protein substances. On the other hand, they differ materially from plant tissues in that they apparently contain no cellulose. My researches have shown that bacteria and animal tissues can be split up in the same manner into three main groups of substances—viz., alkali soluble material, acid soluble material, and alcohol soluble material. The relative proportions of the alkali, acid, and alcohol soluble fractions of different germs and animal tissues vary very greatly; for example, the gonococcus consists of 90 per cent. alkali soluble, 9 per cent. acid soluble, and 1 per cent. alcohol soluble substance, whereas the tubercle bacillus contains 40 per cent. alkali soluble, 30 per cent. acid soluble, and 30 per cent. alcohol and chloroform soluble material. No two germs give the same quantitative proportions and thus it is possible to diagnose a given germ by biochemical analysis alone without resorting to the microscope. The same is true of tissues. Brain tissue is remarkable in containing an enormous proportion of alcohol and chloroform soluble lipoid material (about 50 per cent.), whereas the alkali and acid soluble fractions are correspondingly low. Muscle tissue, on the other hand, is rich in alkali and acid soluble material and comparatively poor in alcohol soluble substance.

The quantitative biochemical analysis can be carried, however, much further, since it is possible to split up the alkali and acid-soluble fractions into subgroups. Thus, the alkali-soluble material may be subdivided further into (a) metaprotein, which is thrown out of alkaline solution on neutralisation with acid; (b) primary proteose, which is thrown out of the neutral solution by half saturation with ammonium sulphate; (c) secondary proteose, which is precipitated by full saturation with ammonium sulphate; (d) a brown material not precipitated either by full saturation with ammonium sulphate or absolute alcohol. This subdivision of the main groups makes it possible to separate the toxic fractions from each. When the metaprotein and proteoses are thrown out of solution by neutralisation, ammonium sulphate or alcohol, the toxic substance remains in the supernatant fluid. It can also be removed from the precipitates by simply washing the latter with alcohol or water or both.

In the case of the secondary proteose precipitates, which are largely soluble in water, the toxin must be removed by washing with absolute alcohol. The toxic material is light straw in colour when dilute and dark reddish brown, like port wine, when concentrated. It appears to be identical with the substances excreted in urine. It is well known that urine is toxic. In other words, it would appear that by this process of detoxication there is removed from the germs or tissues the same harmful and useless substances that are excreted by living animals in the urine. The brown toxic material, so far as I can ascertain, is not antigenic (produces no immunity). The other non-toxic fractions of the germs, on the other hand, are definitely antigenic (immunising), as estimated by the complement-fixation test and by inoculation experiments. The first detoxicated vaccines, which I described in THE LANCET of June 28th, 1919, were composed only of the alkali-soluble metaprotein part of the germs. Now I include in addition all the other antigenic fractions—viz., the proteoses, the acid-soluble and the alcohol-soluble lipoid portion, each of which is detoxicated separately. In other words, every part of the germ is now included except the actual endotoxins.

Another point of great interest is the fact that the proteoses have a provocative action. For example, the preteose fraction of the gonococcus when injected subcutaneously provokes a focal reaction at the site of the disease. In a disease like gonorrhoea this provocation does no harm and I include the proteoses in this vaccine because they are antigenic. In systemic diseases, however, like tuberculosis or pneumonia, it is doubtful if the proteoses of the tubercle bacillus and the pneumococcus should be included in the vaccines, since a provocative focal reaction in the chest in such conditions might be undesirable. At the present time I am endeavouring to ascertain whether detoxicated tubercle bacillus vaccine is better with or without the proteoses. With the vast majority of germs, detoxicated vaccines are

some ten to one hundred times less toxic than ordinary vaccines. In the case, however, of the typhoid and coliform group of germs, the detoxication is not so marked. I am inclined to attribute this to the fact that the bacteria of this group have a very much higher percentage of proteoses in their composition than those of any other group so far examined.

I am, Sir, yours faithfully,

DAVID THOMSON,

New Cavendish-street, W., Lecturer and Research Pathologist
July 8th, 1920. to the London Lock Hospital.

THE ILLNESS OF MR. CLIFFORD ALLEN.

To the Editor of THE LANCET.

SIR,—I enclose a statement by Mr. Bertrand Russell and myself on the illness of Mr. Clifford Allen while with the British Labour Delegation in Russia, to which I was attached as physician and secretary. Mr. Russell and I are anxious to have our own signed statement circulated because a matter of principle of first-class importance both to individuals and doctors emerges from it. Mr. Allen is getting better and is now on his way to England.

I am Sir, yours faithfully,

Tite-street, S.W., July 12th, 1920. L. HADEN GUEST.

ENCLOSURE.

British Labour Delegation to Russia and the Illness of Mr. Clifford Allen.

On May 30th, while the British Labour Delegation was on the Volga, Mr. Clifford Allen became suddenly ill with acute pleurisy and pneumonia originating from the latent phthisis from which he had suffered. Before the delegation left England for Russia, Mr. Allen was medically examined and was found in good health and free from any active disease, and had so remained free for one year. Mr. Allen was, therefore, considered fit to travel. During the four days after the beginning of the illness, during which the boat proceeded down the river to Saratoff, Mr. Allen became very gravely ill indeed, and Dr. Haden Guest warned the members of the delegation that his life was in great danger. It had been arranged that the delegation should return to Moscow by train from Saratoff. On arrival at Saratoff Allen had a hæmorrhage which made it dangerous to move him.

Three courses were possible with regard to Mr. Allen: (1) to leave him in a sanatorium in Saratoff; (2) to take him by train with the rest of the delegation to Moscow; (3) to let him remain on the boat and proceed with it to Astrakhan. To both of the first two courses there was the insuperable objection that he could not be moved on that day without danger to life, and as accommodation on the boat was comfortable, and there was a Russian doctor and a good Russian nurse attached to the boat, and food, especially milk, was more easily obtainable on the boat than in any town in Russia, as it was obtained directly from the villages en route, it was decided to keep Mr. Allen on the boat. The Russian doctor on board, Dr. Dmitrieff, agreed entirely with the decision which was arrived at—namely, that Mr. Allen should remain on the boat. We proceeded to Astrakhan and from there returned to Saratoff.

Mrs. Philip Snowden and Mr. Bertrand Russell remained with Dr. Haden Guest to help in the nursing. At Astrakhan Dr. Haden Guest called in a consultant, who took an even graver view of the case and regarded it as hopeless. Nevertheless, by the time the boat arrived at Saratoff Allen was sufficiently recovered to be moved and fit to travel as a lying down case. By the kindness of B. M. Sverdloff, Acting Minister of Ways and Communications, who had been on the boat throughout Mr. Allen's illness, a special saloon coach was provided and arrangements were made to enable Mr. Allen to remain in this coach until his arrival at Revel in Esthonia, as well as for accelerating his journey. Partly on account of the impossibility of communicating with his friends in Western Europe and partly for other reasons Mr. Allen so urgently desired to get to Revel, as to make it almost impossible for him to sleep or rest while in Russia. This gravely aggravated his condition and made his departure imperative on medical grounds.

On arriving at Moscow and presenting ourselves at the Foreign Office for visas, we learnt that the Government had decided to keep Mr. Allen in a sanatorium in Moscow pending a medical examination by doctors chosen by themselves. At first Ttchiterine was unwilling to allow this examination to take place immediately in the train, in spite of our both stating to him that we considered Mr. Allen's speedy departure of the utmost importance for saving his life. It was only after we had both made strong and formal protests against the Government decision, which we regarded as gravely increasing his danger, that Ttchiterine decided to