tissues in which it was contained. This is an observation which we have constantly the opportunity of verifying. When a part upon which an artificial inoculation has been made, is made to slough, by the application of caustic, within four or five days of the infection, a simple sore alone will ordinarily result. After the separation of the slough, the surface of the wound will not furnish an inoculable matter. In like manner, after natural inoculation, if the part inoculated sloughs within the first few days, a simple ulcer alone will be left. We find in such cases that there is no suppurative of the inguinal glands, because there is no ulceration of any infected part. There is no contamination of the system, because the virus, by means of which constitutional infection takes place, has been destroyed before the process has been gone through.

The three cases which we have now considered, may be regarded, as I have stated, as types of three very common classes of affections, differing in their mode of origin, in their effects upon the constitution, and in the treatment which they require.

The first presented in its origin a sore surrounded by specific adhesive inflammation. The glands of the groin were in a state of slight chronic enlargement, and the constitution was affected with syphilis.

The second originated in a sore presenting the characters of acute ulceration. The glands in the groin became inflamed and suppurated. But I venture to say there will be here no constitutional affection.

The third, as far as we have been able to learn, commences as a sloughing sore, and has been accompanied by neither inflammation of the inguinal glands nor syphilitic affection of the system. At our next meeting, I purpose to make some further remarks on the second of these three forms of disease.

CASE OF DISLOCATION OF THE HUMERUS ON THE DORSUM OF THE SCAPULA.

By R. U. WEST, Esq.

DISLOCATIONS of the os humeri on the dorsum of the scapula are very rare; so much so, that Sir Astley Cooper, in his work on dislocations, says that there were only two such cases met with in Guy's Hospital during thirty-eight years. It would seem, therefore, that the accident can arise only from some peculiarity in the kind of violence which causes it, and not from the action of any particular muscles on the bone after it is thrown out of the glenoid cavity. The manner in which the accident was caused is not given in the two cases referred to by Sir Astley; but there are three other cases communicated to him by provincial practitioners, and published in his work, which seem to prove this; notwithstanding that one of the writers, Mr. Coley of Bridgenorth, thinks that the effect is produced by the action of the latissimus dorsi and teres major on the bone. In fact, the very great frequency of the dislocation into the axilla, compared with that of the dislocation either backwards or forwards, must prove that the muscles invariably pull the arm downwards, when no other force gives a different direction to it. Surely, when the muscles are left to themselves, the pectoralis major would have its influence as well as the latissimus dorsi.

About three months ago, I met with a case of the dislocation backwards, and it occurred in a way which may serve to illustrate this point. My patient, a farmer, residing about a mile from this place, was standing alone in his yard, where some additions to his house were being erected. Four and twenty deal-boards were piled crosswise over a pole, which was supported at each end by a triangle; and as Mr. — stood with his back towards one of these triangles, it suddenly gave way; the pole dropped to the ground, the boards slid off the end of it, and the whole mass falling on him, threw him on his face to the ground. The intersecting portion of the boards caught him on the back, and held him down, while his head escaped from being

crushed by being in the interval or interstice above; but the right shoulder, which was in the interval on one side, was on that very account severely injured, the elbow catching the ground, and the head of the humerus being thus driven directly backwards. On my arrival about an hour after the accident, I found Mr. — suffering great pain both in the back and shoulder, and there was so much shortening of the upper arm, that before his coat was taken off, I thought the humerus must be broken. But on stripping him, the nature of the case was at once evident, from the great shortening of the limb, a soft, yielding, thickened, fleshy mass under the acromion, and, plainly perceptible under the spine of the scapula, a hard round lump, which could be made to rotate by grasping the elbow. There were some ribs broken, and the patient was collapsed and faint, so that I had no difficulty in reducing the dislocation, which I effected by means of a couple of jack-towels, and the assistance of two men from the yard. Mr. — had scarcely any pain in the shoulder after the reduction, and recovered very rapidly from all the effects of his accident.

