

No one who has been following the trend of thought among water engineers and all those interested in our water resources during the past year can fail to be impressed by the almost unanimous desire for some Government action which will respond in a practical way to the repeated demands for an organised survey of our water resources. Increasing quantities of water, for an ever-increasing variety of purposes, are required, and the first necessity is to know where and in what quantities they are available, both above and below ground. As already indicated, this information cannot be obtained merely by collecting such data as are at present known, and of the kind which the Ministry of Health has been collecting, and which is compiled in the Water Supply Memoirs of the Geological Survey. But this is not to minimise in the least the importance of the systematic collection and collation of existing data, which are of primary value, and must be continued and extended.

An increasing body of opinion is demanding that there should be some central Government authority exclusively concerned with our water supplies. Further, when we realise the diversity of surface configuration, geology and hydrological conditions, as well as population and industry, in the various regions of the country, it becomes evident that the conservation and allocation of supplies should be dealt with in the first instance by local or regional bodies with statutory powers, but subordinate to the central authority.

In planning any such national scheme it is important, in the writer's opinion, to provide so that scientific investigation of overground and underground resources is kept separate from the purely administrative branch, which would be concerned with the allocation, distribution and

conservation of water. The continuous and systematic gauging of rivers and springs, and the varied problems involved in underground hydrology, should be pursued independently of the immediate use of the water for any single interest or authority or combination of such, in much the same way that the national survey of our rocks and minerals by the Geological Survey is run independently of any one industry or profession, but is meant to serve any or all national interests.

It is for this main reason that the writer would prefer that the more purely scientific part of hydrological investigation which is now under consideration should be brought under the control of the Department of Scientific and Industrial Research, or a special branch of that Department. This need not mean that there should be any sort of barrier between the Department of Scientific and Industrial Research and the central or the regional water authorities here envisaged. On the contrary, there should be the closest collaboration between the investigation side (which would be continuously adding to our knowledge of the amount and location of available resources) and the more practical engineering and industrial side.

In any such comprehensive and national scheme, there might still be room for valuable work carried on by competent and enthusiastic geologists and others, whether amateur or professional. Short of a whole-time staff of Government experts, capable of conducting a systematic survey for the whole country, which may be impossible under present conditions, it would be possible for the Department of Scientific and Industrial Research to assist by money grants this work, and provide for its publication in such form as to be readily available for public use.

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## News and Views

### Intellectual Freedom

GENERAL THE RIGHT HON. JAN CHRISTIAAN SMUTS was installed on October 17 as Rector of the University of St. Andrews after the honorary degree of doctor of laws had been conferred on him by Mr. Stanley Baldwin, Chancellor of the University. In the presence of a distinguished audience including Sir James Barrie, a former Rector, whose address twelve years ago on "Courage" is still vividly remembered, General Smuts addressed his constituents. He delivered a characteristic speech on "The Future of Liberty", and the students of the scarlet gown gave him an enthusiastic welcome and a most attentive hearing. South Africa and Scotland are linked together by many ties including the love of liberty—"We decline to submerge the individual in the State or in the group, and we base our organisation of the State and society on individual freedom

and the free initiative of the citizen". Surveying the condition of the world as it passed through and emerged from the War years, General Smuts admitted that "mankind stands perplexed and baffled before the new situation and the new problems". But in spite of all grounds for anxiety, General Smuts finds none for real pessimism—having passed through rough passages, having sampled the world and human nature at many points, he remains at heart an optimist.

In a striking tribute to science, General Smuts claimed that it would provide a solution of many of the difficulties of the age. "Science has perhaps made more fundamental progress in the last thirty years than in the preceding two thousand. In particular, as is to-day commonly recognised, the problem of food shortage, of starvation and famines, the most

dreadful spectres of all history, is at last yielding to science, and the most fruitful cause of war in the past is thus being eliminated. Instead we are now oppressed with the novel problems of plenty, the solution of which will in due course mean not only the passing of war, but of grinding poverty and slavish toil for the masses of mankind. In these and other ways the scientific results of the last twenty years will come in the future vastly to overshadow in importance the losses and dislocations of the Great War which still bulk so large in our view." General Smuts believes that scientific invention will make war more and more impossible. There is a more serious problem even than the risk of war, and that is the maintenance of liberty. It is the decay of principles that must be feared, and the disappearance of intellectual freedom. Every sincere thinker and every scientific investigator must welcome the challenge of this rectorial address. We must seek, with John Milton, to preserve "the high hopes and aims, the diligent alacrity of our extended thoughts and reasonings in the pursuance of truth and freedom".

