but comprehensive and is written by world
experts. It is provided with a wealth of
apposite and readily understood graphs,
tables and references. It has four chapters on
measles, five on rubella and five on general
immunisation policy issues with a foreword
by Gruenberg who has been a very good
editor of a multi-author book; but I won-
dered who wrote chapter 1 on the Epi-
demiology of Measles and its Complications
which has 20 pages one quarter of which are
taken up by diagrams and tables but has
eight authors!

I can heartily recommend this book to all
health workers and to administrators and
politicians who will be given a clear ex-
position of the problems relating to the control
of measles and rubella and of the interaction
between clinicians, laboratory workers, epi-
demiologists, other health workers and the
politicians which is necessary to make immu-
isation for all children in the world at least
an aim, if not a reality, by the year 1990.

GEORGE DICK

The Neurobiology of Gangliosides. Edited by
Alfredo Gorio and Bernard Haber. (Pp 396;

Regeneration and plasticity of the nervous
system is not a generally recognised phe-
nomenon particularly within the brain.
Neuronal membranes contain high concen-
trations of nerve growth factors known as
gangliosides but these are not thought to act
once maturation of the nervous system has
occurred. However, the Neurobiology of
Gangliosides contains a series of papers de-
tailing the ability of these substances to
stimulate neuronal growth and sprouting
and to be of use in the regeneration of dam-
aged brain areas.

Initial chapters deal with the biosynthesis,
isolation and characterisation of gangli-
oses. Subsequent contributions show the
ability of ganglioside preparations to stimu-
late neuronal growth and repair in a variety
of cell lines. This is followed by details of the
biophysical interaction between ganglioses
and membranes. All of these parts of the
volume are highly specialised and serve to
introduce the applications of ganglioses to
central nervous system repair.

One component of the ganglioside mix-
ture extracted from neuronal membranes
namely, the monosialo-ganglioside GM-1
appears particularly useful in brain regen-
eration. GM-1 applied exogenously may be
incorporated into neuronal membranes and
induce neurite growth. This material
features in later chapters as capable on
peripheral administration of inducing neu-
rochemical and behavioural restoration of
deficits induced by experimental lesions of
the brain. Indeed, a double blind study of
the effects of GM-1 in stroke are contained
in a later chapter suggesting beneficial
effects.

It seems difficult at first sight to accept
that the peripheral administration of gangli-
oses can induce a regeneration of the adult
central nervous system. However, the evi-
dence is compelling, but readers must judge
for themselves. Overall, an interesting but
specialised volume to be recommended to
those involved in this field.

P JENNER

Magnetic Resonance Imaging (Principles and
Applications). By: DM Kean and MA Smith.
(Pp 164; £27.50.) London: William Heine-
mann Medical Books Ltd, 1986.

In the six years since the first Magnetic Res-
onance Imaging (MRI) studies of the head
there have been dramatic improvements in
the technique for imaging the body in gen-
eral and the CNS in particular. The number
of MRI facilities continues to grow and as it
does so this will alter the practice of clinical
investigations as well as remaining a re-
search instrument.

This book provides a useful introduction
to clinical MRI and covers the fundamental
principles of Nuclear Magnetic Resonance
(NMR) and the constituent parts of the MRI
system. The format of the book is straight-
forward and the order logical with each chapter
following on from the one before, begin-
ing with the physical principles, cov-
ering the machinery and instrumentation and
finally the clinical imaging and its appli-
cation. More than half the text in concerned
with general principles and the second half
addresses more specific aspects of imaging in
various parts of the body.

Although the theory of NMR is not
difficult to grasp at a basic level the prin-
ciples involved in the manipulation of the
NMR signal for image production are com-
plex for those untrained in physics. In partic-
ular two dimensional Fourier trans-
formation, frequency encoding and phase
encoding of a sample may be new areas for
the clinician and these are explained usefully
and clearly by means of text and diagram.

Some of the most difficult aspects of MRI
for the uninitiated are the mechanisms of
generation signal and contrast in the image.
Contrast and relative signal intensity from
the various parts of the image are difficult to
predict because there are several parameters
which determine the signal intensity: most
notably the proton density and the relax-
ation times T1 and T2 of the protons in any
given area. Furthermore, there are several
possible imaging sequences, the most widely
used being saturation recovery, inversion
recovery and spin echo. The appearance of
the image (relative signal intensity from the
various areas within the image) is different
for each of these as they have different
dependence on the three main imaging
parameters. The inversion recovery
sequence is usually made T1 dependent and
the spin echo is usually more T2 dependent
although all of the imaging parameters will
contribute to the signal intensity in each of
the three sequences. The relative signal
intensity from a given area with any one of
these pulse sequences can be markedly altered
by altering the timing intervals within a given
pulse sequence. This book goes some of the
way to explain these concepts and enabling
some predictions to be made about the opti-
mal pulse timing intervals for imaging vari-
ous tissues. The issue is, however, com-
plicated further in that the optimal pulse timing
intervals will vary between systems oper-
ating at different magnetic field strengths.
The book partly explains these problems of
clinical imaging but unlike many of the other
aspects the book covers this particular angle
would benefit by further examples of clinical
images.

