January 11th, 1864. He felt much better. Pulse 96. Expectoration was very much less. Diarrhoea had ceased. Cavertous sounds and large crepitation were heard at the upper part of the left lung. He was ordered fifteen minims of tincture of iron three times daily. In a week he returned worse in every respect; the diarrhoea was as bad as ever. The hypophosphite of lime was resumed, and on it he again improved very markedly.

The case of Minnie S., who has just left the hospital, deserves a word of notice. This girl comes of a consumptive family, and has always had some cough. After an attack of measles, she was laid up with severe cough and congestion of left lung. Fourteen days afterwards, on November 13th, 1880, she came into Victoria Park Hospital with much cough and expectoration, and a temperature of 102°. The left lung was dull, and full of crepitant *râles* in its upper part. She took regularly three grains of the hypophosphite of lime for six weeks, and lately she has been taking some of Burrough's iron and beef wine. She has gained about ten pounds in weight, and, though the dullness at the upper left lung is not gone, yet the crepitant *râles* are scanty, her cough causes her hardly any trouble, her pulse is quiet, and she can run about like a child in perfect health.

I should have liked to be able to give you a few more cases to show how well the hypophosphites answer in curing caseous and scrofulous pneumonia of the apex of the left lung. Croupous ordinary pneumonia of the base I believe very rarely to lead to phthisis, but catarrhal pneumonia of the apex is very apt indeed, especially in young scrofulous persons, to lead to destruction of lung-substance; and it is in these cases, where cell-products accumulate in the alveoli and bronchioles that both phosphorus and hypophosphites are unsurpassed in curative action by any remedy with which I am, as yet, acquainted. Nor am I singular in this belief; my friend and colleague at Victoria Park Hospital, Dr. Eustace Smith, has said to me, and has said also in his *Clinical Studies on the Diseases of Children*, pp. 178, 289, that, when softening in a deposit has begun, the effect of hypophosphite of lime is often very remarkable; and again, page 289, speaking of pneumonic phthisis, Dr. Smith says "The effect of the hypophosphites seems at times almost magical; but in true grey tuberculosis they, in common with quinine, digitalis, and other remedies, are of small avail."

Thus I have briefly endeavoured to show the indications for the employment of the hypophosphites in phthisis pulmonalis. Most useful medicines I have found them; never have I seen any injurious effect follow their administration, and all I would say in conclusion to anyone who is disposed to try these salts is—Examine well the patient and see if he have any hepatic or renal disease complicating his lung-affection, and then test your hypophosphite to see if it ignites readily when heated. Lastly, give the salt in as simple a form as possible. A little bicarbonate of soda may be added to the soda salt, and some liquor caldis saccharatus to the lime salt; and then let simple water, or syrup and water, form the vehicle for administration.

PHTHISIS: ON THE THEORY OF INFECTION, AND ITS INFLUENCE UPON TREATMENT.

By W. R. THOMAS, M.D., M.R.C.P.,

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I so frequently meet with patients suffering from phthisis in whom no hereditary tendency whatever can be traced, but who have lived with another or others who have suffered from the same complaint, that I cannot help thinking that the disease must be infective; more especially as, in many, what we consider to be the predisposing and exciting causes have not been present to any great extent.

Now, if phthisis be infectious, and if we can satisfy ourselves by careful observation that it is, that knowledge alone will enable us, by recommending certain precautions to be taken, to save the lives of thousands who might in the future, being ignorant of the fact, expose themselves to the infection, and ultimately die of the complaint.

The following are examples of cases to which I have before referred.

A. A married woman, aged 30, has extensive deposit in the upper part of her left lung. Her husband died, eight months ago, of phthisis, and she has never been well since.

B. A phthisical young man, aged 24, slept with another young man for two years, who afterwards died of phthisis. He has never felt well since; he gave up living with his friend two years ago.

C. A young man, about 30, is decidedly consumptive; his wife died about eight months ago of the same complaint.

D. A widow, aged 26, has a cavity in her right lung. Her husband died of phthisis twelve months ago, and her child of *tabes mesenterica* fifteen months ago.

