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ON THE USE AND ADMINISTRATION OF COD-LIVER OIL IN PULMONARY CONSUMPTION.

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THERE is no department of medical knowledge, which seems to me to stand so much in need of improvement, as that which relates to the operation of medicines. Even with regard to those most commonly used, it is surprising what a diversity of opinion prevails among different practitioners; and, as a necessary consequence, there is an almost equal variation in the modes and combinations in which each medicine is administered. Yet, it is pretty obvious, that as truth is essentially simple and constant, there must be much of error in such diversity of opinion and practice, and the sooner the truth is elicited by a careful and rational examination of facts bearing upon each subject, the more safe and satisfactory will our practice become.

The remedial influence of the COD-LIVER OIL particularly deserves this kind of investigation; not only because its mode of operation is a subject of much difference of opinion, but because the effects ascribed to it by many practitioners are of a very palpable and positive kind; and because such effects have not hitherto been obtained from any other remedial agent. The object of the present communication is to record the chief results of my own experience in the use of this remedy, in tuberculous and analogous diseases of the lungs. These results will be arranged briefly under the following heads:—

I. GENERAL RESULTS OF THE USE OF COD-LIVER OIL IN PHTHISIS PULMONALIS.

II. ON ITS MODE OF OPERATION.

III. ON ITS PREPARATION AND ADMINISTRATION.

I. GENERAL RESULTS OF THE USE OF COD-LIVER OIL IN PULMONARY CONSUMPTION.

I have prescribed the oil in above four hundred cases of tuberculous

disease of the lungs in different stages, which have been under my care in private practice, during the last two years and a half. Of these, I have 234 cases recorded in my note-books, with the results of the treatment at various intervals; these constitute the chief materials of the present communication.

Out of this number, the oil disagreed, and was discontinued, in only nine instances. In nineteen, although taken, it appeared to do no good; whilst in the large proportion of 206 out of 234, its use was followed by marked and unequivocal improvement; this improvement varying in degree in different cases, from a temporary retardation of the progress of the disease, and a mitigation of distressing symptoms, up to a more or less complete restoration to apparent health.

The most numerous examples of decided and lasting improvement, amounting to nearly 100, have occurred in patients in what is usually termed the second stage of the disease, in which the tuberculous deposits begin to undergo the process of softening, the common physical signs being defective movement and breath-sound, with muco-crepitation and marked dulness below or above a clavicle, or above a scapula, and tubular breath and voice-sounds towards the root, or inner part of the apex of the same lung. Such patients generally have had cough for some months, latterly with muco-purulent or opaque yellowish or greenish expectoration, and have begun to lose flesh, colour, and breath, in such a degree as to excite alarm, and induce them to seek further advice. With many, night-sweats had occasionally occurred; and hæmoptysis may have been present at a former period.

The effect of the Cod-liver oil in most of these cases was very remarkable. Even in a few days, the cough was mitigated, the expectoration diminished in quantity and opacity; the night-sweats ceased; the pulse became slower and of better volume; and the appetite, flesh, and strength were gradually improved. The first change manifest in the physical signs was generally a diminution and gradual cessation of the crepitus; the breath-sound becoming drier and clearer; but the dulness, and tubular character of the breath and voice-sounds were much more persistent, and rarely exhibited a marked decrease, until after several weeks' use of this remedy, in conjunction with regular counter-irritation. The tubular sounds, in fact, frequently became louder at the first removal of the crepitus, which in phthisis as well as in pneumonia, tends to mask the signs of consolidation. In several instances, however, in which I have had the opportunity of examining the patients under treatment, at several successive intervals of a month or six weeks, the gradual removal of the consolidations has been unequivocally proved, by the restoration of clearer vesicular breath and stroke-sounds to the affected spots. In several cases, in which the disease has existed long, the restoration has never been perfect; even where the health has been completely re-established, and all common symptoms of disease have entirely disappeared, there have remained perceptible inequalities in the breath and stroke-sounds; generally, with prolonged expiratory sound, which has more or less of a tubular note towards the root of the lung of the same side. These signs, if unaccompanied by decided dulness on percussion, I have learnt by the experience of many years,

not to consider as exceptional against recovery, for they appear to be dependent on the puckering of the texture, often with pleural adhesions and old deposits in the bronchial glands, so frequently found after death at the summits and near the roots of the lungs of persons who have not for many years exhibited symptoms of any pectoral disease.

As might be anticipated, a large number of the phthisical patients for whom I have been consulted, have been in the first stage of the disease, in which the tubercles or deposits are in the solid state. In these cases also, I have largely used the Cod-liver oil, and, so far as I have ascertained them, with not less satisfactory results; but a large proportion of these patients I have been unable to add to the numbers mentioned above, from my having seen them only once, or not frequently enough to enable me to determine with accuracy the results of the treatment. Such patients do not commonly consider themselves sufficiently ill to be under constant medical treatment; and although the good effect of the oil is commonly manifest in the abatement of cough and feverish excitement, and in the improvement of flesh and strength, yet the benefit is less speedy and obvious than in the more advanced stages of the malady. The physical signs of improvement are precisely the same as those which take place tardily in the second stage after the removal of the humid rhonchi; and in truth, the treatment by the oil combined with counter-irritation, where successful, seems to bring back the lungs from the second stage, that of incipient softening, to the first stage, that of simple deposit, which is tardier in its changes of increase or diminution, and may remain long stationary without any obvious alteration. The same remark is applicable to the chronic products of inflammation of the lung, which, as is known to the profession, I consider to approximate in nature to the higher class of tuberculous deposits.

The most striking instance of the beneficial operation of Cod-liver oil in phthisis, is to be found in cases in the third stage,—even those far advanced, where consumption has not only excavated the lungs, but is rapidly wasting the whole body, with copious purulent expectoration, hectic, night sweats, colliquative diarrhoea, and other elements of that destructive process by which, in a few weeks, the finest and fairest of the human family may be sunk to the grave. The power of staying the demon of destruction, sometimes displayed by the Cod-liver oil, is so marvellous, that I will attempt no general description, but will merely quote from my note-books brief abstracts of a few specimen cases, that shall plead for themselves.

