occurred at the same temperature. The measurements were made on a homologous series of fatty acids from pelargonic to stearic and the results are plotted in Fig. 2. Curve I gives the melting point of

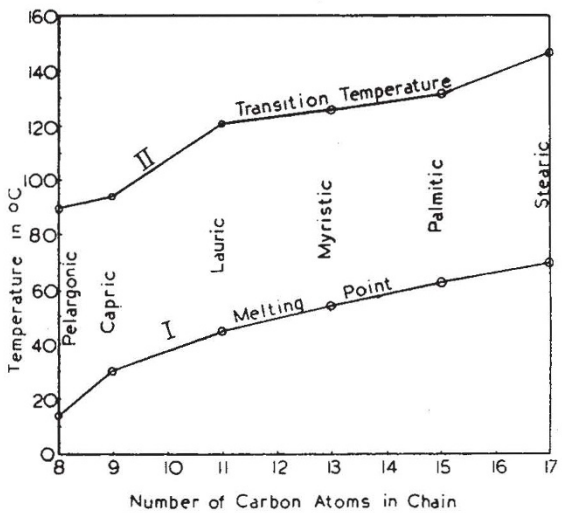

Fig. 2.

the samples used, and Curve II the temperature at which the transition from smooth sliding to stick-slip occurred. It will be seen that there is a separation between these curves which is nearly constant and is approximately equal to 75° C.

It is suggested that the transition from smooth sliding to stick-slip is due to the desorption or disorientation of the adsorbed film or to a change of state from a closely packed to a less closely packed form. The fact that this 'surface melting' of the adsorbed film occurs at a temperature 75° C. above the bulk melting point in the case of the acids, close to the melting point in the case of the corresponding alcohols, and at the melting point in the case of the corresponding hydrocarbons, is interesting. At the melting point of the bulk solid, sufficient kinetic energy is distributed among the molecules to enable them to overcome their attraction for one another. In order to melt the adsorbed film, sufficient energy must be available to overcome this mutual attraction plus their attraction for the surface. The difference between the transition temperature and the bulk melting point may therefore be regarded as a measure of the strength with which the polar group is attached to the steel surface.

The results suggest that this analytical frictional method provides a useful weapon for measuring the strength and for studying the mechanism of the adsorption of various polar groups on to solid surfaces. Apart from their theoretical interest, these observations are of considerable practical importance. If a lubricant contains suitable polar substances it will give smooth sliding and low wear at room temperature but, when the temperature is raised, the adsorbed film responsible for this may be driven off. The temperature at which this occurs may be below 100° C. and may be easily attained by many parts of a running engine. It is clear that this must be taken into consideration, both in the testing of a lubricant and in its selection for practical use.

I am indebted to members of Dr. Bowden's research team in the Laboratory of Physical Chemistry at Cambridge for helpful discussions and to the Asiatic Petroleum Company for permission to publish the work, which was carried out in their laboratories.

Britannia Laboratory,
Britannia Place,
Cambridge.

D. TABOR.

[1] Tabor, NATURE, **145**, 308 (1940).
[2] Bowden, Leben and Tabor, *Trans. Faraday Soc.*, **35**, 900–904 (1939).
[3] Bowden and Leben, *Phil. Trans.*, A, **239**, 1–27 (1940).

"The Man of Science as Aristocrat"

IF I may say a word more about "The Man of Science as Aristocrat", I would like to point out to my friend Lieut.-Colonel Moore-Brabazon that my suggestion, as Sir Richard Paget realizes, was of an inner aristocracy of the spirit in an entirely democratic world. I did not suggest that men of thought and knowledge should rule or control anybody or anything outside the range of their distinctive gifts. I suggested that within that range they should refuse absolutely to be directed, controlled or silenced by anybody, that they should bear themselves like brains with a backbone, and not like flexible slaves.

13 Hanover Terrace,
N.W.1.

H. G. WELLS.

MR. H. G. WELLS[1] states that he was once in danger of becoming corruptingly rich by patenting films, and that "Mr. Paul came along to me and we took out a provisional patent that would have made us practically the ground landlords of the entire film industry" (NATURE, April 19, p. 465).

My provisional specification described means for presenting the main incidents in Mr. Wells's story, "The Time Machine". To create an illusion of travelling through time spectators were to be seated on a rocking and oscillating platform and subjected to wind and noise effects. Pausing at various epochs —past, present and future—they were to see appropriate events shown on a screen by means of animated photographs and dissolving views. It was to discuss details of such scenes that I invited Mr. Wells to my office in Hatton Garden towards the end of 1895. He listened patiently to my proposals, gave his general approval to my attempting to carry them out, and proceeded to talk of subjects suitable for the primeval scenes. Having recommended for my perusal some books on extinct monsters he left without further discussion as to future action, and many years elapsed before I had the pleasure of meeting him again.

My scheme was promptly abandoned for reasons which can be guessed by those acquainted with animated photography in 1895. Then one-minute films could be watched by individuals who looked through the slot of an Edison kinetoscope or one of its variants. In several countries inventors, including myself, were seeking means for showing films on a screen, and such projectors came into use early in 1896. The simplest scenes, coupled with the novelty of seeing photographs moving, sufficed to attract the public and to establish the new art of cinematography in favour. A prolonged presentation, such as that of "The Time Machine", was then unnecessary and indeed impracticable.

ROBT. W. PAUL.

High Street,
Sidford, Devon.