

into *Xenopus* embryos. Larsen discusses gap junction population dynamics, and the roles of the gap junction in oocyte maturation and in secretory epithelia are the subject of contributions by Beers and Olsiewski and by Peterson respectively.

The book is completed by six papers on electrotonic synapses. Electrical interactions and synchronization of cortical neurones are discussed by Dudek and Snow. Llinas deals with the role of the electrical synapse in the mammalian central nervous system. Bennett *et al.* discuss the interaction of electrical and chemical synapses. The crayfish rectifying synapse is the subject of the paper by Giaume and Korn, and the effects of neurotransmitters on electrical synapses are presented by Neyton *et al.* and by Lasater and Dowling.

As one has come to expect of books published by Cold Spring Harbor Laboratory, the book is well produced if expensive. In my opinion it is a volume which no laboratory carrying out work in the area of gap junctions can afford to be without. Indeed, I had already bought a copy for use by my group before being offered my review copy. Would anyone like to make me an offer for a second-hand volume in mint condition?

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Frequencies of Hemoglobin Variants. By FRANK B. LIVINGSTONE. Oxford: Oxford University Press. 1985. 526 pages. £29.00. ISBN 0 19 503634 4.

Ever since the discovery by Pauling in 1946 that sickle cell anaemia was a disease that could be explained entirely in terms of a mutant protein, the haemoglobin (Hb) loci have been at the forefront of advances in human biochemical genetics. At the last count there were more than 400 known Hb variants, while amongst the alpha- or beta-thalassaemias (syndromes with deficient alpha- or beta-chain synthesis) some fifty to sixty separate point mutations have been described. If one includes the glucose-6-phosphate dehydrogenase (Gd) locus with its 250 known mutants, one has a set of red cell polymorphisms and rare variants which show remarkable heterogeneity. And yet the frequencies are all determined to a greater or lesser extent by heterozygote advantage in the face of the falciparum malaria parasite.

Interest in population and racial frequencies of the Hb and Gd variants comes mainly from anthropologists and others studying the migration patterns of ethnic groups. Thus, the frequency of *Hb S* genes amongst American blacks shows that they probably come from three major areas in Africa: Benin in Nigeria, Central Africa and Senegal. Hb E is found at

high frequencies to the east of Calcutta, *Hb S* to the west; the border of these distributions corresponds to the major ethnic interface between Indo-European speakers to the west and Tibeto-Burman speakers to the east. The virtual absence of red cell variants amongst Amerindians confirms their migration from the Bering Strait into a malaria-free world.

The collecting and cataloguing of human genetic variants is a valuable but thankless activity. Mourant and his colleagues did it for the blood groups and other red cell and plasma polymorphisms. The second and (probably) last edition of *The Distribution of Human Blood Groups* appeared in 1976, and could not have made much profit for Oxford University Press. It is to this publisher's credit that they have again performed a service in supporting another huge compilation of essential genetic data.

The raw statistics of Frank Livingstone's book tell their own story. He has surveyed the Hb and Gd variants and the incidence of thalassaemia, ovalocytosis and Gd deficiency in 150 different ethnic and geographical groups around the world. There are over 8000 entries set out in dictionary-style, and no less than 2000 references. One imagines that it is all there. My only criticism is that he might well have followed Mourant's lead and imposed some meaning on the data by setting them out in maps or flow-charts of migration.

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Essential Medical Genetics. By J. M. CONNOR and M. A. FERGUSON-SMITH. Oxford: Blackwell Scientific Publications. 280 pages. 1984. £7.50. ISBN 0 632 01331 1.

There are at present some 40 genetic counselling centres in Britain (compared with 450 in the USA), and this number, though rising, appears to be still inadequate. In the West of Scotland the authors counsel about 1000 families annually from a population of 3 million, and consider that another 2000 families need genetic counselling, of whom 'a substantial number' do not receive it.

In the UK the Congenital Disabilities (Civil Liability) Act of 1976 means that legal action can be brought against a person whose breach of duty to parents results in a child being born disabled, abnormal or unhealthy; so medical practitioners need training in medical genetics – at least to the stage where they can recognise problems which need referral to a clinical geneticist, though preferably not to the stage where they consider they know all the answers themselves. Most medical and dental training now includes a course in medical genetics, and this book is designed for such students, based on the teaching and counselling experience of the authors in Glasgow.

The first 10 chapters (120 pages) cover the basic