CASE I.—Mr. C., æt. 30, consulted me August 6, 1846, by the advice of Mr. Orrell, of Cheltenham. He has had cough for six months, with expectoration, latterly profuse and opaque; also progressive, and lately rapid loss of flesh, strength, and breath. He has had occasional profuse night-sweats; and now suffers from diarrhoea. Pulse 116, very weak. There is no appetite. *Physical signs:* Dulness in both upper regions of the chest; most on right side, where, under the clavicle, are well-marked cavernous sounds (gurgling and imperfect pectoriloquy), with muco-crepitation and obstructed breath-sound below, to the fourth rib in front, and behind to below the spine of the scapula. Obstructed breathing and muco-crepitation also above and below the left

clavicle. *Ter die sumat Olei Jecoris Aselli puri cochleare minimum, et gradatim augeatur ad cochleare amplum.* A pill, containing sulphate of copper, morphia, and creasote, was ordered every night whilst the diarrhœa continued; and the chest was to be rubbed every night with strong acetic acid, with a little acetum lyttæ. Diet to be nourishing.

Oct. 18. Very much improved in every respect. Has increased the oil to six drachms three times a day. Has gained nine pounds in weight; walks four or five miles every day, and can run without difficulty. Cough and expectoration trifling. Pulse, 90. Bowels now rather confined. Cavernous sounds are still heard below the right clavicle, but they are dry, and the crepitus below and at the apex of the left lung is now replaced by a clear but rather harsh vesicular breath-sound. Dulness very much diminished. Treatment to be continued. An occasional mercurial aperient to be taken.

Feb. 8, 1847. Has continued to improve in flesh and strength. Still coughs and expectorates a little. Takes still six drachms of oil three times daily. Cavernous sounds still present, but less distinct; with less dulness below. Sounds in left lung healthy. I have not seen this patient since, but have lately heard that he continues to enjoy a fair amount of health, and is engaged in active employment. He still continues to take the oil (but less frequently), having experienced a return of cough on suspending its use.

CASE II.—Mr. K. (Walworth), æt. 56, of large frame, formerly at sea; accustomed to take fermented and spirituous liquors freely; for upwards of twelve months had been much harassed with cough and copious expectoration, now muco-purulent; formerly, often bloody. In the last few months had lost flesh rapidly, he thought to the amount of forty pounds in weight. Now confined to bed; countenance haggard, yet disfigured with acne. Appetite extremely bad; tongue loaded; often sweats profusely at night. Pulse moderate in frequency, but weak. This man had signs of disease in both lungs; but in one (I have omitted to note which) there were large cavernous sounds, with much surrounding dulness and obstructed breathing. The liver was also enlarged and tender.

The oil and liniment were prescribed as in the former case. All stimulants were prohibited, except bitter ale. In about three months, I visited him again, and found him so altered, that I did not recognize him. His face was now plump and smooth, excepting a reddish tip to the nose, the monument of his former excesses; his person portly, and even corpulent, which was natural to him; and he must have regained his lost forty pounds. His appetite had improved immediately from the time he began the oil; and he was soon able to take not only meat, but also fat and butter, which he had been unable to touch for years. There had been an equally speedy cessation of the night-sweats; but the cough and expectoration were reduced more gradually, and were still occasionally troublesome. The improvement in the state of the lungs was not equal to that in the general health, there being still the large loud cavernous sounds, and considerable dulness; but there was a great increase of clear vesicular breath and stroke-sounds, and a remarkable absence of crepitus.

I heard of this patient continuing in this improved state twelve months later; but I have had no account of him since. He was so convinced that the oil had saved him, and was keeping him alive, that he set about making it for himself, and shewed me a fair specimen of clear, pale, tolerably-smelling oil, which he said he was able to obtain from the fresh cod livers at the rate of about 1s. 3d. a quart. This may suggest a hint to others, who are anxious to prolong their lives at an economical cost.

CASE III.—Mr. J. H., æt. 28 (of Brighton); of consumptive family, several members having died of phthisis. Often had cough and expectoration for several weeks. During the early part of 1846, in consequence of close confinement to business, observed some failure in his general health and strength. A slight cough with expectoration came on about midsummer, and gradually increased, with occasional night-sweats, until the end of September, when he consulted me. His pulse was then 80, and weak, face pallid and rather sallow, with a slight hectic patch on each cheek. Dulness, deficient breath-sound, and moist crepitation from second rib to scapula on left side; tubular expiratory sound in both supra-spinous regions. Liver large and very tender.

I prescribed a mixture containing nitric acid with iodide of potassium (a combination which I have used very extensively, with much advantage, in such cases), and a rubefacient liniment for the chest and hypochondria. In a month, the cough and expectoration were much diminished, the sweats had ceased, the liver was no longer tender, and he had improved in strength; but he continued thin, and the physical signs were but little altered.

I then prescribed the cod-liver oil, which he was soon able to take thrice daily, in half-ounce doses. In ten days the moist crepitus at the left apex had almost disappeared, there being only a mucous click sound on deep breath; but the dulness and tubular sounds were unaltered. I now advised him to go to Naples for the winter, and to continue steadily the use of the Cod-liver oil with the rubefacient. He did so; and improved so much in all respects, that he fancied himself well, and before the end of the winter removed to Rome, where, tempted by the sight-seeing which is the snare of that city, he took cold, and had slight hæmoptysis; and he was advised to discontinue the oil. He then went to Florence, and became better; but being in a weak state, was directed to take the iodide of iron.

June 8, 1847. He returned, looking very thin, and complaining of much weakness, loss of appetite, and cough, with considerable muco-purulent expectoration. The disease had advanced in the left lung, there being now gurgling above the clavicle, and the dulness and moist crepitation more extensive than ever. The tubular expiration was distinct above the right scapula, and the breath-sound rather harsh below the right clavicle.