In all these cases, the family history was favourable. Of course, such patients are often exposed to the ordinary causes of phthisis. Watching, worry, and want, tend to produce it; but cases of death from phthisis occur so often among those who have attended upon phthisical patients, that I cannot help thinking that there must be some cause for the frequency which we do not now appreciate, and that probably many of the cases now deemed to be hereditary, are owing to infection.

For years, we have been in the habit of reading, and now read, of dogs who, after licking the phlegm expectorated by a phthisical master or mistress, have died of the same complaint; proving that the act of swallowing, or inhaling, or both, reproduced the disease in the animal.

Dr. Tappeiner mixed half a gramme of pus from a tubercular lung with one hundred grammes of water, and made dogs inhale the atomised mixture for a quarter of an hour daily for ten days; this produced cough, loss of weight, etc. The animals were then killed. Those killed before the nineteenth day presented no tubercles whatever. Those killed after the twenty-third day presented tubercular nodules, proved to be such by microscopical examination of the lungs and spleen. Other dogs were treated in the same way with pus from scrofulous abscesses and bronchitis, but no tubercular mischief whatever was produced by such pus.

Some maintain that, in phthisis, the morbid process begins with proliferation of the connective tissue elements of the outer walls of blood-vessels; and that this action gradually involves the surrounding cellular tissues. Dr. Burdon Sanderson maintains that the disease begins with proliferation of cells of adenoid tissue, which is abundant everywhere, and often connected with the walls of blood-vessels. Dr. Klein says that the first changes take place in the alveoli and interalveolar septæ; that the epithelial cells become enlarged and detached; that they then proliferate; and that, either by their coalescence, or by the enlargement of one, a multinuclear cell is formed; and that degenerative changes take place afterwards.

Probably all these theories are correct; and it may be that certain irritating particles, when they come into contact with the delicate lining membrane of the tubes and alveoli, produce proliferation of cellular tissue corpuscles, of cells of lymphatics, and of epithelial cells as well.

Now, if it be true that phthisis is infectious, not only may we be able to adopt certain precautions to prevent infection, but our treatment also may be influenced by our belief. We know full well that there are certain medicines which are known to be poisonous to some of the lowest forms of life; and such remedies, when inhaled, may act beneficially. Indeed, phthisical patients are regularly recommended by our best authorities to take long sea-voyages, and they often return much improved; and we naturally believe that the mode of living and the pure sea-air has cured the complaint. Is it not possible that the constant inhalation of an atmosphere impregnated with tar has had much to do with the cure?

Lately, I have been in the habit of recommending phthisical patients to use a medicated respirator; and the majority have certainly confessed that such use has lessened the cough and amount of expectoration to a remarkable extent. I have seen patients who have had most decided symptoms of phthisis, in the first and second stages, almost entirely recover. All the symptoms have disappeared, and nearly all the physical signs, to such an extent that they have been able to return to their former occupations. Certainly I have, in these cases, tried to improve the general health by other treatment as well; and I have seen cases of phthisis recover under such other treatment before; but, the difference in the number of successful cases has been so great, that one must come to the conclusion that the inhalation has had much to do with the recovery.

Dr. Mackenzie of Edinburgh has described an admirable naso-oral respirator, which acts well. It has two lateral expiratory valves, and two anterior; in front of the latter is a small covered chamber, in which the piece of medicated sponge can be placed.

We are apt to discard all new theories and all new methods of treatment, and we are not alone. Those who have gone before us have done likewise. We see theories, propounded by some, years ago, and then not received, brought forward in our day with additional explanations, and at once accepted by the profession. We know of remedies, recommended most earnestly by some before we were born, and then rejected, now-a-days brought before the notice of the profession, and becoming generally used. Owing to our advanced knowledge, we can now see what could not be appreciated before; and, in the interim, thousands have died whose lives might have been saved.

