same circumstances. I cannot do better than mention in this place the lamentable error we commit in saying that this person or that person afflicted with such and such an organic disorder, must necessarily die in a certain given time, according to the supposed amount of tissue diseased; post-mortem examinations show us, in a way not to be disputed, that we have death produced in many, with very different degrees of organic lesions. One patient dies when the winds are especially unfavourable for such disorders much earlier of a comparatively slight disease, than another who is found to have had a greater amount of disease, but of a different organ. This is illustrated in epidemic diseases. How quickly are many hurried into eternity, when the germ only of a latent disease is present, but which is rapidly matured by the concurrent operation of peculiar electro-magnetic currents, while others escape. Some periods are fatal to old age under certain diseases, not so at others. Other periods again are productive of danger in infantile diseases.

Electro-magnetism is, in my opinion, the potent agent always present, and always in activity on and in the earth's surface, and it is the undue increase or decrease of this important element in the constitution of the atmosphere, which tends to all the numerous changes that are going on for good and evil in terrestrial existence. In the "Report on Quarantine," recently published and presented to both Houses of Parliament, the committee advert to the difficult question relative to the nature and effects of electricity and magnetism, in the following terms:—"We cannot tell, because meteorological science, as connected with the propagation and spread of disease, is as yet in its infancy. We have indeed some knowledge of the influence of two of the more obvious conditions—namely, those of heat and moisture; but of the action of the subtler agents, such as electricity and magnetism, the present state of science affords us little information. Still there are unequivocal indications that there is a relation between the conditions of the atmosphere and the outbreak and progress of epidemic diseases, though we are as yet ignorant of the nature of that relation."

Magnetism and electricity have occupied the attention of philosophers for the last quarter of a century in the most energetic spirit. Faraday stands pre-eminently the first in investigations on the former, while numerous scientific inquirers have cultivated the latter science, yet I do not think all parties are agreed regarding the identity of these two essential elements of the air. To me their non-identity offers a greater guide, a better explanation, to the various reciprocal and alternate actions continually proceeding from the apparent influence of the two separate physical agencies. Although I believe a greater number of arguments have been brought forward to identify the two forces as one body, yet I trust I shall be able to show, that analogy in many of their attributes is not identity, and this will be explained.

Magnetism of the earth is a state of continual and restless fluctuation, and its changes from moment to moment are strictly simultaneous at every point where observations of this nature have been made. It is my impression that cold is an effect of magnetic influence, as solar heat in the atmosphere is an effect of electric action, and I conclude, that the vital principle of temperature is the result of the combined agency of these two forces, variously modified, according to the seasons and latitudes of the several places. The range of the barometer gradually increases towards the North Pole. The rise of the mercury may be observed in this country during the prevalence of northern winds, conveying as they do, magnetic currents, till at last it reaches to two or three inches. On the contrary, between the tropics, the variations of the barometer are exceedingly small; while winds from the southward in temperate latitudes, if the electric current or wind is continued for any time, will cause a tendency in the mercury to fall.

The winds are more powerful in the production of weather than would appear at first sight; and although the moon was always supposed to exercise great control over the weather, yet it is strange that both Drs. Herschel and Clarke, great observers of the heavens, state, in the weather tables,—as a

set off, I conjecture, to her influence,—“If the particular change of the moon, full or new, takes place when the wind is so and so, it will be fine for the ensuing week, and the reverse if it is not.” I ask, does this prove the dominion of the moon over the winds, or the contrary?

Magnetism.

1. The intensity of the magnetic force in different parts of the earth is according to the distance from the poles.

2. The frigid zone, where magnetism is in the greatest intensity, enjoys an atmospheric calm which is unknown in temperate regions; it has no storms, no hail, and scarcely a tempest.

3. The splendour of the aurora borealis, reflected by the snow, dispels the darkness of the polar night, but is not accompanied with danger.

4. Magnetism suspends the decomposition of vegetable and animal matter.

5. In northern latitudes the mercury of the barometer always stands high: in the temperate latitudes it is liable to frequent variations.

6. Magnetism has been known to produce sedative action on the human frame, when applied under certain conditions, causing repose, if not sleep.

7. The northern currents of atmosphere, accompanied as they are with magnetism, have the power of expansive action on the mercurial column of the barometer, wherever it may be placed, either in a warm room or in the open air.