He was again ordered the oil; and he has continued to take it, with a few intermissions, up to the present time. On August 27, the report was, that he was much better in flesh, strength, and appetite, than he had been for years; but the cough continued, and the expectoration (muco-purulent) amounted to nearly an ounce daily. The moist cavernous sounds in the left lung had now given place to pectoriloquy and

cavernous breath sound ; and there were dulness and deficient breathing as low as the second rib, and half way down the scapula. The sounds on the right side were healthy.

I have seen this patient repeatedly since, and have found decided evidences of the gradual progress of consumptive disease in the lungs ; but, considering his delicacy of constitution, and the rapid course which the disease exhibited in other members of his family, it is remarkable how slow his decline has been, and how much he has preserved,—or, under a favourable change of air, he has regained,—his flesh and strength. Experience has taught him to consider the oil as essential to his comfort, as well as the means of prolonging his life ; and I entirely concur in this opinion, for before he began the use of the oil, more than two years ago, the prognosis which I formed of his case was, that he would not live three months.

CASE IV.—Mr. H., æt. 21, consulted me in December 1845. Subject to occasional attacks of cough since childhood, when he had the whooping-cough severely ; but was well and stout, often living freely, until five years ago, when he had a severe inflammation, said to have been in the liver ; ever since which he has more or less suffered from cough and expectoration (often thick and yellow), shortness of breath, and occasional pain of left side. Moderate contraction of the left side of the chest, with dulness, complete in the lower half, where nothing is to be heard but loud large gurgling. Above, the breath and voice-sounds were loudly tubular, with a faint mucous wheeze in parts. There is also subcrepitation below the right clavicle.

This patient derived great benefit from iodide of potassium with nitric acid (sometimes with sarza), and external counter-irritation. For some time I considered the case to be one of dilated bronchi, which I have described as a sequel of pleuro-pneumonia ; but a year later I found cavernous sounds (gurgling, and cavernous breathing) developed in the upper lobe of the left lung, and tubular sounds in the right inter-scapular space, indicating the phthisical excavation of one lung, and incipient deposit in the other ; and this mode of development of phthisis out of the remnants of pleuro-pneumonia is by no means uncommon. At this time (the end of 1846) I put him on the Cod-liver oil ; and he has continued to take it, with occasional interruptions, ever since. His flesh, strength, and general health, have been pretty well restored and maintained, so that he has been able to pursue his occupation of piano-forte tuning (and sometimes even playing the instrument at evening parties) ; but his cough, although slight, except when aggravated by fresh colds, is never absent ; and the lesions of the left lung seem to remain stationary. But on the last occasion of my seeing him, about six months ago, the right lung remained free from disease.

CASE V.—Miss W., æt. 19, consulted me in January 1846. Her brother died of consumption at her age. She had taken cold thirteen months before, and ever since had cough, aggravated in the preceding spring, when she repeatedly spat a little blood. She improved in the summer ; but during the last three months had become much worse, with frequent cough, copious greenish expectoration, loss of appetite and flesh, profuse night-sweats, and cessation of the catamenia.

The physical signs were dulness and deficient breath-sound, with moist crepitation below the left clavicle. Small gurgling, and imperfect pectoriloquy, were heard in the left supra-spinous fossa. The breath-sound was obscure above the right scapula.

By my advice, she went immediately to Torquay, where, under the direction of Drs. Battersby and Madden, she took the Cod-liver oil, which had the effect of speedily restoring her appetite, and ultimately her flesh and strength, and of almost removing the cough and expectoration. I saw her on her return to town in May, when she considered herself quite well; and her plumpness and complexion, steady pulse, regular catamenia, etc., betokened a re-establishment of general health. On examination, I found still considerable dulness in the upper part of the left chest, especially behind and above the spine of the scapula, where deep breath produced a croaking. Here the vesicular breath-sound was indistinct, and there was still tubular expiration. I could not convince her that she was not perfectly well; for she had the unanswerable argument, that she was going to be married. And married she was shortly after; and I saw nothing of her till last spring (1848). She then reported that she had continued pretty well, although never quite free from cough and expectoration, until last winter, when, being anxious to have a family, she consulted a surgeon, who told her that her marriage was unfruitful because she was the subject of disease in the liver; and, with a view to correct this, he put her on a course of small doses of blue pill, with occasional leechings of the sides, forbade the malt liquor which she had been accustomed to take, and much lowered her diet. Under this treatment, as might have been expected, her strength soon failed, she became very thin, the cough returned with much purulent and albuminous expectoration, and the sweats, inappetency, etc., were as bad as in her former illness. When I saw her (in February 1848), she was confined to bed; the pulse was 120, weak; tongue furred, and all hectic symptoms were well pronounced. Disease had made sad havoc in the left lung, there being a large splashing cavity in the upper part, and the lower being dull and impervious to air, except with a short moist crepitus. Tubular sounds were loud also in the right supra-scapular region; and the vesicular sound there, and below the clavicle, was rough with incipient crepitus.

I had but faint hopes of her improvement when I again ordered the Cod-liver oil, and a return, as speedily as her stomach would bear it, to the most nutritious food, and a moderate allowance of malt liquor. She did improve, however; and so rapidly, that in a fortnight she was able to come down stairs; and her appetite having been speedily reestablished, she regained a considerable share of flesh and strength, with the pulse reduced to 90, and the cough and expectoration amazingly diminished. The change in the physical signs was more tardy and imperfect: the chief difference consisting in the cavernous sounds becoming drier and hollower, and crepitus longer, with less dulness in the lower region. The improvement continued, and advanced, during the early summer months, so that she was able to take daily drives; and, in spite of my prohibition, she even went to an evening public amusement. In August, whilst at the sea-side, she sat for some time exposed to a draught

of air, which brought on an attack of acute pleurisy on the right side ; and the effusion from this, compressing the only useful lung, caused very distressing and dangerous dyspnoea. This, however, yielded to moderate antiphlogistic treatment ; and in the course of ten days she was able to resume the oil and good living with benefit. But it is evident that, after such repeated trials, the constitutional powers are giving way, and the destructive disease is likely, ere long, to triumph.

