with me, I now employ the bandages rolled with dry plaster as recommended by Sayre, placing them in the water and mucilage until they are sufficiently soaked. (Slips of bandage previously torn to the proper length may be steeped in the plaster mixed as directed above, then taken out, and, with the help of an assistant, smoothed and laid in position on the bed.) The bandage thus charged with wet plaster has now to be cut into slips of the length necessary to wrap round the patient's back, meet in front, and fold over for a few inches, and these slips have to be placed in proper position on the bed and in suitable layers for folding round the trunk of the patient so as to form a jacket reaching from below the crest of the ilium to the axilla. I, therefore, measure round the patient's chest, and take the depth of the jacket from the axilla to half an inch below the anterior spine of the ilium, and mark these dimensions on the bed, which I have protected by laying a few sheets of paper upon it. My assistant taking the end of the bandage, I rapidly unroll it across the bed, and with scissors divide it at the appropriate length, leaving the slip lying across the bed; the nurse again taking the end, places it so that the bandage as again unrolled shall overlap two-thirds of the slip previously laid down; I again cut it off at proper length, and we repeat the process until a layer of slips of bandage, each overlapping the other two-thirds of its width, is laid across the bed, of sufficient size to reach from the hip to the axilla. This will only give a jacket of the thickness of three layers of muslin, which is not sufficient; I therefore begin again at the bottom with the fresh bandages, first placing a narrow slip of paper across the bottom layer at each side, so as to prevent my confusing the ends of the bandages in the two layers during the next stage of the application. If I wanted a specially strong jacket for an active adult, I could repeat the process again, so as to form a third layer; but usually, if the bandage be well saturated with plaster, a thickness of six folds is sufficient, and, as each slip of bandage overlaps two-thirds of the one below it, this is obtained with two such sets of overlapping bandage.

The patient, who is stripped and clothed in the vest which is to form the lining of the jacket, will now lie down on the bed. I place him carefully, so that the edge of the jacket may come well below the crest of the ilium and not rest upon the bone; he raises his arms and lays them in such a position that the elbows shall just clear the top of the jacket (in the case of a female, the breasts must be held up, and pads of cotton-wool placed so as to mould the plaster in a proper form to receive the breasts when the pads are removed), and lies down on the strips of bandage; I now take one end of the last slip laid down, while my assistant takes the other, and bringing them smoothly round the side we cross them tightly over the chest; we repeat this with each slip until we come to the bottom of the first layer; then, lifting the slips of paper placed to distinguish the two layers, we commence again with the bottom stratum, smoothing the whole over with what wet plaster remains. I have never found it necessary to use what Dr. Sayre calls the dinner-pad. The patient may now put his arms down, that I may, if I find it necessary before the plaster has set, cut away or fold over the edge under the arms; in the same way, I fold up the ends of the lower slips of the bandage, and cut away the lower edge of the jacket if I find that it is so low that it will catch the thigh of the patient when he sits down. From the folding over of the slips in front, the jacket is at this part twice as thick as at any other; it has a strong wide rib down the front, which is the point at which it should be strongest to resist the tendency of the spine to curve forward; should it be thought desirable, it is easy to strengthen the back by placing a few strips of well-charged bandage vertically down the middle of the jacket before the patient lies down upon it, or by pouring in a little wet plaster between the layers of bandage.

You will observe that the addition of the mucilage has given me ample time to complete the jacket, but all must be done with a certain degree of rapidity, or the plaster on the first slips laid down, which are, of course, the last to be folded round, will be found to have set. In a few minutes, the lad will be able to get up, the jacket being completely hardened, and you will see that the spine is fixed in its straightened condition as completely as it would have been if the boy had been suspended by his head instead of resting easily on his back.

