

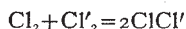
with the Carnegie Trust, a million of the taxpayers' money is now well on its way to provide more sumptuous motor-cars rather than professors of chemistry, and another two millions or so to foster dye-making as it is understood in the City by directors more innocent of the art than our early woad-besmeared ancestors. To such ill-informed and costly efforts the complete indifference with which science was regarded in official circles before the war is surely preferable. It may be difficult to break with the habit of a hundred years in patiently expecting a miraculous change of attitude on the part of the Government towards the debt- and wealth-producing elements of the community respectively. A more practical and practically attainable objective would, it seems to me, be for the universities to ally themselves with Labour to provide saner government. Incidentally, some long overdue reforms of the universities might then be effected, and the paralysing and deliberate stranglehold of the old vested interests upon science broken, once for all.

I may merely be more outspoken than my colleagues, but I believe I am more scientific in diagnosing the trouble before seeking a remedy. The failure of a century's efforts on the part of scientific men is not due to ignorance, apathy, or any other negative cause. But for the clever, tireless, and all-embracing activities of all those to whom science spells *finis*, the existing absurdities would not survive a year, and against this combination Labour is the only real force. The unpopularity of the proposed remedy with all those who have proved themselves such good friends of science in the past is, to my mind, an unsolicited testimonial to its efficiency from a quarter eminently in a position to judge.

FREDERICK SODDY.

#### The Separation of the Isotopes of Chlorine.

IN my letter to NATURE of June 17 I showed that inappreciable separability of the isotopes of chlorine by a special class of chemical change would be difficult to reconcile with Nernst's heat theorem, and in a later issue of NATURE (July 15), at the request of Prof. Soddy, the argument was more fully given. Mr. Core (NATURE, July 29) has endeavoured to remove the difficulty to which attention was directed by me. With most of his deductions I agree, but I am not satisfied that he has reconciled Nernst's theory with the inappreciable separability of the isotopes by the specified chemical method. Mr. Core contends that the solid compound  $\text{ClCl}'$  which would actually be formed in the chemical change represented by the equation



is a solid solution—since in the crystal the molecules would be indifferently oriented as  $\text{ClCl}'$  or  $\text{Cl}'\text{Cl}$ —and Nernst's theorem cannot be applied to solutions.

Now Nernst states his theorem as follows:

"I have been led to the conclusion that not only do A and U become equal at the absolute zero of temperature, but that their curves touch asymptotically at this point. That is to say,

$$\lim_{T \rightarrow 0} \frac{dA}{dT} = \lim_{T \rightarrow 0} \frac{dU}{dT} \text{ (for } T=0\text{).}$$

It is to be remembered that this equation is only strictly applicable to pure solid or liquid substances" (H. T. Tizard's translation of Nernst's "Theoretical Chemistry," 1916 edition, p. 746).

Again, Nernst (*loc. cit.*, p. 748) identifies liquid with amorphous substances

Further, Planck limits the application of his more general enunciation of Nernst's theorem to chemically

homogeneous substances, which he defines as substances made up of nothing but molecules of the same kind (Max Planck, "Thermodynamik," § 67).

Neither of these definitions appears to me to exclude the crystalline modifications of  $\text{ClCl}'$ , which are stable at finite temperatures. But even if it be conceded that the intention was to exclude such solid compounds, the difficulty I find in reconciling Nernst's heat theorem with the inappreciable separability of the isotopes by the specified chemical method has not been removed, for the solid substances taken in performing the thermodynamic cycles can (without modifying the reasoning) be the liquid (amorphous) forms.

D. L. CHAPMAN.

Jesus College, Oxford.

#### The Scratch-Reflex in the Cat.

I HAD lately the opportunity of examining in a young cat eight weeks old the conditions of the scratch-reflex, and the results would seem to be worth noting. The animal had been through an unusually heavy day of play on a hot day, and in the evening was lying asleep on the lap of one of her friends in a profound sleep. I thought this a good occasion for finding out what reactions she would show to gentle mechanical stimuli. A very light touch with a wooden match on the conchal surface of the pinna or one extending to the meatus, produced immediate response as follows:—First, the facial muscles on the same side twitched irregularly; this ceased, and then the fore foot was moved irregularly towards, but not so far as, the ear; when this had ceased there occurred at once a *rhythmical* movement of the hind limb, with a rate closely similar to that of the scratch-reflex of the dog, the hind foot, as in the fore foot, being brought *towards*, but not up to, the ear.

This unusual sleep lasted for a quarter of an hour, during which repeated light mechanical stimuli of various kinds failed to wake the animal, and the above series of reactions was frequently evoked, but none of the later attempts produced results so strongly marked as the first. I was unfortunate then in not having read more than an abstract of the paper in the *Journal of Physiology* of December, 1917, by Prof. Sherrington on "The Pinna Reflexes in the Cat." He has now very kindly sent me a copy of the paper, and I see how much better I might have marked out the receptive field of this reflex if I had known the accurate observations he has made on it.

I examined in this animal then and since the various regions of the back and flanks, and have found there no receptive field like that of the dog, which seems to be in accordance with the experience of others. Since the first occasion I have found the foregoing reactions present many times, but the sleep has always been lighter and the results less orderly and striking.

WALTER KIDD.

Chalet le Mourezin, Château d'Oex,  
Switzerland, August 13.

#### Portraits Wanted.

I SHOULD greatly appreciate any information readers of NATURE may be able to give me which would lead to the discovery of portraits of any of the following early myriapodologists:—Shaw (who published a paper in 1789, *Trans. Linn. Soc.*, vol. ii., p. 7), W. E. Leach, George Newport, John Edward Gray, and John Curtis. The last four all published papers during the first half of the nineteenth century.

S. GRAHAM BRADÉ-BIRKS.

16 Bank Street, Darwen, Lancs, August 19.