as law in its present form a real blow will assuredly be struck unless 20,000 men have pledged their word for nothing not to take service. Meanwhile, Sir, I feel that I am only voicing the sentiments of hundreds of fellow practitioners when I say that in view of recent events some more responsible leadership than that of the Council of the British Medical Association and one more in touch with the real wants of us all is required.

I am, Sir, yours faithfully,

Trinity-road, S.W., Dec. 5th, 1911.

H. B. GREENE.

To the Editor of THE LANCET.

SIR,—I have read with interest the letters of Dr. B. Hall, and I am pleased that at last someone has ventilated the views of the rural practitioner, for hitherto the majority of your correspondents appear to have been resident in London or the suburbs. There appears to be no other way of making known the requirements of the rural practitioner except through the medium of the press, for the branch meetings of the British Medical Association are usually held in the large industrial towns, and the majority of country doctors, many of whom reside several miles from a railway station, have no opportunities for attending those meetings and ventilating their views; consequently the opinions expressed at those meetings are not fairly representative of the profession as a whole.

I hope to avoid the error which so many of your correspondents have committed, in writing for town and country doctors alike. I know very little of the working of a medical practice in a large industrial town. I am a country doctor, and I am absolutely convinced that the *per capita* system of payment is far and away the best and most lucrative in a rural district.

I am medical officer to three village clubs with a total membership of about 250, all adult males. A large majority of the members are agricultural labourers, probably the healthiest class of men in the community. I am paid 5s. per member per annum, and the amount of sickness is exceedingly small. On the other hand, about 45 of my clients in one village are members of the National Deposit Friendly Society, whose system (and rate) of payment "for work done" appears to be considered fair and reasonable by many of your correspondents. I find that during the last eight years I have received for those of the 45 who have required medical attendance the sum of £46 3s. 6d. If those 45 had been members of my clubs, paying me the *per capita* fee of 5s. per annum I should have received just £90 for them during the same period. I am also medical officer to a rural post-office, and I find that during the last five years I have received in capitation fees the sum of £12 10s. I have a record of the work done under that appointment, and I find that if I had been paid "for work done" at the National Deposit Friendly Society's rates I should have received just 19s. I am not appending my name to this letter in case the Postmaster-General should not consider my appointment worth continuing. I do not think that any post-office medical officer would willingly exchange the present system and rate of payment under those appointments for one of payment for work done.

I agree with Dr. Hall in thinking that those members of the profession who are crying down the *per capita* system of payment are without experience of it. I cannot say what the effect would be in the large industrial towns, but I am quite sure that in the rural districts where sickness is rare any substitution of a "payment for work done" system in place of the present *per capita* system would mean a serious falling off in income to a large number of country doctors.

There is another point wherein I consider that the British Medical Association is not reflecting the views of the country practitioners, and that is the "free choice of doctor" principle. Anyone who has bought a country practice knows that when an appointment held by a predecessor is not obtained by his successor one year's value of that appointment is deducted from the purchase money; therefore, when an appointment is obtained it is bought and becomes a vested interest. The "free choice of doctor" principle takes away that vested interest without any compensation whatever. I can quite imagine that if it had been Mr. Lloyd George who had introduced the "free choice of doctor" principle all those who have purchased club appointments would have been up in arms against his interference with vested interests, but as it is the British Medical Association instead of Mr. Lloyd George they appear to be silently

acquiescing. Probably the principle will be beneficial to urban practitioners, but it appears to me that the country doctor is being sacrificed for the sake of his brethren in the industrial centres.—I am, Sir, yours faithfully,

Dec. 4th, 1911.

RURAL PRACTITIONER.

To the Editor of THE LANCET.

SIR,—The sincere thanks of the medical practitioners of this country are due to you for the strong line which you have taken throughout the course of the debate in respect of the Insurance Bill as far as it affects, and will affect, the profession. You have continually and continuously made clear the evils of contract practice which would be crystallised under State authority if that Act comes into operation; and you have ever been on the side of the general practitioner, whose welfare and interests you have always supported in every possible way.

Owing to circumstances which all men of reason in the profession can appreciate, you have not sought to make capital out of the position for your journal; and your pen has been most carefully and wisely restrained, so as neither to engender nor to increase the grave feeling of mistrust which has arisen in respect of the negotiations which have been carried on by the constituted leaders of the profession, who were appointed to look after our best interests, but whose exertions and heavy expenditure of valuable time and money have proved, apparently, so ineffective. At this time of serious crisis I am sure you will use your best endeavours to assist in steadying the position, in preventing a *débâcle*, and in opposing any panicky action which might rend the Association and destroy its powers for good, which under wise direction it must possess.