I do not propose to detain you by entering into any account of the cases to which the method I have demonstrated is applicable; but I may state that I believe it to be adapted to every case in which Sayre recommends suspension; the jury-mast can be fixed as well in this way as by suspension; and the direction in which the slips of bandage are laid and folded may be modified according to the situation of the disease. Even in lateral curvature, the spine is much straightened, and the twisting remedied when the patient is laid either supine or prone; and what is gained in straightness, and consequently in height, may be retained by such an application of the plaster-shell as I have shown.

Although my demonstration is intended only to illustrate the applica-

tion of the apparatus in spinal cases, the practical surgeon will see at once that the method of applying by a many-tailed bandage plaster-of-Paris, the setting of which has been delayed by the addition of mucilage, may be available in many other cases where a solid immovable retentive apparatus is required.

In conclusion, I would thus summarise the points which I wish to impress upon you by my demonstration, and the remarks with which I have accompanied it.

1. The main object of the treatment of angular curvature of the spine should be the maintenance of the affected bones and joints in a state of absolute rest, and that in the position most favourable for the cure of the disease without deformity.

2. This position is found when the patient is placed comfortably in a recumbent posture.

3. By the application of a plaster-of-Paris jacket, as recommended by Sayre, the bones may be fixed in this position, so as to retain it when the patient rises and moves about.

4. The only way in which such a jacket can be applied with the patient recumbent, is by the method which I have demonstrated.

5. This method depends for its practical facility on the application of the many-tailed bandage and the use of plaster-of-Paris mixed as I have directed.

6. The adoption of the recumbent posture dispenses with the inconvenience and serious risks of suspension, while all the advantages of Sayre's method are secured for the patient at a minimum of trouble to the surgeon.

ON THE INFLUENCE OF WHOOPING-COUGH AS ONE OF THE CHIEF CAUSES OF INFANT MORTALITY.

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THE returns of the Registrar-General, during the past few years, and particularly during the spring months of the year 1878, indicate a great increase in the mortality which is caused by whooping-cough. The disease appears to be better recognised than was the case some years ago; and that peculiar symptom, from which it takes its name, is not now allowed the importance it once possessed in determining the nature of an illness where other symptoms, due to the same cause, are more prominently exhibited.

Exactly two centuries have elapsed since the term *chin-cough* was introduced into the Bills of Mortality (1678), London, and twenty-three years followed before the term *whooping-cough* appeared. Since the year 1701, when we find this return—cough, 3; *chin-cough*, 2; *whooping-cough*, 1, in a total mortality in London of 20,471—the disease has pressed itself more and more on public attention, until it has surpassed in importance any other of the zymotic class to which it belongs.

It is from the impression, or rather from the conviction, that it greatly exceeds its present supposed influence as a cause of death, that I venture to bring the results of observations upon this subject before the British Medical Association. There has appeared to be doubt among some authorities of its contagious nature, or rather of its specific origin and character; but, as this doubt is entertained by few practitioners, and is not supported by extensive observation, I shall defer its consideration for the present. The remarks which I published in 1876*, on the general laws which appear to determine the frequency of the peculiar laryngeal sound or whoop in this disease; the conditions which occasion a second attack; and the differences in symptoms, which are due to the age of those that suffer, were the conclusions arrived at from an analysis of nearly one thousand cases. Between then and the middle of last year, a period of two years, six hundred and fifty cases have passed under my notice and treatment, making a total of between fifteen and sixteen hundred. At the hospital where these cases presented themselves, all the forms of disease in children are met with, and the relative frequency with which whooping-cough occurs may be determined. From the first set of cases, it was calculated that this proportion was in the ratio of 10 per cent.; but, in the latter set, the six hundred and fifty occurred in a total of 3,409, or about 19 per cent. From the Registrar-General's Report for 1876, it is seen that, in a total mortality in England of 510,315, whooping-cough was returned as the cause of death, in ten thousand five hundred and fifty-six cases, or nearly two per cent. Of this number, 4,588 occurred under the age of twelve months

* *Whooping-Cough: Remarks on its History, Prevalence, Symptoms, and Treatment.* 1876. Smith, Elder, and Co.

and 10,201 under five years of age, from which we can estimate its frequency when compared with other diseases of the zymotic class.