#### Memorial to Carl Daniel Ekman

An interesting ceremony was performed on behalf of the Swedish Cellulose Association by Consul T. Lundgren on October 19, when he unveiled a memorial to Carl Daniel Ekman, the inventor of the sulphite wood-pulp process, at Northfleet Cemetery. In the addresses by Baron Palmstierna and others at the dinner afterwards given by the Swedish Chamber of Commerce in London and the Society of Swedish Engineers in Great Britain, great emphasis was laid on the strengthening of Anglo-Swedish relations by mutual exchange of experience in science and technology. Sweden owes much to the many English pioneers who settled in Gothenburg during the last century and organised railways, exploited iron ore deposits and developed industrial life generally in the west of Sweden, but the debt has, however, been amply repaid by the work in England of many Swedes. The current issue of the Yearbook of the Society of Swedish Engineers deals with the work of some of these, such as Alfred Nobel, John Ericsson (1803-89) the inventor of the marine propeller and the first steam fire-engine, Nordenfelt (1843-1920) the gun and submarine designer, Sandberg (1832-1913) of steel-rail fame, and Ekman (1847-1904).

In 1870, attempts were being made to improve Mey's steam-cooking process for the conversion of wood into pulp for the manufacture of paper by adding soda to the liquor, but even then the product was not entirely satisfactory; it was not until 1872 that Ekman at Bergvik found that a solution containing sulphurous acid and magnesite was the key to the problem. He thus laid the foundation of the sulphite process, the present world-production of which (6,130,000 tons a year) exceeds that of the sulphate or mechanical process in quantity as well as in value; further, the consequent cheapening of paper has brought the pleasures of reading into many homes. In 1883, Ekman became manager of a mill at North-

fleet, Kent, and it was in his well-equipped laboratories there that much of his work on digesters and beaters and on the utilisation of the waste liquors was carried out. Ekman was the traditional type of inventor, and economics had no place in his enthusiasm for his technical work. As a result he died a poor man, and since the subscriptions to his memorial fund were devoted to the Ekman family and to the founding of scholarships, his grave became neglected. The memorial at Northfleet Cemetery is a result of the attention directed to this fact by Mr. J. Strachan, of the present Northfleet Mills.

#### England-Australia Air Race

Mr. C. W. A. Scott and Mr. T. Campbell Black arrived at Melbourne at 5.35 a.m. (G.M.T.), on Tuesday, October 23, thus winning the England-Australia air race. The flyers left Mildenhall, England, at 6.35 a.m. on Saturday, October 20, thus completing the journey, a distance of 11,300 miles, in 2 days 23 hours. The aeroplane was a new D.H. Comet, constructed at the de Havilland works specially for the race. It was a low-wing monoplane with two unsupercharged Gipsy Six engines (230 horse-power). Mr. C. W. A. Scott has already several notable flights to his credit. In 1931, he flew from England to Australia in 9 days 4 hours 11 minutes, in 1932 he did the same journey in 8 days 20 hours 44 minutes, and in 1931 he flew from Australia to England in 10 days 23 hours. Mr. Campbell Black set up a new world Puss-Moth record in 1931 by covering 1,600 miles in a single day. The second arrivals at Melbourne were Mr. Parmentier and Mr. Moll, flying a Dutch K.L.M. (Douglas) air liner carrying three passengers, who reached Melbourne at 12.54 a.m. (G.M.T.) on October 23, thus having completed the flight in just over three days. The flights are noteworthy achievements, for which tribute is due to the pilots for their skill and endurance, and not less to the designers and makers of the engines.

#### Memorial to Capt. Cook

On October 15, during the Victorian centenary celebrations at Melbourne, the cottage from Great Ayton, North Riding of Yorkshire, associated with Capt. Cook, which was purchased by Mr. W. R. Grimwade, taken to Australia and re-erected in Fitzroy Gardens, was formally handed over to the care of the Melbourne City Council. On the same day, at Great Ayton, Mrs. R. Linton, wife of the Agent-General for Victoria, unveiled a memorial which has been erected on the site once occupied by the cottage. The memorial consists of an obelisk of granite blocks brought from Cape Everard near Point Hicks, Australia, and is a facsimile of the obelisk at that spot, which states that Cook "First sighted Australia near this point which he named 'Point Hicks' after Lieutenant Zaekary Hicks who first saw the land, April 19th (Ship's Log date), April 20th (Calendar date) 1770". In reply to a vote of thanks to Mrs. Linton and himself, the Hon. Richard Linton said: "We stand to-day beside a granite monument. It is a piece broken off from that