elevated position, so as to relax the extensor muscles as much as possible. I then adjusted the scarified ends, and, having closed the wound, fixed a leathern collar around the limb above the patella; and by means of lateral cords attached to this and drawn tight beneath the sole of the foot the displaced bone was kept in its natural position. I also fixed another collar around the limb below the knee, and, strapping it tightly to the upper one, forced the lower portion of the ligament into apposition with the patella. Perfect rest was enjoined, and cold water dressing applied around the knee. On the following day, the patient was comfortable and the knee cool; pulse 90. On August 30th, the knee was considerably swollen; the pulse was 100. It was necessary to loosen the straps. On August 31st, this swelling was decreasing; pulse 95. On September 1st, the swelling was gone; pulse 80. After this, all went on well, the wound soon healing. The limb was kept on the splint for six weeks; and, on its removal, I found that he could lift the extended leg off the bed, showing that some adhesion had taken place.

He remained in bed for a fortnight longer, and was then allowed to get up with a straight splint on behind the knee. After a few weeks, this was removed, and the power of extension was found to be perfect. On January 1st, 1870, he resumed his work as a miner, and reports that he finds the leg as strong as the other one.

THE THERAPEUTICS OF THE SEA-SIDE: WITH SPECIAL REFERENCE TO THE NORTH-EAST COAST.*

By GEORGE OLIVER, M.B.Lond., Redcar.

ACCORDING to the experiments of Beneke, it would appear that, when persons from inland places are subjected to the influence of sea-air, and *à fortiori* to sea-bathing combined with sea-air, disintegration of tissue (as indicated by the excretions) is augmented; but this is more than counteracted by the ingestion of new material, so that the body gains in weight and energy. Some difference of opinion has been expressed as to the value and reliability of Beneke's experiments; and though it would be more satisfactory if they were confirmed by further experimental investigation, yet our knowledge of the physical constitution of sea-air, and unbiased observation at the sea-side, corroborate Beneke's conclusions.

Apparently the same end is obtained by sea-air and by sea-bathing—namely, a tonic effect. Yet it would seem more than probable that in some respects the mode of action of sea-air upon the body differs somewhat from that of sea-bathing. Sea-air, for instance, according to Dr. Burdon Sanderson (*British and Foreign Med.-Chir. Review*, Jan. 1856) and other observers, has an evaporating power, on an average, at least twenty per cent. less than that of the air of inland places; it is therefore highly probable that cutaneous and pulmonary evaporation is lessened by sea-air. On the other hand, sea-bathing acts powerfully upon the skin and lungs, moderately upon the kidneys and bowels. We have here possibly a reason why sea-bathing, and in particular tepid and warm sea-water baths, which stimulate the skin more than sea-bathing does, and much more than plain water, should to some extent prove supplemental, or rather corrective, to the action of sea-air, in some instances in which this alone appears to exert a prejudicial influence. I have now and then met with persons from inland localities complaining of loss of appetite, languor, and almost constant headache—apparently sufferers from the direct effects of strong sea-air—who have derived much benefit from warm sea-water baths and sea-bathing. When sea-air appears to disagree, and in particular when the skin is inactive, I frequently prescribe salt water baths, and I am convinced of their utility in such cases.

Perhaps the best and most obvious indication of the beneficial effects of sea-air is an increase of appetite. I have sometimes observed the appetite impaired for a short time after arrival at the coast, as if the primary effects of sea-air were too powerful for the digestive organs; but, after a while, nature generally restores the lost balance, and often with a rebound in the opposite direction. When the appetite remains for many days or weeks below that usual with the individual, notwithstanding careful attention paid to the bowels, and especially when at the same time there exist headache and feelings of lassitude and depression, we suspect that sea-air is acting injuriously. It is very often extremely difficult to trace the causes or conditions which determine the prejudicial effects of sea-air. According to my own observation, they have been most frequently met with in nervous irritable

subjects, whose powers of digestion are habitually feeble, and in particular in delicate females about the age of puberty or at the climacteric period. In such cases, tepid and warm sea-water baths do much good. Now and then, I have found a very liberal allowance of alcoholic stimulants very useful in apparently counteracting the over-powerful effects of sea-air. I have met with several persons who have found stimulants a necessity at the coast, but who, while inland, could do without them. As a rule, when alcoholic beverages can be dispensed with, much more benefit is derived from the sea-side without them.