	Deaths under 12 months.	Under 5 years.
Small-pox	287	612
Scarlatina	770	11,045
Measles	2,282	9,252
Diphtheria	209	1,569
Croup	507	3,507
Whooping-cough	4,588	10,201
Typhoid	168	1,279
Simple continued fever	70	595
Diarrhoea	15,091	18,598

The chief point to which I would direct attention is the great difference which age seems to make in respect to the symptom of the whoop; for, I have observed, in children under twelve months, that the distinct character which distinguishes it at a later age is usually absent. The reason of this, it would seem probable, is due to the feeble vocal powers of the infant, and that the laryngeal organs are not sufficiently developed to produce the sound.

There is another point which affects the accuracy of the large number of cases returned under diarrhoea. This symptom occurs frequently in the course of an attack of whooping-cough. Among the earliest symptoms, there is often diarrhoea, if not to a serious degree, at least sufficient to attract attention. In fact, the first symptoms of the disease are great rise in temperature, refusal of food, and slight diarrhoea. But it is in the advanced stage that it becomes serious, and, though it appears to prove a favourable termination in some cases, in others, and these a large number, it proves fatal.

It may be anticipated, when all the phases through which whooping-cough passes, and the symptoms it causes, are recognised, the number of deaths returned under diarrhoea will, as may be observed to have been the case in many other diseases, greatly diminish in the returns of the Registrar-General. Diarrhoea in infants appears to me to be a symptom almost always either of improper feeding or of whooping-cough, and, so far as an opinion can be formed, from the number of death-certificates which have been required among the patients under my own observation, whooping-cough is the most frequent cause of death in children under the age of twelve months; though, in proportion to the total number of cases of the disease, the most fatal by far is syphilis.

When we consider the vitality which the young of most of the higher animals exhibit, and that the rate of mortality which exists amongst infants and children is very much higher, the various causes which occasion it are deserving of the most serious attention. If we compare the mortality from whooping-cough, for the years 1876 and 1877, we find there is very little difference indeed between them (1876: 10,556, in a total for England 510,315; 1877: 10,518, in a total 500,348); but, in the first two quarters of the past year, the deaths from whooping-cough were 10,343, in a total of 268,936; that is to say, in the first half of last year, there have been as many deaths from whooping-cough as occurred, on an average, in the twelve months of each of the two preceding years.

It must be allowed that, at present, we possess no specific remedy against this disease; and, though I am strongly in favour of the use of the inhalation of the vapour of some of the hydrocarbons obtained from coal distillation, from having had more success with that plan of treatment than with any other, I beg to reserve any further remarks upon this subject for the present. It is rather from the conviction that the etiology of the disease has not been elucidated by pathological research, and that our investigations must be directed to the phenomena presented to clinical observation, that I have ventured to restrict my remarks to the general results of clinical experience.

THE SPRING AT CANNES AND IN THE LITTORAL.

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I READ with great interest, in the BRITISH MEDICAL JOURNAL of September last, an article by Dr. J. H. Bennet, entitled "The Genoese Riviera in Spring", in which the distinguished physician in Mentone speaks of the beneficial influence of the climate of the littoral in spring. I expressed the same opinion a long time ago, in my work entitled *Cannes and its Climate* (now in its third edition); and this subject appears to be so important for invalids, that I am desirous of calling to it the attention of the medical profession. It is often said that the month of March is dangerous in the littoral because of the frequency of the "mistral", and that the heat becomes intolerable in April and May; therefore, it is said, it is necessary to leave this country before the spring, as a more prolonged sojourn would do away with the good done to the health during the winter. Nothing, in fact, is less exact,

nor more deplorable in the result. It is perfectly true that in March the temperature is variable, and there are a few days of wind; but after fourteen years of daily meteorological observations and of medical practice, I uphold that there is no country where the variations of climate are less accentuated. The mean temperature in March at Cannes is 52 deg. Fahrenheit. The thermometer very seldom falls to freezing point during the night, and never during the day. When the "mistral" blows, the thermometer rises, and the sky becomes cloudless and blue. The only disagreeable consequence of this wind is the dryness of the atmosphere; therefore, patients must take the precaution to have from time to time in their room a vessel filled with boiling water; they will thus prevent the air from becoming too dry, and keep up a certain moisture: they may have the rays of the sun through the windows, but should not go out or walk about. This dryness lasts a short time, and whenever the wind falls these precautions are unnecessary.

