varieties had been found with starch-filled pollen-grains, no seedlings of a cultivated type of sugar cane had ever been raised.

During the present season, more than eighty seedlings of Co. 301 and C.P. 34/79 were raised from seed collected from the field. In addition, a number of attempts were made at crossing different varieties. At the beginning of the season, Glagah was the only variety with fertile pollen. Crosses made with Glagah and the varieties Co. 205, P.O.J. 2803, Co. 312 and N: Co. 310 gave a total of 646 seedlings. In spite of the very severe drought during the later part of the season, which resulted in many inflorescences drying out before the seeds had matured, a few successful crosses were made. When Co. 301 was used as a male parent and crossed with Co. 281 and N: Co. 310, 129 seedlings were obtained; as all these varieties are in commercial cultivation in South Africa, some of their seedlings may prove to be well adapted to local conditions.

Overseas sugar cane breeding stations, upon the helpfulness of which South Africa has had to depend for supplies of seed, have few or none of the varieties which have been raised here from imported seed and which are likely to prove of value in further breeding work in South Africa. It would therefore be a great advantage if crosses using these varieties could be carried out locally, even though it should not prove possible to breed sugar cane seedlings on the same scale as is done in other countries.

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Pollen-Analysis of Lignite from the Kerguelen Archipelago

THE origin of the present flora of the sub-antarctic islands that comprise the Kerguelen Archipelago has been a frequent subject of discussion and speculation since the time of Sir Joseph Hooker.

An important contribution to this subject was provided in 1934 by Sir Albert Seward and Miss Verona Conway¹, when they described the collection of Tertiary plants discovered near Port Jeanne d'Arc by Dr. de la Rüe. They demonstrated that at least one species of *Araucaria* flourished at Kerguelen in company with other conifers provisionally referred to as *Elatocladus* and a few unassigned ferns and dicotyledons.

The lignites that occur at certain localities in Kerguelen (Mawson)² suggested themselves to me as a possible supplementary source of information regarding the Tertiary flora of this Archipelago. So that this avenue of approach could be tested, Sir Douglas Mawson very kindly supplied me with a sample of lignite collected by the B.A.N.Z.A.K. Expedition at Port Jeanne d'Arc.

Preliminary preparations made from this material show that spores and pollen grains occur abundantly and are in a satisfactory state of preservation for identification. Among these, several varieties of winged pollens of podocarpaceous affinities appear to predominate; pteridophyte spores are rather numerous but angiospermous pollens seem to be infrequent. Some large wingless grains that suggest comparison with araucarian pollens have also been observed.

The presence of podocarp pollens supports the recent suggestion put forward by Florin³ that the two forms of *Elatocladus* described by Seward and Conway were probably members of the Podocarpaceae.

Detailed identifications and descriptions will be published at a later date.

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¹ Seward, A. C., and Conway, V., *Ann. Bot.*, **48**, 715 (1934).

² Mawson, Sir D., *Abstracts of Proc. Geol. Soc. London*, May 19, 1933.

³ Florin, R. K., *Svenska Vet. Akad. Handl.* 3 ser. **19**, No. 2, 32.

Toxicity of D.D.T. to Man

IN view of the present interest in the possible toxic effects of D.D.T. on man and the importance of factual results, the following brief note on the work carried out by the R.N. School of Tropical Hygiene, Colombo, during the period December 1944–September 1945, may be of interest.

Investigations were carried out on fifteen men employed as a spray-operating team. Ten of these men had been employed continuously for a period of nine months and the other five for seven months. With the exception of one Tamil, all were Sinhalese.

The work of the unit consisted of spraying ships and shore establishments against infestation from mosquitoes, flies, bed bugs and cockroaches and of the routine spraying of R.N. establishments in Colombo for dengue control. Knapack type sprayers were used. The insecticide was a 5 per cent solution of D.D.T. in grade 2 kerosene, prepared by the operators in 40 gallon revolving drums. A mush was first formed in 4 gal. petrol tins, and this was tipped into the mixing drums to which was added the remainder of the kerosene. The men worked in pairs, one operating the sprayer for half the time while the other dealt with furniture and other loose or movable effects and vice versa. On average, a 24-hour (spraying time) week was worked.