8. Snow from the north-west wind has been found to contain more oxygen than rain or river water, and more carbon.

9. The magnetic intensity of the earth is indicated by needles suspended vertically; and in sailing from England towards the North Pole, it is seen that the needle dips, or inclines more and more with the increase of latitude, until, at a certain point, it remains exactly perpendicular, with its south pole downwards.

The above are some of the reasons which have induced me to think that magnetism and electricity are not strictly identical, their operations being as distinct as heat and cold; and I have therefore come to an analysis of the influence of the winds, and a theory to establish something of a definite character. Winds are not decisive as to their influence on health, when continually changing; that is, not remaining in any fixed quarter for two or three hours. Winds have been known to blow from different currents, as spoken of before. Mr. Green, the aéronaut, in his celebrated aerial trip from Vauxhall Gardens to Nassau, in Germany, frequently availed himself of the different currents of air at different altitudes, by raising and lowering his balloon; and in this way he regulated his passage across the Channel, opposite Dover. The highest elevation attained by the aéronaut, during his voyage of nearly 500 miles, (British,) was 12,000 feet above the level of the sea. At the highest point of elevation, it appears, from the account, that there was less circulation of air than at any point below it.

On the earth's surface, then, we have frequent changes of wind, and this more particularly in temperate latitudes or climates; and hence there are frequent alterations in the atmosphere as regards both temperature and electro-magnetism. Sometimes a wind well known for its peculiar mild character assumes so different a nature as to be mistaken for

Electricity.

1. The intensity of electric force is greatest at the tropics, and diminishes as it approaches the poles.

2. The most vivid lightning and the loudest thunder are peculiar to the tropics: here vegetation is vigorous and active at all seasons.

3. Igneous and fiery meteors, fire-balls, lightning, are the peculiar electrical phenomena of the tropics.

4. Electricity assists decomposition in all vegetable and animal substances.

5. The mercury of the barometer is always low in the torrid zone, and varies but little during the changes of weather.

6. Electricity is of an exciting character, increasing the circulation of the blood, and rousing paralytic functions of the nervous centres.

7. The southern currents of the atmosphere, accompanied with free electricity, cause a fall of the mercurial column, under any circumstance of position of the barometer.

8. Electricity causes the rain to descend with less oxygen than snow water, and less carbon.

9. In sailing towards the equator, with a magnetic needle suspended in the like manner, the inclination or dip gradually decreases, until the needle rests in a perfectly horizontal position.

a wind from altogether another quarter of the globe. This arises from various winds supplying one current of air; and this will be better understood by a reference to the diagram below. Here we have a south-west wind of some velocity, of a stormy nature, and highly charged with electricity. Suppose, then, this wind to have a parallel breadth of any given number of miles, and then to be supplied by north-east and north-west winds, of course, under such an influence, we shall have a great reduction of the temperature, and other qualities somewhat reversed, for a time, at least.

A north-east wind, on the other hand, will frequently have its real nature or character altered, owing to rapid changes of aerial currents during stormy or thundery weather; and this happens more particularly when the observer is situated on the external edge, as it were, of a parallel current of wind, (which varies in diameter, at various seasons, from ten to one hundred miles;) and hence an unusual temperature is given to it. In the centre, however, of the said parallel current you have the true quality unmodified. This will be understood by a reference to the above diagram, although it represents a south-west wind, by only supposing the arrow to be reversed.

I am induced to believe that the meteorological tables of the winds kept at most of our public institutions—viz., the Royal Society; the Observatory, Greenwich; and other places—are erroneously drawn up, inasmuch as the examination of the weather-vane is only of a hasty nature at two or three particular periods of time—morn and noon; and the reference is made by observing the position of the vane, which is over a cross, indicating only the four cardinal points—although the difficulty of deciding exactly, under such circumstances, when there are *three* points of the compass between each of the four radii, cannot be slight. To correct this, I would suggest the propriety of having the four radii commonly erected under the vane divided into eight. In this way greater accuracy would be ensured to those who have only this means of observation, and not the more complicated anemometer, for direct reference.

We now come to the question of health and disease under the operation of the several winds. The north wind (I here refer to the magnetic north) has a different influence on different constitutions and ages. The temperature of this wind of course varies, as has been before intimated, according to the seasons; but its general characteristics are always alike. This wind is usually unattended by hail, or even snow,—although, a few points to the eastward, it will often be followed, in the winter season, by a supply of the above phenomena.