CASE VI.—Mr. B., æt. 21. First visited February 12, 1847. Had been out of health six months ; cough came on about two months ago, and was soon attended with expectoration of much yellowish opaque matter, rapid loss of flesh, strength, and colour, with profuse night-sweats. Pulse now 120. Had a hectic flush. I found dulness and moist crepitation at the summits of both lungs ; but above the right scapula the crackling almost amounted to gurgling, and a snuffling pectoriloquy was heard there at times, louder towards the outer margin of the scapula. Loud tubular voice and breath-sounds, with a somewhat tubular note on percussion, were heard in the inner and upper part of the right supra-scapular region.

This patient took the Cod-liver oil steadily for two months, using also a strong rubefacient liniment daily, and living well as his appetite returned. I did not see him again at that time ; but heard that he had, to all appearance, completely recovered his flesh, strength, and general health, and entirely lost his cough. He returned to his occupation in a warehouse in the City, and continued well until the following winter, when he caught cold, and the cough returned, with other bad symptoms. Mr. Holding, of Bridge-street, Blackfriars, his medical attendant, had again given him the oil ; but it somehow disagreed, and its use was not continued. When I visited him, in May 1848, I found him greatly reduced in flesh and strength, with a frequent feeble pulse, and large cavities in both lungs, with very little pervious tissue below them. I again prescribed the oil ; but I do not know the result further than that he died in July. This case, taken in comparison with others, is useful in shewing that the good effects of the oil are not permanent, unless its use be persevered in long after apparent recovery.

CASE VII.—Miss M., æt. 11, a delicate child, born in India. In the middle of April 1847, took the whooping-cough (which continued violent till I saw her), first with much fever, lately with profuse muco-purulent expectoration, and she has in the last two or three weeks been reduced to an extreme state of weakness and emaciation. The appetite was good, but the fits of coughing often ended in vomiting. When I saw her (June 25th, 1847), the pulse was 140, and the skin very hot ; but this feverish state seemed to have been induced by the use of iron, which she had been taking for a few days. The chest was generally resonant, and the breath-sound puerile, except in the right scapular region, where there was dulness, and very large mucous rhonchus, almost amounting to gurgling. There was a little loose crepitus here and there, in other parts of both lungs.

I prescribed a saline with hydrocyanic acid, until the fever should abate ; and then the Cod-liver oil ; choosing, for its administration, the times after the fits of coughing, to ensure its being retained on the

stomach. I did not see this patient again, but I heard from her medical attendant, Mr. F. Davies of Gower street, that she rapidly recovered, in a few days losing the cough and expectoration, and soon regaining her flesh, and has continued well ever since. There is no decisive evidence of the existence of tubercles in this case, as the signs might be produced by circumscribed pneumonia, ending in partial supuration, or in dilatation of the bronchi with purulent bronchitis; but the general aspect of the case was as unfavourable as in phthisis, which in truth often does originate from such sequels of hooping-cough.

CASE VIII.—Mr. D., æt. 25, applied to me (May 28th, 1847) complaining of cough of upwards of three months' duration, and in the last six weeks attended by copious purulent and clotted expectoration, dripping night sweats, and rapid emaciation. His breathing was very short, pulse very frequent and feeble. There was extensive dulness in the left chest, most complete above the fourth rib in front, where percussion caused gurgling, and on applying the stethoscope, large cavernous rhonchus was heard. Large tubular expiration in the right inter-scapular region. I prescribed the Cod-liver oil, and a liniment composed of strong acetic acid and chlorate of potass.

Aug. 11. Has steadily continued the treatment, and is now quite another person, his flesh and strength being completely restored, and his countenance indicating no ill health. Coughs only two or three times in the day, and expectorates as many yellowish sputa. He still finds his breath very short on exertion. I found considerable dulness remaining in the left chest, with absence of vesicular breath-sound down to the fourth rib. The cavernous sounds were, however, much less distinct than formerly, consisting of a bubbling between the second and third ribs on his speaking or coughing. The tubular expiration remained at the root of the right lung.

I have not seen this patient since, but have lately heard from his brother, who is a clerk in Messrs. Bouverie's bank, that he has continued well ever since, now fifteen months, and is able to pursue his employment.

CASE IX.—Miss S. D., æt. 28, of consumptive family; first visited September 3rd, 1847, with Mr. Sawyer of Pentonville. Had a slight cough ever since she took some cold baths in the summer of 1846. A glandular swelling formed afterwards below the jaw, and continued until the last two months. In March 1847, a remarkable eruption of purpura appeared, and as it subsided, the cough became more troublesome, and the flesh and strength visibly declined. In the last two months she had become much worse, with distressing cough and shortness of breath, evening fever and night perspirations, absolute loathing of food, and rapid emaciation. A week ago, on returning from Margate, she expectorated a few teaspoonfuls of blood, since which the cough and tightness of breathing have been somewhat easier. I found her much emaciated, and very tremulous and feeble, with a rapid running pulse, difficult to count. There was complete dulness over more than the upper half of the left chest, with a mixture of large gurgling and pectoriloquy. Below, the stroke sound was less dull, and moist crepitus only accompanied the respiratory movements. The breath was weak,

with moist crepitation, also above the right clavicle ; and large tubular expiration was loud at the root of the right lung.