This dislocation is easily detected and easily reduced, and the round lump on the dorsum of the scapula is very satisfactorily seen to disappear at the moment when the peculiar snap is heard, which announces the return of the head of the bone into its normal situation.

Alford, Lincolnshire, Dec. 20th, 1853.

NOTES ON EPIDEMICAL DISEASES.

By WILLIAM ADDISON, M.D., F.R.S.

NO. I.

INFLUENZA, CHOLERA, CONTINUED FEVER, TYPHUS, AGUE, REMITTENT FEVER, DIARRHŒA, DYSENTERY, SMALL-POX, SCARLET FEVER, MEASLES, HOOPING-COUGH.

EPIDEMIC, or, as they are now more usually termed by medical men, zymotic diseases, were formerly universally considered to be essentially different in their nature, each being thought to depend on its own specific contagion. The correctness of this view seemed to be confirmed by the great apparent difference between typhus, scarlet-fever, influenza, and cholera. Subsequently it has been thought that all these diseases may derive their origin from some common agent, modified by peculiarities of climate and other circumstances, and which, under varying conditions, gives rise to various forms and types of disease. Whichever of these views be adopted, it is agreed by the most eminent investigators that there is a general resemblance between these various forms of disease, and that they have the following characters in common:— They are all fevers; they all obey similar laws of diffusion; they all infest the same kind of places; they all attack the same classes, and for the most part persons of the like ages; and their intensity is increased or diminished by the same sanitary and social conditions. The consideration of these common properties of epidemical diseases, under whatever form or name they may occur, has led to the general conclusion, that the safeguard against them is sanitary measures; that is to say, measures which tend to remove those local conditions, without which, as experience has proved, pestilential diseases are incapable of existing.

The causes upon which epidemic diseases depend, their prognostics, and the phenomena attending them, we propose to consider under the following heads:—

- I. AN EPIDEMIC ATMOSPHERE.
- II. ENDEMIC ATMOSPHERES.
- III. SOCIAL HABITS.
- IV. PERSONAL CAUSES.

I. EPIDEMIC ATMOSPHERE. The first manifestations of an epidemic atmosphere in a country are usually certain natural phenomena, amongst the most remarkable of which are disturbances in the physical condition of the air. These have been observed in ancient times to precede and accompany all great epidemics, and have been witnessed generally on the occur-

rence of such epidemics in the present day. The outbreak of influenza in London, in the week ending Nov. 27, 1847, was preceded and accompanied by extraordinary risings and fallings of the barometer, by violent storms of wind and rain, by unusually heavy dews, and sudden alterations of temperature. "No electricity," says the Registrar-General, "stirred in the air during that week—all was still as if Nature held her breath at the sight of the destroyer come forth to sacrifice her children."

Similar phenomena have been observed to attend the outbreak of cholera. On the great outbreak at St. Petersburg, for example,—namely, about the first week in June, 1848, "a remarkable change," says Dr. Adair Crawford, "took place in the weather. There were almost constant high winds, shifting frequently and suddenly round to almost every point of the compass, and often accompanied with torrents of rain, and sometimes thunder. The disturbed state of the atmosphere was indicated by sudden fallings and risings of the barometer, sometimes to the extent of between one and two inches. The changes of the temperature were equally frequent and rapid, the heat being for several days together very great, as high as from 84 to 90 deg. of Fahrenheit, and the air extremely sultry and oppressive, with a damp relaxing south wind; and then suddenly, on a change of wind, and sometimes on the occurrence of a thunder storm, this oppressive heat would be succeeded by great cold, the thermometer falling as much as 50 deg. in a few hours; so that it was several times in June nearly as low as the freezing point. Another peculiarity in the condition of the air was the disturbed state of its electricity. This was clearly demonstrated by the fact, that the electrical machines could not be charged, and several large magnets lost their power."

