Oxford for building a new college especially for social sciences. Mr. Ramsay MacDonald claimed that close co-operation between the man of science, the industrialist and the man of affairs is needed to assist the changes which diminish the disruptive forces in society and promote the social solidarity lying at the root of human progress. This reminder of the futility of blaming science and scientific workers for the horrors of war is equally timely. Although science has increased the power which can be applied both to life and to death, peace or war are not the responsibility of men of science as such, and they may well claim that by making war more widespread they have driven home the responsibility for warfare, which lies in the moods of man rather than in his mechanical inventions.

The Evolution of Torpedo Craft

IT was but natural that in his presidential address to the Institution of Mechanical Engineers on October 22, Sir J. E. Thornycroft should deal with the development of torpedo craft. He was a child five years of age when at Chiswick his father, Sir J. I. Thornycroft (1843–1928) built the *Lightning*, the first torpedo boat in the British Navy, and he has thus witnessed the growth in size, speed and power of torpedo boats, torpedo boat destroyers and the newest motor torpedo boats. Together with Sir Alfred Yarrow and Jacques-Augustin Normand, of Havre, Sir J. I. Thornycroft was a pioneer of water-tube boilers, forced-draught and high-speed engines, and from the works he founded at Chiswick and Woolston have come many of the most notable vessels ever launched. Towards the end of his address, Sir John Thornycroft made some interesting observations on the skimming principle applied to boats, and on the need for simplification in warships. As is well known, the motor torpedo boat, first brought into use in the Great War, is of such a design that when sufficient speed is attained it skims or planes along the surface of the water. Some people think the principle might be applied to larger vessels, but Sir John pointed out that whereas a 50-ft. motor-boat will skim at 30 knots, a 300-ft. destroyer would have to attain a speed of 70 knots, and this would necessitate engines of 200,000 horse-power. Apart from the propelling machinery, ships to-day are filled with mechanism. The very complexity of this raises the question as to means by which it is to be kept in order, and this led to the suggestion that the work of mechanical engineers should be in the direction of simplification.

Co-ordination of Fuel Interests

IN his presidential address to the Institute of Fue on October 14, Sir Philip Dawson traversed the whole range of fuel-producing and fuel-using industries, pointing especially to the leakages and inefficiency resulting from the absence of co-ordination between the different interests. Although the different fuels are to a considerable extent complementary, the system of free competition leads to internecine conflict, while desirable goals such as the elimination of smoke and the greater production of liquid fuels receive inadequate attention. Such surveys have often been made in the last fifteen years, and Sir Philip comes, like others before him, to the conclusion that the Government should set up a strong central advisory body to co-ordinate the fuel activities of Great Britain. Hitherto, such proposals have passed unheeded, but now he holds that the national interest demands action. Coal should become the raw material for satisfying modern demands in new form. The future requires a smokeless, pure atmosphere in which to live, and suitable solid, liquid and gaseous fuels for every side of national activities.

The Appraisement of Lighting

FOR the twenty-second Guthrie Lecture before the Physical Society on October 22, Dr. C. C. Paterson discussed "the Appraisement of Lighting". Dr. Paterson pointed out that as techniques have become available during the past thirty years, the art of appraising lighting has changed and advanced greatly. Like so many other subjects, however, that of lighting and seeing has been and is held in check by the inevitable tendency of those who practise it to define it at any epoch in terms of the quantities which they understand. Whereas research can stretch out where it pleases it is difficult for a practical art to advance faster than the established techniques for appraising its merits. The earliest standard ever adopted, specifying a candle of a certain weight in a lantern, is one which has many advantages and which under a changed form is still probably the most widely adopted. The most easily measured characteristic of a light source is luminous intensity, but a measure which is of more value in estimating the aid to seeing is that of luminous flux. With the advent of differently coloured light sources difficulties of such measurements have grown. The adoption of an internationally accepted relative luminosity curve for the average human eye has brought the measurement of intensity of illumination to a high state of accuracy for sources with continuous spectra. The use of the photocell has added to speed and repetitive accuracy, but not to absolute accuracy.

THE measuring of light sources giving a few lines only of the spectrum offers a very much more difficult problem which has been met by the use of sub-standard lamps and carefully selected and calibrated filters. However, with different colours errors creep in. Seeing is fundamentally a matter of contrasts in colour and in brightness, and it is these factors which should be measured. There are several methods of measuring brightness. Photography has been used for registering the effects of lighting on the human eye and recording them permanently on photographic plates. When the brightness of two contrasting surfaces has been measured, we still have no accepted methods of expressing them in terms of their aid to vision. Frichner's fraction, which is an approach in this direction, deals only with threshold values, and our interests lie in values far above those. The new