This patient seemed in so hopeless a condition, and had such foulness of tongue and delicacy of stomach, that I did not like to subject her to the annoyance of a trial of the oil, and therefore prescribed an agreeable draught with nitric acid, and a linctus for the cough. I visited her again in a week, and found her no better, but obviously rapidly declining, with the same insuperable disgust at nourishing food. Considering that matters could not well be worse, I did then order the oil, and took my leave, expecting fully to hear of her death in a few weeks. However, I heard nothing of her for two months, when one of her sisters came to consult me about her own health. I learnt, to my surprise, that her sister was not only alive, but comparatively fat and well, having little to complain of but hunger, and that "she could not be allowed the run of the house to eat any and every eatable to be met with." This marvellous restoration of the appetite followed the first few doses of the oil ; and the diminution of hectic, sweats, cough, and expectoration, speedily followed. In January 1848, I was requested to see her, not on account of any check in her progress, but because the catamenia had not returned as might be expected, in her improved state of health. On entering her room, I looked around it more than once before I could recognize my patient, so entirely was she altered in appearance, and she unquestionably was the healthiest-looking person present. The pulse was at 80, of moderate strength, and her tongue clean. The fair outside was not, however, matched by an equal improvement within. The dulness and cavernous sounds still continued in the upper half of the left lung, but with much less gurgling of liquid ; and the short crepitus of the inferior parts of this lung had given place to a harsh and somewhat rough breath-sound. The tubular expiration remained in the right inter-scapular region, but the breath-sound was dry and clear above the right clavicle. That which seemed wanting to the general health, menstruation, was in a few weeks re-established under the use of a daily aloetic pill.

This lady called on me a fortnight ago, having been well and active ever since, only acknowledging a slight cough and short breath on exertion. She has continued steadfast in the use of the oil twice or thrice daily ; and happily she believes and feels the truth of what I tell her,—that it is as the staff of life to her. On examining her chest on this last occasion, I found clear but irregular stroke and breath sounds on the left side as high as the second rib in front, and the middle of the scapula behind ; above is dulness, and a dry cavernous sound of the breath and voice. There is also collapse of the walls above and below the clavicle. The tubular expiration continues in the right inter-scapular region, but in less intensity than formerly.

CASE X.—Miss E. S., æt. 26, of diminutive delicate frame (a patient of Mr. Browne of Camberwell), was first seen by me September 11th, 1847. A brother and two sisters had died of phthisis. There had been a slight cough for six months ; and one month ago, after a tepid bath, she coughed more violently than usual, and brought up about two ounces of blood. She was treated with leeches, acetate of lead, &c.,

and there was no return till four days ago, when hæmoptysis recurred in the absence of the catamenia, and about an ounce has been brought up daily. The pulse was frequent and feeble. No heat of skin. Considerable dulness in the left chest, chiefly in its upper part. Moist crepitation superseding breath-sound below the left clavicle. Tubular breath-sound (superseding vesicular) above left scapula. Tubular expiration, with vesicular inspiration, above right scapula.

Leeches, followed by cupping-glasses, were ordered to be applied below the left clavicle. Draughts with nitric and hydrocyanic acids and hyoscyamus. The acetum cantharidis, diluted with acetic acid, to be rubbed on the chest. When I saw her about a month after, I found that the hæmoptysis had not returned, but the cough continued, with much purulent and albuminous expectoration; and hectic, with sweats and progressive emaciation, had become distressing. I now detected a considerable cavity in the left lung. The oil was now prescribed, but owing to the weakness of her stomach, she was unable to take more than a small teaspoonful three times daily; and when I saw her after the lapse of three or four weeks, the consumption was obviously making rapid progress; the bones projecting so much, that it was difficult to auscultate, and the cavity having extended its signs and dulness more than half down the left side. I strongly urged an increase in the dose of the oil, and recommended as a vehicle the compound infusion of orange-peel with a little hydrocyanic acid; and by the aid of this she was enabled to take above a dessert-spoonful thrice daily. After this the improvement was manifest and progressive, although much more gradual than in the last case. In April the catamenia returned, and she had regained her ordinary amount of flesh, whilst the cough and expectoration were very trifling. The signs of the cavity continued, but within narrower limits, and a pretty clear stroke-sound and vesicular breath-sound were now found in many parts of the scapular and mammary regions, which before were quite dull. The improvement has continued up to the present time, as far as regards the phthisical symptoms; but when I last saw her, there had been so much mental depression as to excite apprehensions of another disorder, to which there is a strong family predisposition.

CASE XI.—Mr. E., æt. 25, first consulted me September 13, 1847. Has been accustomed to rather free living. Eighteen months ago had syphilis, and was under mercurial treatment for three months. Last April had an eruption on the skin, for which he was under the care of Dr. Chambers, who prescribed for him iodide of potassium and sarza. There was at that time a slight cough, and when the eruption was cured, the cough increased, and has continued ever since, with greenish or yellowish opaque expectoration. In the last two months he has become much thinner, and has frequently had profuse night-sweats, and he says that his breath and strength are failing him almost daily. In the last few days he has been suffering from a bad attack of piles.

On examination, I found defective motion, and almost perfect dulness in the left front, from the scapula to below the mammilla. About an inch above the latter point, was large loose gurgling; above and below, short moist crepitus without breath-sound. In the inferior regions of

this side, the breath-sound was feeble, with slight sub-crepitation in parts. In both inter-scapular spaces there were loud tubular sounds of the breath and voice.

The oil was prescribed in increasing doses; a liniment, consisting of acetic acid, acetum cantharidis, and iodide of potassium; an electuary of confection of senna, with sulphate of potass, sulphur, and syrup of poppies. Sept. 23. Takes a table-spoonful of oil thrice daily, and has already improved in strength and general feelings. The sweats have ceased, and the expectoration and cough are considerably diminished. The piles are well. The gurgling was less liquid, and pectoriloquy and cavernous breath-sound were now heard; but there was no material change in the dulness. He was directed to pass the winter at Torquay, or the Undercliff, and to persevere with the treatment.

May 26, 1848. Had most rigidly adhered to all directions, living most carefully, and never omitting the oil or the liniment. Passed the winter at Torquay almost without any disturbance of his progressive improvement. He now is stout and hale-looking; has been in the habit of walking or riding almost all day; only feels his breath a little short, and there is still slight cough with a little yellow expectoration, chiefly confined to the morning. In the last two or three days the sputum has been a little tinged with blood (this was the reason of his calling on me), and the bowels have been rather confined.