The rapidity of the course of great epidemics is a remarkable feature in their history. When influenza broke out in London in 1847, it spread on the same day over every part of the metropolis. "It met you everywhere," says the Registrar-General; "nearly the whole population were affected more or less; and, without taking slight instances, not less than 500,000 persons in 2,000,000 suffered in London from the epidemic!" When it broke out in Edinburgh, it spread with the same rapidity over every part of that city. In like manner, when cholera broke out in Cairo, in 1831, it spread within five days over the whole of Lower Egypt. In 1832, it leaped at one bound from London to Paris; and out of forty-eight quarters of that city, it spread in five days over thirty-five. In a report on the health of seamen in the royal navy, it is stated that, in the early part of March 1837, influenza attacked 280 of the ship's company of the *Rodney*, then off the south coast of Spain, and for the first two days the seizures were at the rate of three men per hour. On the 30th of May in the same year, influenza appeared suddenly amongst the ship's company of the *Vanguard*, which had sailed from Malta on the 23rd; and in forty-eight hours there were 200 of the crew upon the sick list, being at the rate of eight men every hour.

Epidemic conditions are often really present in a country, and disorder the health of the people before they are manifested in their peculiar and recognised forms. The significant signs by which their presence is declared, are commonly called premonitory symptoms. These premonitory symptoms are more than warnings; they are indications of the actual presence of the disease, evidences that it has already commenced its work. In London, the mortality from diarrhoea steadily progressed for three years before the outbreak of cholera in 1848. It has also been observed that great epidemics are usually preceded by circumstances betokening a change in the type of ordinary disorders, some time before they make their decided and general attack. Thus it was observed by Sydenham, who has left a record of the epidemics which prevailed in London in the middle of the seventeenth century, that a remarkable change took place in the character of fevers and other disorders, approximating the general features of disease to the distinguishing characteristics of the particular pestilence at hand.

Dr. Southwood Smith has recorded a similar observation

with reference to the type of fever in London six months before the visitation of cholera in 1832. "During the six months immediately preceding the first appearance of cholera in this country," he says, "the character of fever in London so entirely changed, that typhus, which, for a long series of years, had been especially an inflammatory disease, became a disease of debility so closely resembling cholera, that the fever into which cholera patients commonly fall, could not be distinguished from the primary fever found in the wards of the fever hospital when cholera was at its height."

The steadiness with which great epidemics pursue their course is another remarkable feature of their history. In tracing the rise and progress of cholera in British America during the years 1832 and 1834, Colonel Tulloch observes, that nothing is more remarkable than the post-like regularity with which on both occasions it advanced in the same course, attacking the same places on nearly the same corresponding days. "Take, for instance," he says, "its progress along the line of the St. Lawrence and the lakes:—

	Date of appearance of the disease.	
	1832.	1834.
Quebec	8th June ..	7th July
Montreal, 180 miles above Quebec ..	10th ..	11th ..
Kingston, 190 miles beyond Montreal ..	16th ..	26th ..
Toronto, 184 miles beyond Kingston ..	28th ..	30th ..
Fort George, 40 miles from Toronto ..	14th July ..	13th Aug.

Along the banks of the Ottawa it pursued the same steady course, as well as up the Richelieu and along the lake Champlain, through the United States to New York. In the month of January, 1837, influenza broke out in the ships of the navy stationed on the Tagus; in March it attacked the crew of the *Rodney* on the south coast of Spain; in May it appeared amongst the shipping in Malta harbour, and in June and July it prevailed at Corfu. "The disease," says Dr. Bryson, "was generally supposed to have had its origin in atmospheric causes; and, in several instances, the weather when it broke out is described as being cold, raw, and damp; but as the disease spread over the greater part of Europe, these local phenomena can be but of little importance in an etiological point of view."