Our knowledge of the effects of sea-air on disease is to a large extent corroborative of the results of scientific inquiry into the physiological action of it. Dr. Parkes observes (*The Composition of the Urine, &c.*, p. 115): "The extraordinary tonic and alterative effects of 'sea-air' on the inhabitants of inland places, entitles sea-air to be classed among remedial agents rather than among ordinary physiological conditions." Undoubtedly the term "tonic" embraces in great part the therapeutic action of sea-air; but the experience of the profession has shown it to be specially useful in certain classes of cases.

The climatic conditions of marine health-resorts differ very considerably; even if it were not difficult to draw from them conclusions as to the effects of sea-air *per se*, the practical value of the knowledge gained would be trifling. Hence the results of individual experience will probably be more useful than general remarks concerning the effects of sea-air on disease. I hasten, therefore, to give a brief outline of my own impressions of the therapeutic action of sea-air at Redcar, and Saltburn on the coast of Cleveland. The climate of this portion of Yorkshire is similar to that of the north-east coast line—dry and bracing; and during the spring, keen and irritating to the weak chest. A broad, firm, and sandy beach extends for a distance of about ten miles along the coast; the waves are constantly breaking over it, and charging the air with a fine salt spray. At Redcar, which is nearly on the sea-level, because of a projection of the coast, currents of sea-air are almost constantly circulating over the place; in fact, this is exposed as very few watering-places are to the full influence of the sea; hence the air is nearly always recognised as strongly marine. The beach forms a magnificent natural promenade close to the breaking waves, where undoubtedly sea-air is strongest. At Saltburn we have beautiful rural scenery side by side with all the advantages of the sea-shore—a charming combination, which will secure for the place a most prosperous future.

The coast of Cleveland has appeared to me specially useful in the following classes of cases.

1. *Convalescents*.—Sea-air is undoubtedly more powerful as a restorative agent than is the atmosphere of inland places; it greatly accelerates the production of new tissue, and the collection of lost energy: hence sea-air is a natural tonic agent specially called for during the period of convalescence. Sea-bathing, when judiciously conjoined with it, greatly intensifies its effects.

At Coatham, near Redcar, a Convalescent Home, which accommodates one hundred patients, has been doing good service during the past ten years. The patients are carefully weighed every week. I find that over eighty per cent. of patients admitted make a gain in weight at the expiration of three weeks; and in the majority of these cases the gain is very decided. Nothing can be more satisfactory than the results obtained from the treatment of convalescents in this institution. A large Convalescent Home is being erected at Saltburn-by-the-Sea. In order that the funds of these institutions may be better economised and utilised, it would be very desirable if medical men and subscribers would avoid as much as possible sending such cases as are totally unsuitable for treatment on the north-east coast.

2. *Diseases of Children*.—Seeing that the ordinary action of sea-air, and of sea-bathing, upon the body is to cause the nutrition to resemble that characteristic of the period of growth (*i.e.*, rapid destruction and more rapid construction of tissue), we are not surprised to find that many of the diseases of children, in particular such of them as depend on retardation of the changes involved in nutrition, should be directly counteracted by the health-agents of the sea-side. The almost universal experience of the profession testifies the truth of this position. From my own observation, I am fully convinced that sea-air and sea-bathing exert a powerful influence on nutrition during the period of growth; when defective, they rouse it to a higher degree of activity, and correct morbid tendencies which spring directly from enfeebled formation of tissue. As a rule, the appetite is more frequently increased by sea-air in children than in adults. I have an impression that sea-air sometimes acts injuriously in those cases of children in which the appetite for, and digestion of, food are not considerably improved: at any rate, such cases do not get on so well at the sea-side.

Sea-air on the north-east coast greatly assists blood-formation; probably by stimulating the functions of digestion and assimilation indi-

* Read in the Medical Section at the Annual Meeting of the British Medical Association in Newcastle-upon-Tyne, August 1870.

rectly, by freely oxidising the blood and the tissues generally; hence the anæmic, badly nourished children of our large towns derive great benefit from it. Rickets is also well treated by strong sea-air; this is a rare disease on the north-east coast.