I am, Sir, yours faithfully,

Dec. 5th, 1911.

A. GEORGE BATEMAN.

*** For reasons explained in a leading article we did not publish last week many individual communications with regard to the National Insurance Bill. As correspondents have reproached us for "closing the correspondence," we must point out that no such silly action has been taken, while the views of many of those who wrote to us last week formed the backbone of the editorial comments. We take this opportunity of begging those who address us not to spoil good arguments by mere abuse of those with whom they do not agree.—ED. L.

THE ORIGIN OF CANCER AND THE ORIGIN OF LIFE.

To the Editor of THE LANCET.

SIR,—In his very interesting lectures on Unicellular Cancer Sir Henry Butlin has shown in a striking manner the parallelism that exists between the life and development of different varieties of cancer cells and that of many of the protozoa. He seeks to show, in fact, that "the carcinoma cell is an independent organism like many a protozoon," that it is "a complete animal organism in itself"; and he is now prepared to maintain this view, "not only for carcinoma, but for every variety of malignant disease."

Looking to the generally admitted facts that, as Dr. Bashford says, "cancer arises *de novo* in each individual attacked," and that it occurs "by a transmutation of functional somatic into cancerous cells," as was originally pointed out by Farmer, Walker, and Moore in a paper communicated to the Royal Society on Dec. 7th, 1905, together with the many analogies dwelt upon by Sir Henry Butlin, there seems very much to be said in favour of the view.

To some essential points in his statement, however, I must demur. While all students of cancer are now practically agreed that cancer cells are derived from the tissue cells of the part in which they take their origin, this cannot correctly be spoken of as a kind of process "which has never hitherto been imagined." It is exactly the kind of process known as "heterogenesis," many examples of which I have described and illustrated in my "Studies in Heterogenesis" (1903), and it is a process which has been defined as "the production from the substance of organisms or their germs of alien forms of life."¹ It is true the transmutation here does

¹ An illustrated description of one of the most notable examples observed by me may be seen in the Proceedings of the Royal Society, vol. B, 76 (1905), pp. 385-392.

not lead to the production from the altered tissue cells of what would be generally admitted to be independent living organisms; and certainly the process cannot possibly be cited as an illustration of "the origin of life." Life was already existent in the tissue cells—their mode of life has only been changed; a process allied to heterogenesis has occurred.

I cannot, therefore, agree with Sir Henry Butlin when he goes on to say: "The host in which it dwells has fashioned it out of its own tissues, and, to borrow the figurative language of Scripture, the Creator has breathed into it the breath of life. After ages of past and present civilisation, during which searchers and philosophers have sought to explain the origin and nature of life, we have come no further than this."

The true origin of cancer, as I maintain, is related to heterogenesis, and not, as he thinks, to the still more mysterious problem to which he refers; nor can it fairly be said that in regard to the solution of this problem we have come no further than the establishment of this particular instance of heterogenesis.

Probably Sir Henry Butlin has never studied my little book entitled "The Origin of Life" (1911), where experiments are described in which multitudes of independent living organisms have been taken from tubes (previously sealed hermetically) containing certain saline fluids which had some months before been heated for periods varying from 5–20 minutes to temperatures ranging from 125–145° C., while most of the organisms that had been produced within the tubes were such (torulæ and micrococci) as are known to be killed by exposure in fluids to 60–70° C. for a few minutes. Such experiments surely take us much further towards the solution of "the great enigma" than does any mere proof of the heterogenetic origin of cancer cells—however much they may be shown to be related to many of the protozoa.

I am, Sir, yours faithfully,

H. CHARLTON BASTIAN.

The Athenæum, S.W., Dec. 2nd, 1911.

THE UNICELLULA CANCRI.

To the Editor of THE LANCET.

SIR,—Sir Henry Butlin has stated the case for the unicellula cancri with his wonted lucidity and force, but I venture to question whether he has reduced his thesis to the simplest terms. Is it not a fact that, viewed from the broad biological standpoint, all the cells of multicellular organisms (metazoa) are protozoa? Are not the aggregated cells constituting the metazoa and the segregated cells known as the protozoa all separate, individual animal organisms, bathed in a fluid from which they extract their oxygen and nutriment, and to which they yield their excreta? In the higher metazoa some of these cells—e.g., muscle cells and neurons—are highly specialised and have lost the power of multiplying: such never give rise to cancer cells. Others—e.g., epithelial, endothelial, and connective tissue cells—are less specialised and retain the power of multiplying: there is no doubt that it is from these that the cancer cells are derived. Do we, however, by labelling such cells "parasitic protozoa," "unicellulæ cancri," advance our knowledge?