It was stated, during the awful epidemic cholera at Tooting, in Surrey, that the wind proceeding from this quarter, and conveying the various aerial or gaseous impurities from the metropolis, as well as from its own inherent pernicious character, caused a great aggravation of the malady. This I cannot subscribe to, for the property of the wind is not of that nature; and I do believe that the various products of decomposition in this metropolis would undergo such changes, before reaching that village, as to render them inert. It must be recollected that at that time both the temperature and pressure of the atmosphere were seriously affected, and this anteriorly to the prevalence of the epidemic, by alternating in the most rapid manner, and the winds varied a good deal. I

am persuaded that this would not have arisen if the wind had stationed itself to the north alone; for the barometer would have been steady, and temperature not fluctuating, as when magnetic currents had continued to flow in an uninterrupted manner from one quarter of the compass. It is, then, to local causes, in a great measure, that the great mortality of the children must be ascribed.

In Paris, likewise, I find it stated that the wind blew from this quarter at the time when the cholera broke out in the French capital. The argument of the inconsistency of such a conclusion may be here also applied. The north wind is free from many objections to which winds from either side of the compass are liable. It is not the driest wind, nor the coldest; at least this is its character in the south of England.

Further consideration of the subject will be resumed in another paper, when facts will be introduced which sustain my views in this new field of inquiry; for Bacon has justly observed, that "the man who writes, speaks, or meditates, without being well stocked with *facts*, as landmarks to his understanding, is like a mariner who sails along a treacherous coast without a pilot, or one who adventures on the wide ocean without a rudder or a compass."

Romney-terrace, Westminster, 1849.

(To be continued.)

GLYCERINE A REMEDY IN DEAFNESS.

By J. BROWN, M.D. &c., Boston, Lincolnshire.

ON reading the report of Mr. Thomas H. Wakley, Surgeon of the Royal Free Hospital, on the subject of glycerine, I procured from Mr. Bullock a sample of that drug, and have put it to the test in half-a-dozen cases, and the result, as far as it goes, confirms the value of the remedy. In four cases out of the six, the improvement was instantly apparent. One, a widow, from Thorpe, aged fifty-five, came to me on account of an eruptive disease, and was so deaf I could scarcely make myself heard by her. Having just received my supply, I explained to her its pretensions, and proposed its application. On examining the ear, I found the external ear scaly and desquamating, and the inner ear dry and free from wax. The right ear, having had an abscess in it, was unsuitable for the experiment, so the glycerine was applied to the other. I continued, after the application, talking to her, gradually lowering my voice, until I spoke in a whisper. She continued to reply to me, and I then observed to her, "I am now speaking to you in a whisper, and you hear me." She said, "I hear you perfectly;" and after a little while, she said, "I hear as well as I could wish to hear." Three of the other cases were equally encouraging, and the patients equally pleased and sanguine, but expecting disappointment to follow their favourable impressions. I explained to them that the probable effect of this remedy was that of lubricating the membrane of the drum, and that, as the membrane became dry again, a repetition would be necessary; but that, from its nature, not being disposed to dry or readily evaporate, the effect might last several hours; how long was not at present determined, but that the renewal might be required morning and evening.

In one of the other two cases of doubtful use, a person, aged fifty-seven, who had been deaf many years, and now too ill from incipient hydro-thorax to care much about this remedy, I applied it to one ear, and she could not say she heard better; but a sister from the neighbourhood of Horncastle visiting her that day, as soon as she saw her, exclaimed, "I am sure, my dear, you hear better;" and as this was said without any knowledge of the application having been used in a first salutation, before any explanation had been made, it must, I think, be taken as a favourable tribute to the new remedy.

Glycerine, it is probable, can only be useful where the membrane is perfectly entire, neither indurated nor corroded, nor the subject of purulent discharge; but when, as in advancing years, there is the absence of the natural secretion, the glycerine seems to supply a singularly analogous substitute, and to give a temporary tone to the membrane, and, in an instant, a lively perception to the organ.

Permanent cure of the states in which glycerine is useful does not seem to be claimed by Mr. Wakley as the probable result, but should repetitions of the remedy be followed each time by a re-animation of the sense of hearing, who that has suffered from the deprivation of that sense, and has in his possession a means of revival so easy of attainment, will deem it a trouble to repeat the application, even to the end of life.

Boston, July, 1849.