Although most of the introductory text
on MRI include sections on the equipment
and the magnets this is often superficial to
the needs of the clinician and of much less
interest than the images themselves and this
point is certainly not laboured in this book
which is very much to its advantage. Simi-
larly, only the clinically relevant aspects of
site planning and of the MRI environment
are discussed with particular reference to
imaging artefact and the safety of patients
and personal effects.

Clinical imaging of the nervous system is
discussed as this was one of the first areas in
which MRI was found to be useful. MRI
possess certain technical advantages over
CT x-ray scanning, in particular the absence
of known bio-hazard, the ability to obtain
direct coronal and sagittal images and the
absence of bone artefact make it particularly
suitable for imaging the CNS. It is in the
areas in which CT scanning has had the most
difficulty that MRI is the most useful. In
demyelinating disease, lesions in the poste-
Book reviews


"This book is the successor to Tredgold's textbook...." asserts Professor Bicknell in the opening sentence. "However", she continues, "...the replacement of the medical model by the multidisciplinary approach has caused us to produce an entirely new book." One can only agree that with three editors and forty contributors, this book bears little resemblance to the original Tredgold. Is it, though, an entirely new book?

Tredgold, writing in the early years of this century, was concerned mainly with description of the variety of "syndromes" which had mental handicap as their common feature. Later editions increasingly recognised differing degrees and types of disability, and the postulated aetiologies largely reflected the prejudices and concerns of the era. In that sense Tredgold defined the current state of the art, and that is no less true of this present volume. Gone is the rigid categorisation of mentally handicapped persons according to supposed aetiology; instead there is a comprehensive overview of the various elements (education, health and social services) which together make up a modern service. For maintaining a fairly consistent style throughout the book and avoiding glaring overlap between chapters, the editors are to be congratulated. The impressive quality of the proof-reading is another plus.

Broadly speaking, the major topics covered are service organisation, legal aspects, individual aspects (including aetiological considerations) educational issues and intervention strategies. Service organisation is presented, probably appropriately, in a fairly descriptive manner and the concept of normalisation in the delivery of human services is introduced as a general theme of the text. As a sophisticated discussion of public policy development, I particularly liked Malcolm Johnson's chapter; his comment "Mental handicap policy probably represents the most radical and coherent thrust for positive change to be found on the UK scene" illustrates the quality of his thought.

Of particular interest to the practising professional, the chapters on Intervention take the Community Mental Handicap Team as the central element of service provision, and draw together the variety of contributions of the different members. Overall, I think the authors succeed in this notably difficult task. In Chapter 24, Hollins hints at the difficulties of achieving successful teamwork, but unfortunately has little space to elaborate on team building skills. Perhaps that topic is worth a textbook all of its own!

Further positive aspects of this volume include the attempts by all the authors to support their conclusions with detailed references to the literature, and the descriptions of North American practices in community care and special education. Unfortunately, like any textbook, this too has its weakness. Most notable is the (presumably deliberate) avoidance of serious controversy. Perhaps that is the price to be paid for having an overall coherent thrust. Even so, some discussion would surely be warranted of the inevitable conflict and compromise implicit in public policy formulation: an example would be the dialectic between vaccine damage compensation for the few and the need to attain agreed minimal standards for the many. Smaller criticisms include lack of discussion of the economic costs of change and the comparative lack of pointers towards future research.

Overall then, this is a textbook of interest to a number of professional groups and those responsible for service planning and the allocation of funds. It is not a "hands on" book in the sense of telling a newly appointed professional how to begin. Perhaps a good beginning would be to read this book!

The broad scope of this book is, I feel, at once both its strength and its weakness. On account of its general interest, this book will find a place in the libraries of Community Mental Handicap Teams and specialised professional workers. What though of the needs of psychiatrists specialising in, or having a special interest in, the psychiatry of mental handicap? This was after all the target audience of Tredgold's original textbook. For them, apart from a valuable overview of the current scene, this book has comparatively little to offer. Of most direct relevance is Chapter 28 by Andrew Reid, but this essentially just summarises his own paperback on the subject. Nowhere is to be found the detailed approach to history-taking and mental state examination appropriate to the mentally handicapped person and their family. One is left no wiser about, for example, the recognition of a mood disorder in an autistic person or the specific clinical signs of a dementing illness in a person with Down's Syndrome. Of course, Reid alludes to those in general terms, but not in anything like the detail required by the doctor in clinical practice. As far as I can see, such a book has yet to be written. If, when it is, it will become the true successor to Tredgold, in theme, if not in lineage.

LB CAMPBELL


At first sight thepineal does not look very exciting, but being in the middle of the head it has long been considered to have some central function. The isolation of the pineal hormone melatonin by Aaron Lerner in 1958, and the anatomical studies which have identified a retinal-suprachiasmatic nucleus-pineal pathway have been major achievements of modern neurobiology. The pineal of lower vertebrates has been revealed as an endocrine organ, a biological clock, and the classical "third eye", whilst that of higher mammals has been shown to function as a sensory organ that detects photoperiod. A modern caesium atomic clock has an error of less than 0-00001 s/day, but cannot adjust to the outside world; in contrast, the mam-

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