With attention to some hygienic rules, invalids avoid the dangers attendant upon the meteorological shocks inherent to the change of season. Therefore it is very necessary for them to remain where they are during this period, and not to attempt to move about from town to town, or hotel to hotel. Regarding the supposed suffocating heat during April and May, let me quote the following extract from Dr. Bennet. "Although I have spent nineteen winters at Mentone, I had never before remained there during May, my annual explorations of the Mediterranean, and the obligations of London practice, having hitherto obliged me to leave in April. My estimate of the climate in May was therefore founded on the reports of others, not on personal experience. A careful study this spring of the temperature and meteorological conditions existing at Mentone in May, combined with previous experience of the Mediterranean generally in that month, has led me to the following conclusion. The fear of extreme heat in May in this, as in all other regions of the Mediterranean, which leads winter health-emigrants from the north to make a precipitate return north in April, or, at latest, early in May, is not substantiated by facts. This fear is founded on the often summer-warmth of February, March, and April, but ignores the systematic cold north-easterly winds which usually prevail in Europe in April and May, and which are felt all over the Mediterranean."

The thermometer indicated 36 deg. on the 1st of April, 1878, the coldest temperature during this period of fourteen years, and 77 deg. on the 30th of April, 1871, which was the highest. The mean temperature of the month of April is 56 deg. In May, the absolute minimum, 42 deg. during the night of the 1st of May, 1873; and the absolute maximum, 84 deg., 27th of May, 1873. The mean temperature of the month of May at Cannes is 74 deg. In spring, there never is hoar-frost, as in the north. A feature worthy of remark is the first very hot days each year at the beginning of spring in London and Paris, where the thermometer rises higher than at Cannes, and which are followed by very sharp cold and frost. This phenomenon can be easily compared by throwing a glance over the meteorological charts which I have published in my book. Thus there is no more favourable time than the months of April and May for sea-bathing; the water has not yet attained a very high temperature; it is between 61 to 66 deg., and the sun is very warm. The fine sand of the shore at Cannes is granite (porphyry and gneiss). On this account, nothing is a better tonic for children than to take sea-baths, not remaining long in the water, and followed by a brisk friction. This is the true marine system of hydropathy.

The climate of Cannes is specially suited to persons suffering from delicacy of the respiratory organs (except in such cases where fever rises high), the scrofulous, the rheumatic, the gouty; to those who suffer from poverty of blood; above all, to the coxalgics.

The season commences in October and ends in May. Those who cannot make so long a stay do a hundred times better to come late in autumn than to go away too soon in spring; for nothing is more dangerous than a precipitate return to the north at a time when an equal temperature is not yet established. Invalids would, on the contrary, do wrong to remain in the littoral during summer, especially during August. The heat during the daylight is tolerable, according to the influence of the sea-breeze, but the nights are often suffocating; whilst the earth sends out an enormous amount of solar heat absorbed and accumulated during the day. Thus the sojourn, so favourable to patients in May, must not be prolonged into July and August. Those who cannot go far, do well to seek the neighbouring hills, or, still better, to go to Switzerland.

Another error rather frequent is the idea that all valetudinarians should live on the hills, and not by the seaside. Formerly, it was said to all patients sent south to reside at the seaside that it was not successful for everyone; then the physicians rushed from one extreme to the other, and forbade any to live on the coast, but sent them all, without exception, to the amphitheatre of the hills. It must be clearly under-