

and scientific adjustment, as also of securing a self-registered series of photographic delineations of the solar spots during its continuance—it is proposed that during the continuance of the observatories, an annual sum, not exceeding £350, should be taken on the estimate, and placed at the disposal of the General Superintendent for these purposes.

There is a point referred to in a former letter which will require the attention of the Committee. It is the question, whether the observations of the proposed observatories should be printed *in extenso*, or in abstract accompanied by a discussion of the principal results.

I remain, my dear Sir, faithfully yours,

EDWARD SABINE.

Sir John Herschel, Bart.

PAPERS READ.

- I. "On the Changes produced in the proportion of the Red Corpuscles of the Blood by the administration of Cod-Liver Oil." By THEOPHILUS THOMPSON, M.D., F.R.S.
Received April 30, 1858.

Influenced by a conviction that the peculiarities essential to any disease are often associated with characteristic changes in the blood, and that the efficacy of many remedies depends on their power of modifying such conditions of the blood, I have made it an object to take opportunities of ascertaining some particulars regarding the composition of that fluid in certain diseased conditions prior to the use of remedies, and also in patients affected with similar maladies, but whose symptoms under the employment of medicines have been materially ameliorated. In reference to the inquiry, the proportion of red corpuscles would appear to be a circumstance of special significance, and to this question I have directed my chief care. In pursuing the investigation, my attention has been particularly directed to cases of phthisis, as there was in this way afforded to me the greatest opportunity of comparing the largest amount of analogous instances.

On the 27th of April, 1854, I had the honour of presenting to the

Royal Society a short communication descriptive of the changes produced in the blood by the administration of cod-liver oil and cocoa-nut oil, and advanced the conclusion deduced from chemical analysis, that any favourable result derived from the administration of these oils is associated with an increase in the proportion of red corpuscles. Having availed myself of opportunities for continuing the investigation, I beg to present the results to the Society.

The chief particulars observed are exhibited in a tabular form, but it may be desirable briefly to detail the most important circumstances in some of the instances adduced.

In two of the patients no oil had been given; both were men, the subjects of advanced consumption. In one of them, Edward D., the proportion of red corpuscles was only 98·20 in 1000 of blood. In the other, D. D., similarly affected, it was 119·64.

When cod-liver oil was administered, but failed to produce any favourable effect on the general condition of the patient, a similar sparseness in the proportion of blood-corpuscles was observable. Thus, for example, James H., a man affected with phthisis in the third stage, had taken the oil for four months, but notwithstanding gradually lost strength and weight. His proportion of blood-corpuscles was 114·39, still less than in D. D., a patient to whom no oil had been administered.

With these cases it is instructive to contrast others in the same period of disease, to whom cod-liver oil had been administered with manifest advantage.

Sarah Warren, aged 26, with a consumptive cavity in each lung, under a few months' course of the oil gained $10\frac{1}{2}$ pounds in weight, and in other respects materially improved. The proportion of corpuscles was found on analysis to be 145·68.

In Edwin P., aged 28, affected with a similar condition of both lungs, who improved considerably and gained 4 pounds in weight, under two months' continuance of the oil treatment, the red corpuscles existed in nearly the same proportion as in the female last mentioned, being 145·56.

Thomas N., a patient with a consumptive cavity (indicated amongst other signs by cracked pipkin sound on the left side), having taken the oil for some months, gained 13 pounds in weight. The proportion of red discs was 157·78. It may be interesting to

mention, that in this individual, the fibrine, although considerable in amount, was not associated with fat, and that the corpuscles of his blood examined under the microscope exhibited numerous chains or rouleaux.

The results of analysis in less advanced stages of the disease are still more striking.

Sarah M., a girl aged 16, having the peculiar clicking sound, and other evidences of the second stage—that of softening tubercle (on the left side)—had taken cod-liver oil for six months with most satisfactory results. The corpuscles were in remarkably high proportion, namely 172·56. It is an interesting fact, that in this instance the remarkable hum in the jugular veins, often found as a symptom in anæmia (but as I think wrongly regarded as peculiar to that condition), was present.

In Henry B., the subject of phthisis in the second stage on both sides, after a short course of oil, the proportion was 144·76.

The highest proportion of corpuscles which I have found in any of my consumptive patients was 174·34. It occurred in S. P., a man aged 36, who had the disease in a very early stage accompanied with the variety of wavy inspiration, which I believe to indicate the existence of a considerable amount of freely expanding lung around the parts consolidated by tubercular deposit. He had taken oil for only two months, but had during that period gained about a stone in weight.