I still found dulness, and dry cavernous sounds, in the left chest; but they were now confined to the space of about an inch above and below the clavicle; the breath and stroke-sounds below and behind being clear and vesicular, without any crepitus. The tubular sounds in the inter-scapular regions were also much diminished. He was directed to take an acid aperient every morning, and to leave off malt liquors.

Oct. 18. Has been almost perfectly well during the summer, the cough and expectoration being but trifling, and, as he says, his breath and strength are as good as ever. For the last two months, he has left off the oil. The dulness at the left apex is much diminished, and there are no cavernous sounds; only a tubular whiffing and muffled bronchophony between the clavicle and the scapula, mixed with vesicular breath-sound at every part. The tubular expiration at the root of each lung is now scarcely more than it often is in health.

There seems little reason to doubt that this patient will entirely recover; but as a precautionary measure, I have advised him to pass another winter at Torquay.

The foregoing cases are selected, because they are of some standing; and because my brief notes of them are sufficiently explicit to convey some representation of the amount and duration of good wrought by the treatment. The whole number of cases in the third stage of phthisis, (that is, with one or more cavities, as indicated by physical signs) which have been manifestly improved under treatment with the Cod-liver oil, amounts to sixty-two, up to the end of August. In thirty-four of these, I know that the improvement has continued up to a recent period, when I saw the patients, or had reports. Eleven cases, which exhibited decided improvement for a time, have since again declined or termi-

nated in death. Of the remaining seventeen I have had no recent report, and I do not know whether the amelioration has been permanent or not.

The results above stated give to Cod-liver oil, even as a tardative or palliative in phthisis, a rank far above any agent hitherto recommended, whether medicinal or regiminal. I have made extensive trials of several other medicines of reputed utility in this disease, and on a future occasion may lay before the profession the results of my experience, which prove some of these agents to be by no means inoperative or useless; and I still consider them to be often salutary aids in the treatment of this formidable malady, but their utility and harmlessness fall so far short of those of the Cod-liver oil, that I regard them now chiefly as subsidiary means, and the more likely to be useful, in proportion as they facilitate the exhibition or continuance of this superior agent.

If the experience of the profession at large should accord with my own, and with that of those who have preceded me in recommending the Cod-liver oil, our prognosis with regard to phthisis must undergo some modification. To what extent this modification may reach, cannot be determined, until such cases as those which I have recorded have been tested by years of time; but even now, when we repeatedly find forms and degrees of disease, that former experience had taught us to be utterly hopeless and speedily fatal, retarded, arrested, nay sometimes even removed and almost obliterated by various processes of restored health, we must pause ere we, in future, pass the terrible sentence of "no hope" on the consumptive invalid.

II. MODE OF OPERATION OF COD-LIVER OIL.

It seems scarcely necessary to discuss the question, whether the oil owes its efficacy to the iodine which it contains. The amount of this element is so minute as hardly to admit of quantitative measurement; and to ascribe virtue to such infinitesimal fractions, when ordinary doses have no corresponding activity, is to adopt the fanciful and mischievous speculations of the homœopathist, which cannot be too strongly deprecated by the scientific and conscientious practitioner. Several of the patients whose cases are cited above, and many more of whom I have records, had taken iodine in various combinations before taking the oil, but without any effects approaching to those which ensued on the change of treatment. I am by no means incredulous of the salutary operation of iodine in some forms of tuberculous and scrofulous disease; indeed until I used the pure oil, I considered it to be the most useful remedy; but in the last two years, the oil has so far surpassed it and every other medicine in beneficial operation, that I am convinced that it acts by a virtue peculiar to itself.

A perusal of the foregoing cases, and of others on record, at once suggests that the cod-liver oil is a highly nutrient material; and it is commonly admitted by all practitioners who have used it, that it possesses, in a pre-eminent degree, the property of fattening those who take it for any length of time. But its nourishing influence extends beyond the mere deposition of fat in the adipose tissue. The muscular strength and activity are sensibly and sometimes rapidly increased under its

use; whilst the improved colour of the cheeks and lips implies a filling of the vessels with more and better blood. Researches are wanted, to elucidate this subject more clearly; but the analysis of the blood in one case of phthisis which had been under treatment by the oil, shewed a most remarkable increase of the animal principles of the blood, especially the albumen, which amounted to thirteen per cent., being nearly double its usual amount, whilst the fat was not materially augmented; and the fibrin, which is generally high in phthisis, was reduced below the normal proportion.¹ If these results should be confirmed by further observation, there will be no difficulty in understanding that the Cod-liver oil should prove a nutrient to all the textures; although it may yet be a question, whether it does so by direct conversion into albumen or fibrin, or by preventing the waste of the albuminous principle by protecting it from the action of the oxygen absorbed in respiration.

But there is much reason to believe that the oil itself proves serviceable in supplying the fat molecules which appear to be essential to healthy nutrition, as forming the nucleoli of the primary cells or rudiments of tissues. The important part which fat thus performs in the process of nutrition, was first pointed out by Ascherson of Berlin; and that fat forms the central molecules of the elementary granules and cytoblasts of textures, is generally admitted, although few agree with Ascherson in his opinion that the fat forms the cells by its power of coagulating albumen around it. It seems to have been the opinion of Dr. Ascherson and of Dr. Hughes Bennett, who cites it,² that in scrofulous diseases there is a want of this fat, and that the albumen derived from the food in digestion is liable to be precipitated in an unorganizable condition (as tubercle, etc.) for the lack of it. But it is now well ascertained that scrofulous and tuberculous deposits, so far from being deficient in fatty particles, contain them in greater quantity than exists in the blood, or in its plasma in a healthy state. The explanation which I have given³ of the chief salutary action of the Cod-liver oil, is not that it supplies fat where it is wanting, but that it supplies fat of a better kind, more fluid, more divisible, less prone to change, and more capable of being absorbed into, and of pervading, the structures of the body: thus affording a fine "molecular base" in the chyle, and therein, a material for a better plasma; and being conveyed into the blood distributed through capillaries and around deposits (in such quantity as to soften and dissolve the crystalline and irregularly concentered fat scattered through them), it renders them more amenable to the pro-

¹ Simon's Animal Chemistry, translated by Dr. Day, vol. i, p. 280. London: 1846.