I have repeatedly observed that such remedies as iron, cod-liver oil, alkaline salts—especially those of potash—phosphate of lime, etc., remedies which we may for convenience designate “medicinal foods”, are apparently of great value in the treatment of children at the sea-side. It is not improbable that sea-air may favour the action of some medicinal tonics, more especially during the period of growth.

Hospitals for diseases of children should be located as far as practicable at the coast. I am anxious that a children's hospital should be established at Redcar; it would be a boon to the populous towns in the immediate vicinity, and the climate is most suitable for the purpose. I hope the need for such an institution on the coast of Cleveland will soon be supplied.

3. *Scrofula*.—The unanimous opinion of the profession has asserted that scrofula above all other disorders is benefited by sea-air and sea-bathing. I have seen excellent results from the treatment of strumous cases at Redcar. At the Convalescent Home, it would appear that these cases do best during the winter months. The climate of the north-east coast is undoubtedly well adapted to the treatment of nearly all forms of struma. It is more than probable that a dry, moderately cold sea-air, such as we have on the north-east coast, may exert a more powerful effect on the imperfect nutrition of scrofulosis, than the somewhat moist and warm sea-air of the south and west coasts; though, now and then, special complications may cause us to decide in favour of the latter. In the treatment of glandular enlargements, and of intractable ulcerations occurring in strumous subjects, I have observed beneficial results from the local employment of sea-weed—the red seaweed (*laminaria digitata vera*) which contains iodine.

4. *Some Functional Disorders of the Nervous System* sometimes derive benefit from bracing sea-air. I have seen hysterical paralysis, and aphonia (probably hysterical) disappear completely at the sea-side. Short sea-trips prove very useful and even curative in such cases—in aphonia, not depending on organic changes, the voice has been suddenly restored during such trips.

5. Some forms of *Dyspepsia* do well at the coast—in particular what has been termed “atonic dyspepsia”, accompanied with exhaustion of the nervous system, and with but slight changes in the gastric mucous membrane; a class of cases produced mostly by over-work, anxiety, and the like.

6. *Debility produced by Town-life*.—The tonic properties of sea-air are of great value to those persons whose energies are exhausted by over-work, especially of the brain, or by what is commonly called worry. In such cases, expenditure of energy has exceeded the supply; exhaustion has occurred, and will continue, until income and expenditure are again fairly balanced. The health-agents of the sea-side assist the efforts of nature in the restoration of the lost balance of energy, chiefly by increasing the supply. It may be justly said, that rest anywhere will bring round the desired result; but it is often of importance to secure the best effect in the shortest time, and bracing sea-air is the most valuable hygienic agent for that purpose.

7. *Degenerative Changes in the Tissues*, as in old age, and in the prematurely old. It is not improbable that residence at the sea-side, where the sea-air is strong, may be of great value when the tissue-changes begin to flag, when construction is imperfect, and when old and used matter is allowed to remain. Somewhat in support of this position, we have the fact of longevity at the coast; and, as a rule, the old people who reside there look younger and more robust than persons of corresponding age inland. The climate of Redcar appears to me well suited to cases of paralysis depending on degeneration. There is not only a strong sea-air which may be had at all times of the tide on the beach, which is everywhere most easy of access, but the absence of hills is particularly grateful to persons whose pedestrian powers are impaired.

8. I have heard the east coast objected to in cases of *Spasmodic Asthma*. It would appear that any very decided change of air often does good in this most capricious disease. I have seen some cases greatly relieved, while others appear to have been made worse by the dense atmosphere on the coast of Cleveland. Redcar is a good resort for cases of hay-asthma. *Apropos*, I have met with a sort of spurious asthmatic attack set up apparently by inhaling the strong marine effluvia emitted from the sea-weeds which cover the rocks of Redcar; certainly this must be a rare occurrence, yet I think it is noteworthy.

The following classes of cases are unsuitable for residence on the north-east coast.