Another man, Thos. C., also in the first stage, and with the same symptom, wavy inspiration, but with a greater extent of dull percussion (and other signs of more disease than S. P.), had also taken oil for two months with advantage, and the proportion of corpuscles was 144·45, whilst Thos. B., in whom the physical signs of disease were still slighter, but in whose expectoration, examined with the microscope, the presence of lung-tissue sufficiently demonstrated the nature of the disease, the blood contained a proportion of corpuscles as high as 165·90. This man had taken cod-liver oil (with only one short interruption) for twelve months.

The fourteen cases recorded in this communication with a view to the question under consideration are arranged in the following Table :—

No.	Name.	Stage of disease.	Time during which oil was given.	Gain or loss in weight.	Proportion of red corpuscles.
				lbs.	
1.	Edward D....	3rd.	None given.	98.20
2.	David D....	3rd.	None.	119.64
3.	James H. ...	3rd.	4 months.	- 7	114.39
4.	Sarah Warren	3rd, on both sides	5 months.	+ 10½	145.68
5.	Edwin P. ...	3rd, do. do.	6 weeks.	+ 4	145.56
6.	Thomas N....	3rd.	Some months.	+ 13	157.78
7.	Sarah M. ...	2nd.	6 months.	+ 3	172.56
8.	Henry B. ...	2nd, on both sides	14 days.	No change.	144.76
9.	George P. ...	1st.	7 weeks.	+ 13	174.34
10.	Thomas C. ...	1st.	2 months.	+ 6	144.45
11.	Thomas B. ...	1st.	12 months.	165.90
12.	Martha W....	1st.	3 weeks.	142.62
13.	Mary D.	3rd.	4 months.	+ 10	84.83
14.	Sarah W.....	3rd.	Some months, ozonized oil.	+ 6	162.07

The analyses were made by Mr. Dugald Campbell, Analytical Chemist to the Consumption Hospital, and were conducted as follows:—

The blood was placed in a small beaker half-full, fitted with a cork, and was conveyed carefully so as to keep the serum free from the blood-corpuscles. The beaker containing the blood, after standing twenty-four hours, was weighed.

The serum, perfectly free from red corpuscles, was drained from the coagulum with very great care, and the latter being transferred on to bibulous paper, after standing for the space of four or five hours, was weighed. Two separate portions of coagulum, of from 35 to 40 grains, were again weighed, one for the moisture, and the other for the fibrine. The moisture was then entirely removed by means of a water-oven; from 24 to 36 hours being found necessary for accomplishing this object, the completion of which was ascertained by the capsule, with its contents, ceasing to lose weight. The portion for the fibrine was removed into a bason, treated with cold water by maceration, until the fibrine appeared to be perfectly colourless, when it was removed on to a previously weighed filter, again washed, and carefully but not too highly dried. The filter and fibrine were next put into a test-tube, and, in order to separate the fat, digested, first with ether and again with alcohol, twice or thrice, then dried by means of a water-bath, and weighed. This weight, less that of the filter,

represents the fibrine; and these data being obtained, the amount of blood-corpuscles, and that of fibrine in 1000 parts of the blood, are determined by a simple calculation.

The general correspondence between the instances adduced in the present communication and those of my former contribution is sufficiently obvious; the proportion of red corpuscles in patients to whom oil had been successfully administered exceeding that ascertained to exist in the first stage of the disease, in those to whom this medicine had not been given. It is commonly stated, and the remark is in harmony with my own observations, that the proportion of red corpuscles is usually less in women than in men. To this rule the seventh case in the Table furnishes an exception, and it was further remarkable from the fact that a murmur could be heard in the jugular vein; a phenomenon commonly attributed to sparseness of blood-corpuscles, but in this instance associated with more than the average amount.

The case numbered thirteen in the tabular analyses would seem directly opposed to the conclusion to which the other observations tend, but the patient had suffered from repeated attacks of spitting of blood so extreme as to place her life in jeopardy. This profuse hæmorrhage would naturally increase the poverty of the circulating fluid, and thus counteract to a great extent the apparent influence of the remedy.

In the fourteenth case ozonized oil had been administered.

The rapid reproduction of red corpuscles implied in these observations, suggests inquiries of special interest; but I purposely abstain from any attempt to explain the mode by which it is effected.

- II. "Further Observations on the Power exercised by the Actinæ of our Shores in killing their prey." In a Letter to W. BOWMAN, Esq., F.R.S., dated Oct. 25, 1858. By R. M'DONNELL, M.D. Communicated by Mr. BOWMAN. Received Oct. 27, 1858.

DEAR SIR,—In the course of last winter I had the honour, through your kindness, of making a communication to the Royal Society "On the Power exercised by the Actinæ of our Shores in killing their prey;" allow me now, through the same medium, to correct the