There may or may not be truth in the theory of infection. Let us not, without careful examination, take it for granted that there is not: for, if there be, and we become satisfied there is, we may, by prevention and by alteration of present treatment, be able to save the lives of thousands.

A NOTE ON RESPIRATORS, OUTDOOR AND ANTISEPTIC.

By EDWARD MACKEY, M.D., Brighton.

I BELIEVE that more advantage may be gained from the judicious use of outdoor respirators than is commonly recognised; and, according to my experience, the objection of the public to wearing them has become less, whilst the profession prescribes them less often than formerly. Messrs. Maw and others have recently favoured me with a selection of specimens for the Sanitary Exhibition at Brighton; and I think it may be useful to name these, with a few brief notes as to some of them.

A. Metal Respirators.

1. The principal forms made by Jeffries (named "original") are three: one for the mouth only (the men's size larger than the women's); a second (Himalene), for the mouth, with a scarf; and a third, for mouth and nose (ori-nasal). Most of them are made in two "strengths"—i.e., with more or fewer separate wire plates; and some so that plates can be added or removed according to the weather. Their speciality lies not only in excellence of workmanship, but also in the fact that all the wires are vertical, so that there is less tendency for moisture to accumulate than there is on crossed wires or netting. Mr. Jeffries claims also that the objection commonly made to all respirators—viz., their retaining, for re-inspiration, injurious elements of air already breathed—does not apply to the vertical arrangement; and that it retains enough moisture and enough warmth for comfort, whilst carbonic acid and other gases pass through. Certainly, when this form is used only for outdoor exercise, it has seemed to me to answer its purpose well. Of two ladies under observation, wearing the single-mouth form, one, with tubercular disease (at present quiescent, but rendering her very sensitive) has gone out here almost daily throughout the winter without catching cold or complaining of inconvenience; the other, the subject of chronic pleurisy and bronchial catarrh, with much dyspnoea, has been able to go out in the evening without any of her former inconvenience.

2. A wire respirator by Roof (named "Eclipse"), light, and well shaped to the mouth; worn with marked advantage by a man suffering from strumous deposit in one apex, liable to hæmoptysis; also by a girl with an old cavity in one apex, and liable to bronchial attacks. Both these patients have been constantly in the open air throughout this winter. But respirators are apt to be kept in use too long without cleaning, and patients seem to expect them to last for ever; and these slighter-made wire ones are not calculated for continuous effective use more than one winter.

3. The same remark applies to the wire-respirators of Maw, Son, and Thompson. These are made in many sizes and qualities—some only of perforated metal, others of wire. There must be a fair demand for these, for all chemists show them; their price is moderate. My own experience of them is not very large; but they have seemed of service in a few cases with tendency to relax and irritable throat.

B. Charcoal, Wool, and Cork Respirators.

4. The charcoal respirator of Dr. Stenhouse is still met with, and contains about one-fourth in-layer of charcoal, protected by wire gauze.

5. Messrs. Bourne and Taylor have constructed a cotton-wool ori-nasal respirator, inspired by the sanguine lecture of Professor Tyndall on wool filters. A movable metal plate, perforated, protects the wool. It is presumed useful in infected atmospheres.

6. The "cloud respirator" of Captain Mackenzie Douglas really deserves a favourable mention. It is named, I presume, from a ladies' "cloud" shawl, and is of wool, woven or knitted, smooth inside, and shaped to the lips, rough and woolly outside, and fastening by elastic. The cost is about a shilling. A girl with softening tubercle at one apex has been able to go out most days (at mid-day), with the air-passages protected only by this, and has not suffered. Another girl, liable to much congestive dyspnoea and catarrh, and accustomed to sleep with a "cloud" shawl round her mouth and nose (which relieved her, but often excoriated her neck from retained moisture), has found the greatest comfort from this simple substitute.

7. A cork respirator, of equal cheapness, is on sale, and might answer; but I have not used it.

With "antiseptic" respirators, we pass from the idea of prevention to that of cure; and their use marks unquestionably a great step in advance.

