

that there should be two sessions, one in the afternoon and the other in the evening, at which sub-divisions of the general subject should be discussed. The subject of the afternoon session was the "Induction and Functions of the Chemist", and that of the evening session, "His Influence and Reward".

Eight short papers were prepared and all were published in advance of the meeting in *Chemistry and Industry*. In addition, reprints were available at the meeting. Two *rapporteurs* were appointed to summarize the papers, namely, Dr. R. H. Pickard, director of the Shirley Institute, for the afternoon session, and Mr. C. J. T. Cronshaw, managing director of the British Dyestuffs Corporation, for the evening session. In the unavoidable absence of Lord Leverhulme, president of the Society, Mr. W. A. S. Calder, a past president, presided over the conference.

By adopting this arrangement, practically the whole of the time available was devoted to the discussions, and it may be said that the speeches on the whole were excellent. The immediate point under discussion was seldom lost sight of, and so far as the first session is concerned, it looks as if the Committee would be in a position to come to definite conclusions which it is hoped will be helpful to the universities and colleges on one hand and industry on the other. As might have been expected, the discussions centring around the subject for the evening session were less helpful, but inspiring nevertheless.

No attempt will be made to summarize these discussions here. In due course they will no doubt be published, together with the conclusions of the Committee, but it is quite clear that the symposium has justified itself, and others will no doubt follow in due course.

The following is a list of the writers of the papers, all of whom were requested to confine themselves, so far as possible, to their own experiences: *Afternoon Session*: Dr. J. J. Fox (Government Chemist); Prof. J. C. Philip (Imperial College of Science and

Technology); Mr. F. Scholefield (College of Technology, Manchester); Mr. C. M. Whittaker (Courtaulds, Ltd.). *Evening Session*: Mr. H. Ballantyne (Lever Bros., Ltd.); Mr. G. E. Collins (Shirley Institute); Dr. A. E. Dunstan (Anglo-Iranian Oil Co., Ltd.); Mr. J. Rogers (Imperial Chemical Industries, Ltd.).

It will be observed that the writers of these papers covered a very wide field, from both the academic and industrial points of view, and though the whole field could not be covered, this defect was remedied largely by the discussion in which twenty-five persons, all men of standing, took part.

It is just as impossible to summarize the papers as the discussion, but one or two points have emerged:

(a) For certain classes of work, graduate chemists do not appear to be sufficiently trained in manipulative technique, possibly through the attempt to put too much into the curriculum.

(b) There has been too little contact between industry and the teaching institutions generally.

(c) There is a large demand for chemists whose training from the start is along definitely technical, as opposed to purely academic, lines.

(d) For success in other walks of life, such as administration, business, salesmanship, and even finance, chemical training forms just as good a background as any other.

Probably the most striking statement made during the symposium was by Mr. C. M. Whittaker, who said: "In my experience there are just as many fools walking about with high academic qualifications as there are able men walking about with lesser academic qualifications, but of greater ability and deserving of greater financial reward."

In this connexion the views of many of the speakers, which seemed to be endorsed by the very large audiences present, were that the avenues to inclusion in the profession should not be closed in the slightest degree to those who had the desire to better themselves.

Forestry in the Gold Coast

THE annual report of the Forestry Department of the Gold Coast for the year 1935-36 (Accra: Govt. Printing Dept., 1936) by Mr. R. C. Marshall, conservator of forests, is written in non-technical language and gives evidence of progress in the introduction of a sound forest administration.

Cocoa forms one of the staple exports of the Colony, and the protection of a certain area of forests in the right situations is indispensable to this industry. It has been established by the research work carried out under the Cocoa Research Scheme at the Imperial College of Tropical Agriculture in Trinidad that an even moisture status is one of the characteristics of a good cocoa soil, and environmental studies have demonstrated that the moisture status of both soil and atmosphere have important bearings on crop productivity. The chief function of shade trees in cocoa cultivation is to provide a buffer against fluctuations in environmental conditions. This lesson was learnt many years ago in Madras and Ceylon in connexion with coffee and the tea gardens and other forms of planting cultivations.

The clearing of large blocks of forest and the hacking which took place in those remaining in the neighbourhood led to serious erosion, desiccation of the soil and so forth; this led to heavy losses and considerable areas going out of cultivation. If the conditions in the Gold Coast are to be adequately preserved, where such preservation is not altogether too late, "the requirements of this industry need to be considered from time to time by the Forest Agricultural Departments in collaboration with the Administration".

Mr. Marshall considers three types of protection forest reserves as required in the Colony: (a) headwater reserves, (b) barrier reserves, and (c) shelterbelt reserves. It is said that reservation has been so far concentrated on (a) the protection of headwaters and (b) the barrier reserves situated between the edge of the closed forest zone where it marches with the drier open (savannah) forest; the idea being to stay the encroachment of dry conditions. During the year, the chief attention has been paid to what are termed (c) the shelterbelt reserves. These latter are to be

oriented so far as possible at right angles to the prevailing wind and spaced at intervals through the countryside: their function is to protect agricultural cultivation, especially cocoa; to assist in maintaining the necessary environment of a closed forest climate, and to afford additional lines of defence against the encroachment of open-forest conditions. How far this aspiration will be possible in view of the considerable area of forest which has already been swept away or reduced to a condition in which it will prove useless for the purpose in view it is impossible as yet to say. But this matter has not been taken up any too soon.