The influence of great epidemics is not limited to human beings; it extends to all classes of domestic animals; and, there is reason to believe, even to plants. It is stated in the report of the Sanitary Commissioners, that, contemporaneously with the change noticed in the character of fever in the London Fever Hospital, an analogous change had been observed by the professors of veterinary medicine and surgery in the diseases of horses, sheep, cattle, and dogs; namely, a change from an inflammatory type to one of debility: and that this had been observed to be particularly the case with regard to all the diseases properly considered epidemic, to which these animals are subject. This change it is stated was so complete, that it had been found absolutely necessary to alter the entire system of remedial treatment with reference to the diseases of these classes of animals; and instead of using bleeding and other means of depletion suited to diseases of an inflammatory type, to employ remedies of a sustaining and stimulant character suited to diseases in which the powers of life are depressed and feeble—precisely the change of treatment which had already taken place in the London Fever Hospital.

It is stated by Dr. Thomas Leslie Gregson, who was at Alexandria during the prevalence of the great plague of 1836, on duty there as surgeon in chief to the Naval, Military, and Civil Hospital, that cattle were attacked with decided symptoms of plague some time before the disease broke out among the human species.

The coincidence of blight with pestilence has been recorded from ancient times; and the wide-spread potato disease, which has now extended to almost every region of the globe, concurrently with the presence of cholera and influenza poisons in the atmosphere, may possibly be a modern instance of it. At all events it is certain, that seasons

which are unusually sickly to large classes of human beings are often alike unfavorable to the health and fruitfulness of many classes of plants.

The periodical return of epidemics is a feature of their history, which cannot be accounted for by such causes as terrestrial effluvia, crowded dwellings, and undrained streets. We are naturally then led to some speculation upon the cause of this phenomenon. In the middle ages, the returns of sweating sickness were at intervals of from ten to twenty years: its first visitation took place in 1485; the second in 1506; the third in 1517; the fourth in 1528; and the fifth in 1551. The periods when fever prevails in an extraordinary and excessive degree in London appear to recur after certain intervals with more or less regularity. Such periods, with reference to plague, are stated to return about every ten years. In a report on the causes of death in Ireland appended to the census of 1841, Mr. Wilde states that, when the Irish records of this class of affections are examined, it is found that, notwithstanding all that has been written and asserted upon the influence of want and distress in the production and spread of fever, fever has raged nearly decennially in Ireland for the last 150 years. "I do not mean to say," he observes, "that it has become epidemic, or fatal exactly upon the tenth year, but from the eighth to the twelfth, with an interval of from six to eight years; thus it appeared in 1708, 1718-21, 1728-31, 1740-43, 1763-64, 1771-73, and 1817-21." In the year 1832-33 cholera took its place, in 1837 fever reappeared; 1842 was marked by a most fatal epizootic, and in the autumn of 1842 choleraic diarrhoea and dysentery of a very aggravated type again usurped the place of fever. Upon what hypothesis can facts of this kind be interpreted? The autumnal and winter seasons of the years 1830 and 1831, 1832 and 1833, were remarkable for several unusual meteorological phenomena. In December 1830, the aurora borealis was seen unusually brilliant for several nights in succession in most parts of England. In November 1832, the memorable display of meteors, seen at the same time in many parts of Europe, occurred. And in October 1833, the aurora and a brilliant arch were noted by many observers. Early in the year 1831 cholera made its first appearance in Europe; and the spring of 1833 will be ever remembered for the universal prevalence of influenza. Again, on the 17th and 18th November, 1836, the aurora borealis returned with extraordinary brilliancy, extending in the midland counties of England to the south of the zenith; and in January, 1837, influenza reappeared severely throughout England and Scotland. Whether these are simple coincidences, or have a relation of cause and effect, can only be determined by further observation. It is at least a fact sufficiently interesting to call for a few remarks, that unusual epizootics, potato blight, the vine fungus, cholera, and influenza, have established themselves as familiar diseases in many parts of the world since the very unusual meteoric phenomena of November, 1832. On the subject of meteors, or rather aërolites, the most approved hypothesis is that they are a most numerous class of bodies revolving in small orbits in a similar manner to the planets. These, at particular times, cross the earth's orbit, enter the outer regions of its atmosphere, and thereby become incandescent, throwing out a shower of meteoric light.