The cancer cells are manifestly cells which have thrown off their allegiance to the body politic and become rebels. The whole problem of cancer is summed up in the question, What is the cause of this act of rebellion?

I am, Sir, yours faithfully,

Wimpole-street, W., Dec. 3rd, 1911.

HARRY CAMPBELL.

PHYSICAL TRAINING IN SECONDARY SCHOOLS.

To the Editor of THE LANCET.

SIR,—I have read with great interest the article on "Physical Training in Secondary Schools," which appeared in your issue of Oct. 21st (p. 1150), and heartily endorse the contents thereof, especially the remark that "the gymnastic teacher should possess expert training and should be a member of the school staff." THE LANCET also points out that, whereas there are many expert lady teachers of Swedish gymnastics, there is a great dearth of expert male instructors. The reason for this state of affairs is that several excellent

institutions exist for the teaching of lady students of gymnastics, but that there have hitherto been no similar institutions for male students. An inquiry into the arrangements for teaching gymnastics in other countries reveals the striking fact that the subject has been made a university one in a considerable number, and that special schools, controlled by the State, exist for the teaching of it. Let me quote some examples:—

Sweden.—The Royal Central Gymnastic Institute, founded at Stockholm in 1813, provides a course of study of three years' duration, which includes all the branches of Ling's system. The first two years are devoted to educational and military gymnastics, and the course of instruction includes anatomy (dissections are compulsory), applied anatomy of gymnastics, and physiology. The third year is devoted to medical gymnastics, some theoretical work in which has already been gone through in the second year. Examinations are held at regular intervals, and after passing the final examination the title of gymnastic director is conferred upon the candidate. The institute is under medical supervision, and the chief teachers have the title of Professor and rank as such.

Belgium.—The Institute Supérieur d'Éducation Physique attached to the University of Ghent was duly opened in 1908. After three years' training in physical education the candidate receives the title of Licentiate in the Science of Physical Education. Later on, after further examination and the presentation of a thesis which the licentiate must defend, he may obtain the title of Doctorate in the Science of Physical Education. The syllabus of the course seems to show that it is very complete.

In Austria there are State institutions in Vienna, Prague, and Gratz. Similar institutions are to be found also in Bavaria, Prussia, Saxony, and Norway. I see, also, that physical education is included in the curriculum of the University of Wisconsin. In Denmark the subject of gymnastics has quite recently been made an optional subject for the degree of B.A., B.Sc., and diplomé as school teacher.

In England gymnastics is, I regret to say, neither a university subject nor one which interests the medical profession as a whole. Indeed, I have no hesitation in saying that a medical man who opened a gymnasium for educational gymnastics would be shunned by his colleagues. Even the medical supervision of school gymnastics is almost an unknown factor in this country. This is not as it should be, and I consider that THE LANCET exactly states the case when it says that there should be a close coöperation between the medical officer and the gymnasium instructor. The fact cannot be denied that physical education largely enters into the subjects of hygiene and prevention of disease, and that overdoing or misuse of it leads to pathological conditions, especially in school children. Under these circumstances I feel that many will agree with me when I suggest that physical education be made one of the subjects of the ordinary medical curriculum.

The state of affairs at present is that gymnastic classes are held in the vast majority of the schools by people who are not competent to take them, and as matters stand now children with adenoids, with spinal curvatures, with weak chests are all performing the same gymnastic exercises together with healthy children, and they are doing so under the direction and control of a teacher who is incapable of judging whether he is doing good or harm thereby. Outside schools we have an equally deplorable state of affairs in many directions. The advertising quack who does a large and flourishing trade in so-called scientific gymnastics, with or without some special apparatus, and who boasts of self-arrogated invention and discovery, need only be mentioned.

The only way to improve matters is for the medical profession to take them into their own hands, for until they do so no change can be effected, and I sincerely hope this will be done ere long. In connexion with this, however, I should like to point out that an institute for teaching educational gymnastics will be open in this city in Marylebone in the immediate future. The object of the institute is to give thorough instruction, theoretical and practical, in the science of physical education on the basis of the Swedish system of gymnastics. The course of training will follow as closely as possible the lines upon which the Royal Central Institute at Stockholm is working, with such modifications as occasion requires. The syllabus of the Board of Education will be thoroughly studied and the requirements of the Board will be