² Bennett on the *Oleum Jecoris Aselli*, p. 58: Edinburgh, 1841. In a recent number of the "Edinburgh Monthly Journal of Medical Science," the editor, Dr. Hughes Bennett (or some one writing under his direction), accuses me of plagiarism, in adopting his explanation of the action of the Cod liver oil without acknowledgment. But this explanation, which is not his, but quoted from Ascherson and other German writers (and is combined by him with the notion of the oil acting by its iodine), is by no means that which I propose, as may be seen on reference to the text. The professed review which contains this accusation, betrays such gross misunderstandings of the work which it criticises, and such a spirit of personal jealousy, that I do not think it needful to notice it further.

³ Principles of Medicine, 2nd ed. p. 408: London, 1848.

cesses of reparation and absorption. Hence its beneficial operation is more marked in those stages of tuberculous disease in which the deposits abound in fat: that is, at the period of maturation and softening; although from the extent of mischief already done, both to the part and to the system, the benefit may not be so lasting as in the early stages of the disease.

One of the most remarkable effects of the Cod-liver oil, in some cases of the second and third stage of phthisis, and in other forms of scrofulous disease with extensive suppuration, is the speedy removal of the sweats and other symptoms of hectic fever. This can hardly be ascribed to its direct nutrient powers; but I think that it is due to its influence in diminishing the unhealthy suppuration which is excited around the softening and excavated tubercles. If my views of the chemical nature of suppuration,—that it consists of a further oxydation of the exudation corpuscle,¹—be correct, then it is quite intelligible that the presence of so highly combustible a material as oil must check this process of oxydation, and thus prevent the degeneration of the corpuscles into the aplastic state of pus globules. In fact, if it should prove to be correct, according to the analysis above quoted from Simon, that Cod-liver oil removes the excess of fibrine in the blood of phthisical patients,—this also equally accords with my notion, founded on the inferences of Mulder and others, that the formation of fibrine is due to a process of oxydation of the albumen (forming a deutoxide of protein, according to Mulder); and that, by preventing this, the oil removes that tendency to cacoplastic inflammatory deposits which largely contribute to increase the consolidation of the lungs and other organs in phthisical subjects.

In making these surmises, I would not be supposed to adopt the idea of Liebig, that pulmonary consumption is the result of an excess of oxygen in the blood at large, consuming its materials, and those of the textures. Many of the symptoms, as well as the organic lesions of the disease, shew that there is a great deficiency in the process of respiration by which oxygen is supplied to the blood; and some of the most rapidly fatal cases, exhibiting speedy emaciation, are, throughout their course, in a condition bordering on asphyxia. Here is obviously a great want of oxygen in the blood,—nay, I believe the excess of fat in the liver, and in the tuberculous deposits, in these instances, to be caused by this very scanty supply of oxygen to the system. But although it is deficient in the system, enough oxygen comes into contact with the exudations from cavities in the lungs, and from the diseased bronchi in their vicinity, to effect the formation of much unhealthy pus; and it is the formation and reabsorption of this that seems to excite the hectic of phthisis, as well as to keep up much harassing local irritation. Now, I believe it to be by diminishing these exudations, and checking their further oxydation into pus, that Cod-liver oil acts so promptly in reducing the hectic sweats and purulent expectoration of phthisis, which accelerate and aggravate its destructive progress.

The limits of this paper will allow me to notice but briefly one more

¹ Principles of Medicine, 2nd ed. p. 295.

point in regard to the action of Cod-liver oil. Unlike other oils or fats, it rarely disorders the stomach or bowels, or disturbs the functions of the liver. If taken in any quantity, vegetable oils commonly purge, and animal oils turn rancid in the stomach, causing heartburn, bilious attacks, and even jaundice. On the contrary, Cod-liver oil generally improves all the chylipoietic functions, and distinctly promotes the action of the liver; so that, as in several of the cases above related, the appetite and power of digestion are restored, and patients are enabled to take an amount and variety of food beyond what they were accustomed to, even in health. I cannot help thinking, that this peptic influence of the oil is due to its containing some biliary principle, which both favours its divisibility in the process of digestion, and promotes the natural secretions of the liver. The flow of bile, as indicated by the colour of the fæces, is generally free and uniform during its exhibition; and I must not omit to notice another fact, which I believe to be connected with increased activity of the liver. I have in numerous instances remarked that the bulk of the liver (as determined by percussion) becomes augmented during its use; yet without tenderness or any other sign of disorder. In fact, this seems to be a kind of useful hypertrophy, induced by the oil augmenting the bulk and quantity of the hepatic cells, and supplying at once a material the more fitted for this secretion, because it has already within it some elements of biliary matter which served a similar purpose in the liver of the fish, and this at a lower temperature, and less favourable to the activity of the process. The observation of this influence of Cod-liver oil has led me to use it in several cases of functional and structural disease of the liver, marked by defective or depraved secretion, and in some instances with most satisfactory results, especially in one of habitual formation of gall-stones, which had resisted all kinds of treatment, and was rapidly destroying the health: the use of the oil has entirely stopped the attacks, and has restored the patient to good health.

It appears probable, therefore, that although other oils might be equally influential in promoting nutrition, and in preventing and removing the cacoplastic and aplastic exudations of scrofulous subjects, the oil from the cod's liver, and perhaps those from the livers of other fish, have the advantage in point of digestibility, and in promoting the action of the digestive and biliary organs.