Upon this view of their nature, a shower of incandescent aërolites is as likely to happen during the day and pass unnoticed, as to occur at night and be visible. A number of such bodies throwing out sparks would certainly leave aëriiform products of combustion, which must gravitate ultimately towards the surface of the earth; and their arrival in the lower regions of the atmosphere would account for the periodical returns of epidemic sickness, and explain some interesting meteorological appearances connected therewith.

Again, it is a commonly received opinion that a comet is the unfailling precursor of calamity and trouble; and it may happen here, as has happened before, that a popular notion exploded by the scientific may be established upon some solid foundation. A tendency to deny what we cannot

demonstrate—to disbelieve what we cannot comprehend, is not a characteristic of the spirit of true knowledge. It was the opinion of Bacon, that "comets have some power and effect over the gross and mass of things"; and Sir Isaac Newton expresses a suspicion that "comets are instrumental in modifying phenomena connected with the atmosphere".

"The number of comets", says Sir J. Herschel, "which have been astronomically observed, is very great, amounting to several hundreds; and multitudes must escape all observation, by reason of their paths traversing only that part of the heavens which is above the horizon in the day-time." Considering the number of these erratic bodies, that they often cross the orbits of the planets and the earth, and that their tails are sometimes sixty millions of miles in length, there is nothing improbable in the supposition that our atmosphere may occasionally entangle aëriiform particles derived from a comet, and that these may periodically or at uncertain intervals constitute conditions unfavourable to health. Arago has stated that a comet can act on the earth only in three ways: by attraction, by its luminous and calorific rays, or by the union of its tail with the earth's atmosphere. He shows that the results produced by the two former methods would be insensible; but he says that cometary matter may mix with our atmosphere, that the phenomenon may occur at uncertain intervals, and possibly be productive of epidemic diseases. History furnishes us with numberless instances of great atmospheric changes which have accompanied or succeeded the apparition of large and notorious comets; and unless we reject altogether its often iterated testimony, we do not see how assent can be refused to influences so perfectly philosophical.

In the year 1782, and still more in the year following, a remarkable haze, or *dry fog*, extended over the whole of Europe; it is said to have been of a pale blue colour, and occasionally yielded a strong and peculiar odour. Rain did not in the least degree affect it. This haze was dispersed or disappeared in the summer of 1783, but the two years of its continuance were remarkable for an epidemic catarrh or influenza, which prevailed throughout Europe, affecting not only mankind, but likewise other animals.* Connected with this subject is the remarkable observation of Dr. Prout, that early in the year 1832 the weight of the air suddenly appeared to rise above the usual standard, and retained its augmented weight as long as the observation was continued, a period of six weeks. At this time the first cases of epidemic cholera were reported in London.† An epidemic miasm of cosmical origin, reaching us from above, would be as likely to impinge upon one quarter of the earth as another; it would probably, from the rotation of the earth, have an apparent motion from east to west, and in the lower regions of the atmosphere would meet with terrestrial effluvia and the poisonous exhalations of crowded dwellings and undrained streets. Miasms derived from three distinct sources, interchanging and intermingling, would each obscure the others, and render it very difficult to obtain a clear view of how much may be due to the one and what to the others, or how far unusual meteorological and physiological phenomena are to be rightly distributed. Experience fortunately has decided that the influence of an epidemic atmosphere may extend over a wide range, and yet produce actual sickness only in particular places where it finds localising conditions; and it follows that the true means of prevention is to make search for all localising circumstances and to remove them. One blade of the destroying shears is forged at home, without it the other cannot do its work.

Maidstone, Dec. 1853.

[To be continued.]

* The long continuance of this haze, its peculiar colour, and its not being influenced by rain, seem to point to some other than a terrestrial origin.
† The additional weight of the air here noticed has never received any explanation; and the assumption of a cosmical cause does not, therefore, displace any other more probable solution.