8. Dr. William Roberts's form is of blackened metal, perforated with large holes at the front, shaped to the lips, and about three-fourths of an inch in depth, with a hinged lid opening outwards, allowing the introduction of a saturated sponge or wool. With this, and the following form, it is necessary to carefully regulate inspiration through the mouth, and expiration through the nostrils.

9. Dr. Sinclair Coghill's early form is a hollowed oval of plated metal, perforated with small holes, enclosing a movable and shaped plate, also perforated; between these wool is placed. His later form is of somewhat similar shape externally, but has a hinged plate opening outwards, with wool between the two. This is a decided improvement; and, in this form, his respirator is identical with one (10) sent me by Messrs. Aitken of York, on a request for Dr. J. Carrick Murray's.

A patient with chronic cavity, and profuse foetid expectoration, which has not been checked by ordinary remedies or vaporous inhalations, has worn one of the last-mentioned pattern for about an hour night and morning (making use of the compound antiseptic fluid, dispensed according to Dr. Coghill's formula), with marked improvement in the character, and lessened amount of expectoration.

11. Dr. McDowell Cosgrave's "skeleton" (John Whyte, Dublin) is a very light and ingenious form of wire cage, shaped to the mouth, and enclosing between a spring-hinged plate a piece of lint, about one inch from the lips, and just under the nostrils. Of course, the vapour is not so completely charged with the remedy used; but, on the other hand, the apparatus is well borne by children and others, who could scarcely tolerate a heavier one. One phthisical girl, who inhales terebene on the lint, for about an hour morning and evening, has certainly improved, and I believe partly on account of this practice; her temperature is now normal (or subnormal), instead of 101° Fahr., and there is no septicæmia.

12. But, certainly, the most complete and effectual instrument for its purpose, is that of Dr. Hunter Mackenzie (Edinburgh), named though it has been by some of my patients the "portable coal box." It is in metal, and shaped like a chloroform-inhaling mouth and nose piece; it has four rubber valves, two on the sides opening outwards, and two inwards from the antiseptic chamber; this is in front on the truncated nose piece, and an oval perforated rimmed plate fits on it, and can be taken off for the purpose of saturating a contained sponge. The valves enable the patient to breathe without trouble in the ordinary way, and secure the immediate exit of expired air.

Since this was written, Messrs. Meyer and Meltzer have introduced a much lighter and more elegant form of this respirator, in pink vulcanite; this leaves nothing to be desired.

Dr. Saundby has recently figured a form which recalls that adopted by Dr. Roberts, but is much more freely perforated; it is made also with a nose piece. His patients have found it "light, comfortable, well ventilated, and not fatiguing." (BRITISH MEDICAL JOURNAL, December 24th, 1881.)

ABSTRACT OF LECTURES

ON THE

ANATOMY, PHYSIOLOGY, AND ZOOLOGY OF THE EDENTATA.

Delivered at the Royal College of Surgeons of England.

By W. H. FLOWER, LL.D., F.R.S.,

Hunterian Professor of Comparative Anatomy.

LECTURE VII.

THE existing *Dasypodidae* or Armadillos are generally divided into six genera. Of these, the one called *Tatusia*, which contains the common Pebas or nine-banded Armadillo (*T. novicincta*), and a closely allied species, the Mulito (*T. hybrida*) is the most aberrant. The other genera are *Dasyops* proper, containing the equally common six-banded Armadillo (*D. sexcinctus*) and the Hairy and Little Armadillos (*D. villosus* and *D. minutus*), also a rare small species called *D. vellerosus*. *Xenurus*, containing *X. uncinatus*, a large species remarkable for the absence of bony scutes covering the tail. *Priodon*, with one species, *P. maximus*, the largest of all the group. *Tolypeutes*, with three species, all small, with only three movable bands in the carapace, and capable of rolling itself up into a ball; and lastly, *Chlamyphorus*, very remarkable for the peculiar character and arrangement of its dermal covering, having a strongly ossified, solid, bony shield, cover-