III. PREPARATION AND ADMINISTRATION OF THE COD-LIVER OIL.

It may seem somewhat strange that this remedy, which has been long employed and valued on the continent, and in some limited localities in this country, and of late years has been strongly urged on the attention of practitioners, both at home and abroad, should have been so slow in being received into general use. If the experience of other practitioners accords with my own on this point, I would give as the reason of this tardy introduction, the disgusting smell and taste of the oil as it has been commonly prepared, and an impression generally prevalent that the efficacy of the remedy is connected with these offensive properties. This notion was favoured by Dr. Hughes Bennett, in his monograph published in 1841. At that time I made several trials

of the oils, selecting the clearer specimens of the brown oil, as recommended; but I found that so few patients could take it at all, and fewer still were able to persevere with it, that the inference seemed to be, that however German and Dutch stomachs might bear it, English ones could not, at least among the upper classes. It was not until I had witnessed some striking examples of benefit ensuing from the use of the pure oil, prepared according to Mr. Donovan's method, that I began again to make trial of it, and to reflect further on its mode of operation when freed from all impurities; and the results are recorded in the preceding pages. They will not, I think, be considered less favourable than any that have been previously published; and their value will be much increased by the statement that in all instances I have prescribed oil as *free from taste and smell as could be procured*; and so little difficulty has been experienced in its administration, that the proportion of cases in which it has decidedly disagreed has not amounted to four per cent.

The inoffensiveness of the oil implies the use of no process by which it can be deprived of its proper qualities. All that is required is, to obtain it *pure and fresh*, as it existed in the hepatic cells of the healthy fish when alive, without contamination by any process of putrefaction, roasting, boiling, or the like. On the contrary, the disgusting smell and taste, and dark colour of the impure oil, proceed from the putrefaction and heat to which the livers are subjected, for the purpose of obtaining from them the utmost quantity of oil; hence it becomes highly rancid, and holds in solution or suspension various putrid and colouring matters derived from the corrupting cells and tissues of the liver.

It is not my intention to describe the details of the process by which the oil may be obtained in the greatest purity; but I may mention the following particulars, to which it is necessary to attend, in order to obtain a good product. The livers should be used as soon as possible after the death of the fish, every hour deteriorating the quality of the oil. The pale, plump livers should be preferred; those which are flabby and dark in colour should be rejected as unhealthy. The livers, after being quickly pounded into a pulp, should be mixed with water of the temperature of about 120°, then filtered; and, after standing long enough, the oil is to be decanted from the filtered liquor, cooled to the temperature of 50°, and again filtered. The whole process is to be accomplished with as little delay as possible, and in closed vessels, to prevent the air from giving to the oil the slightest degree of rancidity. For the same reason the vessels, in which the oil is preserved, should be full, well corked, and kept in a cool place. I recommend the second filtration after cooling, to remove the more solid part of the oil, the stearin and margarin, which not only further clears the oil by its separation, but, by leaving a preponderance of elain, gives to it more of that perfectly liquid and penetrative quality which promotes its absorption and diffusion through the fluids and tissues of the body.¹ My usual

¹ The oil most commonly used by my patients has been carefully prepared by some of the most eminent operative chemists in London, particularly Messrs Bell and Co. of Oxford.

mode of administering cod-liver oil, is in doses of a tea-spoonful, gradually increased (if the stomach bear it) to a table-spoonful, floating on some pleasant-flavoured liquid, such as diluted orange wine, or the Infus. Aurantii Comp., with a little Tinct. and Syr. Aurantii. The vehicle should be suited to the taste and stomach of the patient; and much of our success in exhibiting the medicine will depend on our being able to keep the palate and stomach at peace with the oil. In numerous instances I have found that the addition of a little diluted nitric acid to the vehicle will make it more grateful to the palate, as well as serviceable to the stomach; and we may often combine with it other medicines which are not disagreeable, and thus fulfil the indications of palliating symptoms by their means. The fittest time for taking the oil, is from one to two hours after the three first meals of the day. At this time the chyme is beginning to pass from the stomach into the duodenum; and it would appear that the oil passes quickly with it, for given at this time it causes none of those unpleasant eructations which are apt to occur when it is taken either before or with food. There is nothing in the oil for the stomach to digest; and the less it is brought into contact with it, and the sooner it passes out of it, the better. When it mixes with bile and pancreatic juice in the duodenum, its division and absorption begin and proceed, as in the case of all fatty matters. Herein, too, we see a reason why the oil does not agree so well either with the palate or stomach, when mixed in an emulsion, or combined with liquor potassæ, as recommended by some practitioners.

In conclusion, I repeat, that further observations, and longer time, are requisite to determine with accuracy the extent to which this agent can control or remove tuberculous disease of the lung; but I would state it as the result of extensive experience, confirmed by a rational consideration of its mode of action, that the *pure fresh Oil from the Liver of the Cod, is more beneficial in the treatment of Pulmonary Consumption than any agent, medicinal, dietetic, or regiminal, that has yet been employed.*

7, Holles Street, Cavendish Square, 18th Nov. 1848.

street, Mr. Squire of Oxford-street, and Messrs. Allen and Co. of Plough court, Lombard-street. The oil supplied by these chemists, when fresh, has a sweetish, grassy smell and bland taste, and only acquires a fishy odour and flavour on exposure to the air or heat. Good specimens have also been sent to me from Messrs. Taylor, of Vere-street, and Mr. Twinberrow, of Edward-street. But the sweetest oil that I have yet met with, is that prepared on a large scale on the northern coast, by Messrs. Hogarth and Co., wholesale fish-mongers, and is now supplied by Mr. Barclay, of Fore-street, and other wholesale and retail druggists. This oil has a pleasant odour of fresh sea-weed, and is more free from stearin than other specimens. It has further the great recommendation of being considerably cheaper than that prepared in town; and if on trial it should be found to be as efficacious as that has been proved to be, its moderate price will ensure a preference for an article that is consumed for months, and even years, at the rate of three tablespoonfuls in the day, and ought, if possible, to be supplied on the terms rather of an article of diet, than of an expensive drug. I understand that much of what is sold in the market as cod liver oil, is obtained from the livers of the skate, the hake, and other coarse fish. Such adulterations are of course to be deprecated; but it is a subject deserving of investigation, whether, as seems probable, a pure oil of analogous therapeutic properties, may not be obtained from such sources at a price which would place it within the reach of the lower classes, who suffer so extensively and variously from diseases of malnutrition.