Protective Clothing. At the beginning protective clothing was issued, consisting of blue overalls, cap, tropical A.R.P. oiled silk gas cape and gloves, gum boots and gauze mouth pads. In a very short time the men had discarded the gas capes, gloves and mouth pads on account of the intense discomfort from heat, while the gum boots were frequently removed during operations, particularly in ships and on slippery surfaces as the men greatly preferred working with bare feet. All the men wore their overalls open at the neck, and most of them

rolled their sleeves up. They washed their hands before the midday meal, and the majority of them washed all over at the end of the day under a cold-water tap in the open.

Degree of Exposure. The nature of the spraying, being mostly indoors and much of it in confined spaces, meant that the men were frequently working in a saturated atmosphere, while many of the sprayers leaked owing to the hard treatment they received and the difficulty in obtaining spares and replacements.

The hands, forearms and upper arms and, to a lesser extent, the faces and feet of the operators were constantly exposed to spray dripping from ceilings and splashing back from walls and to liquid solution leaking from the joints and nozzles of the sprayers. After a day's operations, a white frost of D.D.T. crystals could be seen on the exposed portions of the skin, while the overalls were frequently saturated. All attempts at making the men wear other types of protective clothing failed owing to the heat.

Clinical and Physiological Investigations. Each man was questioned as to his general fitness and received a full clinical examination. Liver function was estimated by the oral hippuric acid synthesis test, haemoglobin estimations, red- and white-cell counts including differential white-cell counts, examination of urines for abnormal constituents and of stools for parasitic ova, worms and cysts were also carried out. Similar investigations were conducted upon a control series of Sinhalese of comparable age and from the same localities.

The clinical and special investigations and the general demeanour and labour output of the men indicated that no ill-effects whatsoever had been incurred from the prolonged exposure of the skin to the solution and from working in confined spaces in a mist of spray. The operators were keen on their work and a considerable *esprit de corps* existed. Absenteeism seldom occurred.

Detailed findings and a description of the work and environment of the operators will be published shortly in the *Bulletin of Entomological Research*.

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Plasma Iron in New-Born Babies

IN an isolated observation, Moore *et al.*¹ found that a new-born infant had a serum iron of 247 γ /100 ml., while the mother at the same time had a serum iron of 58 γ /100 ml. This finding seemed to us sufficiently interesting to justify collecting further data on serum iron in new-born infants. Venous blood from the mother, and blood from the placental end of the newly cut umbilical cord, were used, and plasma iron was estimated by the thiocyanate method², using a photo-electric colorimeter for the final colour measurement. The results shown in the accompanying table were obtained from ten full-term infants and their mothers, of whom five were anaemic:

Number	Race	Maternal haemoglobin (gm./100 ml.)	Maternal serum iron (γ /100 ml.)	Fœtal serum iron (γ /100 ml.)
1	Indian	11.2	130	173
2	"	11.2	277	207
3	European	—	73	275
4	"	11.2	13	67
5	Indian	11.2	233	299
6	"	4.6	130	173
7	"	9.0	190	170
8	"	7.6	123	137
9	"	7.6	70	207
10	"	8.7	77	87

In eight of the ten pairs of results, the foetal serum iron was higher than the maternal; of the two exceptions, in No. 2 the value for the maternal serum iron was very high, and contamination may have occurred, while in No. 7 the infant had hydrocephalus and spina bifida, and may have been otherwise abnormal.

Although serum iron is probably bound in some way to proteins, the explanation of the higher foetal serum iron does not lie in a different serum protein level; for maternal and foetal serum proteins were estimated in six of the ten cases, and showed no significant difference. There is some evidence that the 'turnover' of blood in the foetus approaching term is rapid, for the haemopoietic tissues are active, and at the same time the icterus index is high³; and the slight increase in serum iron might be of the same nature as that found in some cases of haemolytic anaemia. Alternatively, the raised serum iron might be a reflexion of rapid passage of iron from mother to foetus, which is said to occur mainly in the last month of pregnancy; it is of interest in this connexion that in a five months abortion, not included in the table, the maternal iron was 142 γ /100 ml. and the foetal only 95 γ /100 ml. From a more general point of view, these results add iron to the long list of substances the concentration of which is different in maternal and foetal bloods⁴.

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¹ Moore, C. V., Doan, C. A., and Arrowsmith, W. R., *J. Clin. Invest.*, **18**, 927 (1937).

² Powell, J. F., *Quart. J. Med.*, **13**, 19 (1944).

³ Whitby, L. E. H., and Britton, C. J. C. "Disorders of the Blood" (London, 1942).

⁴ Needham, J., "Biochemistry and Morphogenesis" (Cambridge, 1942).