1. *An Irritable and Dry Condition of the Bronchial Tubes*, whether coexisting or not with disease of the lungs. The climate of the north-

east coast is almost sure to increase the bronchial trouble, except perhaps during the warm months of the year; and even then any sudden fall of temperature, and a strong sea-wind, are apt to act injuriously upon the chest. ‘Is this due to an excess of ozone,* or to excess of saline matter in the air, or to dryness of it?’

2. *Inflammatory Skin-Affections* are often greatly aggravated by the dry salt air of the east coast. I do not think the dry scaly affections suitable for treatment at the sea-side. A very dry harsh condition of the skin I have not unfrequently found to be a contra-indication, especially when obstinate. Visitors to the north-east coast should pay special attention to the skin; sea-bathing and occasional tepid and warm sea-water baths are to be specially commended for this purpose.

3. Cases of *Tubercular Consumption* in all stages of the disease, so far as I have been able to observe, are injuriously affected by the north-east coast. Though tubercular phthisis among the residents is a very rare disease, yet imported cases, as a rule, make a very unsatisfactory progress; sea-air on the north-east coast appears rather to hasten than to retard the course of the disease. I have, however, met with persons suffering from the ordinary chest-symptoms of pulmonary phthisis, and exhibiting the signs of consolidation of lung, but without much, if any, rise of temperature, persons of a decidedly strumous habit, who were not injuriously affected by strong sea-air, but who, on the other hand, really appeared to derive benefit from it. These were probably cases of scrofulous disease of the lungs, or rather of fibroid degeneration of lung; I question whether they were really cases of tubercular phthisis.

4. Cases of *Bright's Disease* should avoid the dry climate of the north-east coast, in particular during the winter and spring.

The east winds which prevail during the spring months, and often even until the end of June, make it a risky thing for delicate invalids to visit the north-east coast before the beginning of July. The dry polar winds which are thought to be hurtful to people in general, are really rather beneficial than otherwise to the moderately strong; to persons, for instance, with sound lungs. The very bracing and more powerful sea-air of the winter months (October, November, December, January) is, I believe, of very great value in the treatment of scrofula. The study of the therapeutic properties of a cold atmosphere, and in particular of cold sea-air (e.g., residence at bracing marine health-resorts during the winter months), deserves more attention than it has hitherto received.

The climate of the north-east coast is undoubtedly a decided one; if not beneficial, it is very apt to produce injurious effects. It is well calculated to call forth and develop vital energy, and thus to invigorate an enfeebled system; but the substratum of energy submitted to it must not be too low, nor must it have been lowered by exhausting organic disease, or the result may be, as I have more than once suspected, still greater depression.

INTESTINAL OBSTRUCTION: AMUSSAT'S OPERATION: RECOVERY.

By THOMAS B. BOTT, M.D.,
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JAMES WALKDEN, aged 28, brickmaker, in the summer of 1868, whilst climbing a bank, fell back, and the handle of his spade, which was upright in the ground, came into collision with the parts about the anus. He had severe pain at the time, and was driven at once to stool. No blood or anything abnormal was evacuated. He suffered pain in walking for many days. Subsequently, he occasionally had gripings in the lower parts of the abdomen, which caused him to go to stool at once.

Three or four weeks before coming under my care, he noticed that his motions were narrow—not much thicker than a tobacco-pipe stem. He generally went to stool twice a day; but he was rather irregular as to time.

Early in February 1870, he was seized with violent pain in the bowels. The bowels were not evacuated. He called in the parish surgeon, who gave him purgatives. He had a motion somewhat resembling barm on Saturday, February 12th, 1870. The bowels had not again operated; but the pain increased.

I was called to him on the evening of Thursday, February 17th, 1870. He lay supine. His face was rather shrunken and anxious. He had no sickness now. He suffered from a feeling of tension of the abdominal parietes. The abdomen was very hard to the touch, but not tender on pressure; it was tympanitic, more or less, except in the hypogastric and iliac regions. The left iliac region was especially dull,

* Dr. Brameld informs me that the ozonometers of the observatory at Saltburn almost invariably record a great charge of ozone in the atmosphere. Is this to be accounted for by the proximity of abundant vegetation, or by the character of the sea-winds at this part of the coast?