wire has previously received permanent torsion in the opposite direction.

44. There is for all but very large magnetising forces a critical point of torsion, for which temporary torsion does not affect the temporary magnetic permeability.

45. When the critical point of torsion is passed, the temporary permeability increases with the torsion at first more rapidly than the torsion, and afterwards more slowly until a maximum is reached and the permeability begins to decline.

46. When the wire has previously suffered excessive permanent torsion, temporary torsion which has before produced increase of permeability now produces decrease.

47. The effect of temporary torsion on the temporary permeability of unannealed piano-steel wire is in the same direction as with annealed iron which has suffered excessive permanent torsion (see 46).

48. For a wide range of torsion the temporary permeability and the permanent permeability of annealed iron are oppositely affected by temporary torsion.

49. Fluid pressure does not temporarily affect either the temporary magnetic permeability of annealed iron, or the permanent magnetisation of hard steel, except, it may be, to a degree which is not comparable with that of the effect of stress applied in any one direction.

50. The application, however, or the removal of fluid stress like that of the stresses of compression, extension, and torsion, shakes out from annealed iron a certain amount of residual magnetism.

IV. "Note on a New Constituent of Blood Serum." By L. C. Wooldridge, M.D., D.Sc., Research Scholar to the Grocers' Company. Communicated by Dr. Pye-Smith, F.R.S. Received March 19, 1887.

I wish in the present note to draw attention to a proteid substance which exists in very small quantity in blood serum. Owing to the difficulty of obtaining a sufficient amount, I shall not attempt to give a complete description of its chemical characters, but shall confine myself chiefly to its physiological properties which, I venture to suggest, possess considerable interest. It is obtained by rendering undiluted serum distinctly acid by means of dilute acetic or very dilute (4 pro mille) sulphuric acid. Neutralisation does not cause its precipitation; the serum must have a strong acid reaction. It is constantly present in the serum of dog's blood, and when collected by the centrifuge it is precisely similar in physical characters to ordinary

fibrin, and only differs from the latter chemically by being more easily soluble in dilute alkali. It is totally different from the soft granular precipitate of paraglobulin, the latter substance being extremely easily soluble in the slightest excess of acid. It is also constantly present in serum of sheep's blood. In the case both of dog's blood and sheep's blood it is only present in very small amount, and in the serum from horse blood and bullock's blood it was absent in the specimens I have examined. The physiological interest of this substance will be seen from the following.

It is well known that Schmidt regarded two proteid substances as being essential for coagulation. One of these bodies was paraglobulin, a substance existing in large quantity in blood serum. Subsequent investigation has failed to confirm this view, and there can be no doubt that paraglobulin is not essential to the process. But Schmidt has obtained results, the correctness of which we are in no way entitled to dispute, which apparently clearly show that the quantity of fibrin formed can be largely increased by the addition of paraglobulin. I think this discrepancy can be explained by the help of this new substance, and this will be best shown by describing the following experiments.

Two portions of peptone plasma were taken, and

To No. 1, an equal quantity of sheep's serum was added.

,, No. 2, a small quantity of a solution of the new substance.

No. 1, after many hours only presented a scarcely perceptible flocculus of fibrin.

No. 2 was quite solid in 15 minutes; on squeezing out the fluid from the clot and again adding a solution of the new substance, the mixture again clotted through and through.

Now Schmidt's experiments were very much of this nature. He found in certain specimens of hydrocele fluid that the addition of fibrin ferment produced very slight clotting, whereas on the further addition of a substance which he regarded as paraglobulin a decided clotting took place. Now sheep's serum contains plenty of paraglobulin and plenty of fibrin ferment, but it has no appreciable effect in my experiments.

But this new substance, which it must be remembered is only present in very small quantity in serum, had the most marked influence, and hence I conclude that it is the new substance, and not paraglobulin, which increases the amount of fibrin. It may be mentioned that in preparing paraglobulin a certain amount of the new substance is always precipitated with the former substance.

A second physiological property of this new substance is the effect it exerts when injected into the circulation of a living animal.

It is very exceptional to find that the injection of blood serum

produces any effect, serum containing plenty of paraglobulin and ferment but only traces of the new substance.

But the injection of a solution of this body prevents the coagulation of the shed blood. Occasionally as the result of the injection very small thrombi are formed; possibly if more could be obtained considerable intravascular clotting might be set up.

The following is an example.

A quantity of the new substance obtained from 300 c.c. sheep's serum and well washed was dissolved in dilute alkali and salt solution. (The amount of substance was I estimate 0·2 gram.) This solution was injected into the jugular vein of a rabbit. The blood of this rabbit previous to the injection clotted in two minutes; after the injection the blood drawn off remained quite fluid for three hours—time of observation. It clotted, however, directly on adding some of the solution injected.

The injection of considerable quantities of serum or of paraglobulin I have not found to have any appreciable effect.

Of itself this substance, since it exists in so small amount, is of little interest, but as it appears to vary in quantity in different animals and under different circumstances, it is easy to see that misapprehensions as to the influence of paraglobulin on coagulation might easily arise.

These observations also throw great doubt on the power of fibrin ferment to produce a so-called intoxication.

This substance has an extremely feeble influence on dilute $MgSO_4$ plasma, and hence contains but a trace of fibrin ferment. Since it is closely related to the fibrin-yielding matters of the plasma, and to the tissue fibrinogens I have elsewhere described, I should propose to call it serum fibrinogen.

V. "Preliminary Note on the Fossil Remains of a Chelonian Reptile, *Ceratochelys sthenurus*, from Lord Howe's Island, Australia." By THOMAS H. HUXLEY, F.R.S. Received March 24, 1887.

The interesting remains of which I propose to give a brief notice in the present communication, are contained in a friable sandstone (apparently formed of concreted blown sand), and they have a very recent appearance. The age of the deposit in which they are found is unknown, but it is probably quaternary. The specimens have been for some years in the palæontological collection of the British Museum; and, for the most part, they have not yet been submitted to careful examination. But I learn that the greater number of them