It is apparent from the report that the Conservator has been able to increase considerably his gazetted staff (from 12 in 1934 to 18 in 1936) and is making progress in an even more desirable matter—that is, in “bringing the Forest Department district organization into line with the political district organization which itself follows tribal distribution as far as possible. At present forest districts consist of two to three political districts”.

With a strengthened staff, the Conservator rightly decided that the first work to deal with was the selection, demarcation and cultivation of the forest reserves still demanding constitution, and a considerable amount of work in this connexion was undertaken during the year.

With the sub-division of the country into definite forest districts, each to be in charge of an assistant conservator of forests, the management of the forest districts will receive more attention and the advance in the introduction of working plans will prove feasible, when sufficient stock mapping of the growing stock in the forests has been accomplished.

Fuel will be required so far as can be foreseen in increasing amounts in the Colony, both for domestic consumption and for power in connexion with water-work schemes. The exotics *Cassia siamea* and the Indian neem are both giving satisfactory results, as elsewhere in West Africa. Good fuel wood is successfully produced in seven years or less. The total area of fuel plantations amounts to 1,000 acres, the greatest area at Achimota, where the highly successful School is situated, within a short distance of Accra, the capital on the Coast. Other plantations of the same type exist at Cape Coast, Kumasi and other centres. Assistance is also given by the Department in connexion with water-works schemes. The sustained supply of fuel to the mines is proving a more difficult matter.

The report has some interesting remarks on the subject of the prevalent practice of firing the so-called open or savannah forest lands and shifting cultivation. It is the most informative forest report on the Colony which has appeared for some time.

Oak-galls in Theophrastus

PROF. GUSTAV SENN, of Basle, has published a short but interesting note on this subject (*Verh. Schweiz. Naturforschende Gesellschaft*, Solothurn, p. 372; 1936). Theophrastus mentions, in his “*Historia Plantarum*”, no less than ten species of oak-galls. Some are well known and unmistakable, such as the common Turkey or Aleppo gall; and one, or the insect which produces it, *Andricus Theophrasteus*, bears the old Greek’s name. But no one seems ever to have studied the Theophrastean account as a whole, and even Sir Arthur Hort made no attempt to identify the several species. Prof. Senn finds little difficulty in doing so, and the result is a remarkable testimony to Theophrastus’s diagnostic skill.

The ‘little gall’ with which the account begins (H.P., 3, 7, 4) is the valuable Aleppo gall, or ‘ink marble’, formed by *Cynips tinctoria*. The common ‘black resinous’ gall is the Bassorah gall, made by *C. insana*; it is the only one with a coat of resin. A scarce one, very hard in texture, mulberry-like in form, is identified by Prof. Senn as the gall of *C. culiciformis*. Another, phalliform in shape, growing into something like a bull’s head at one end and with a hard interior like an olive-stone, is identified as the gall of *C. Quercus-Toxæ*. Fluffy balls, serving for lamp-wicks, are the woolly or cotton galls of *Andricus Theophrasteus*, akin I suppose to *A. ramuli*; and other hairy or bristly galls, covered with sweet honey-drops in spring, but quite useless, are those of *A. lucidus*. Certain stalkless galls, looking like a cluster of leaf-scales and growing in the axil of a leaf or twig, are the hop galls or artichoke galls of *A. fecundator*. The rare, elongated, close-textured foliaceous balls are the galls of *A. multiplicatus*; and,

last of this catalogue, the clear juicy globules, growing on the midrib of a leaf, are the well-known currant galls of *Neuroterus baccarum*.

In another passage (H.P., 3, 3, 8), Theophrastus mentions, with the same brief accuracy, the galls which the tanner uses and the black ones which serve for the dyeing of wool; these being, once again, the Aleppo galls of *C. tinctoria* and the Bassorah galls of *C. insana*. A little gall, something like the Aleppo gall but smoother, and of no commercial value, is in all probability the oak-marble, or oak-apple, of *C. Kollari*. Connold, in his “*British Oak-galls*” says of it: “*C. tinctoria* bears a very close resemblance to *C. Kollari*, and many specimens of the latter might easily be mistaken for the Aleppo gall”; but the latter, he adds, yields 40 per cent of tannin, while *C. Kollari* gives only 17 per cent. This last identification may be a little doubtful, but the other nine oak-galls mentioned and characterized in a word or two by Theophrastus are easily and safely identified. The fact is that, great philosophic biologist as Aristotle was, Theophrastus was far ahead of him as an observer and recorder of species from a modern botanist’s point of view.

Sir Thomas Browne, in his notes on the “*Natural History of Norfolk*” (ed. T. Southwell, 1902), found on the oak just about as many galls as Theophrastus knew, and characterized them with equal skill. His “*Juli pilulæ*, little balls on the flower catkins”, are a form of the currant gall; his *excrementum lanatum* is a woolly gall; and his *capitula squamea jacece cemula*, “little scaly heads like the heads of knapweed”, are without doubt our hop or artichoke galls.

D. W. T.