
BOOK REVIEWS

Observations of Comets: From 611 B.C. to A.D. 1640, by John Williams, (Published by Science and Technology Publishers Ltd., 33, Woodlands Avenue, Hornchurch, Essex, RM11 2Q7, UK), Year of publication: not given, Price: £ 52.

This is a reprint of the book first published in 1871. Though the name of the publisher of the first edition is not given, it is mentioned that it was printed for the author by Strangeways and Walden, London.

As the title indicates it is the recording of the comets observed in China over a two thousand year period. The data was extracted from the "Chinese Annals" and translated into English. John Williams, the author of the book, who was the Assistant Secretary of the Royal Astronomical Society explains in his preface how he was led to carry out the compilation of this work.

To clarify certain doubts raised by the Astronomer J. R. Hind who had taken up the study of the connections between the orbits of certain comets and those of the periodical Meteors, John Williams examined the original text of the supplement to the Encyclopedia of Ma Twan Lin and M. E. Biot's catalogue "Catalogue des comets observees en Chine depuis l'an 1230 jusqu'à l'an 1640 de notre ere, &c" which is a supplement to the 'Connaissance des Temps'. In doing this, the author says "... I quickly found, that although very accurate in its details, it (Biot's Catalogue) was by no means so complete as could be wished; many comets being recorded in the 'Encyclopedia' of Ma Twan Lin and in the great historical work called the 'She Ke' that are not noticed by him. It therefore appeared to me, that a catalogue comprising the whole of the observations in the two Chinese works just mentioned, translated from the original, and arranged chronologically with an explanation of all the particulars connected with them, might be of some service to astronomers, particularly those engaged in cometary researches".

In his introductory remarks the author gives a brief account of early Chinese Astronomy which will be of interest to historians of Science as well as those pursuing research in Cometary Astronomy. The text portion of 94 pages lists 372 comets observed, the first one in July 611 (B.C.) and the last one on May 12, 1621 (A.D.). One of the typical entries found is: 370 A.D. 1618 November 24.

In the 46th year of the same epoch, the 9th Moon, day Yih Maou, a white vapour was seen in the south-east. It was about a cubit in width and 20 cubits in length. It extended from the East to the West of S.D. Chin. It entered S.D. Yih and after 19 days it disappeared.

S.D. Chin determined by β , &c. Corvi. Yih, α and others in Crater.

The Appendix gives tables for reducing Chinese time to European reckoning (different Chinese Dynasties are chronologically listed), and a Chinese Celestial Atlas.

The book printed elegantly on cream cartridge paper and hardbound is certainly interesting and will be useful to both historians and current research workers in Astronomy. It is recommended for all libraries, but it must be mentioned that the present publishers have failed to give the year of publication of this edition anywhere in the book. For various reasons the year of publication is an important piece of information and becomes more so as time passes by. It is especially ironic that the publishers should have been guilty of just such an oversight in the bringing out of a book whose value is totally based on the precise dating of events spanning over two millennia.

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Annual Review of Medicine, 1987, Vol. 38, pp. 360, (ed.) William P. Creger, (Published by Annual Reviews Inc., 4139, El Camino way, Palo Alto, California 94306, USA), Price: USA \$ 31, Elsewhere \$ 34.

There are 40 chapters on different topics in the book which is in conformity with its earlier editions. The book starts with the Chapter on Antiarrhythmic drug selection by Phillip J. Podrid, rightly emphasizing the importance of systematic approach in the selection of antiarrhythmic drug. Considering the enormous consumption of anxiolytic drugs in recent times, Malcolm Lader has contributed a chapter on Clinical pharmacology of benzodiazapines. Similarly topics like the treatment of infertility by Henry G. Burger and H. W. Gordon Baker, Interferon for the

treatment of infections of Monto HO, clinical utility of biochemical assays in psychiatry by John M. Davis; Leukocyte adhesion deficiency — inherited defect by Donald C. Anderson and Timothy A. Springer, Treatment of diabetic retinopathy, Everett Ai and Patrick Coonam are not only appropriate but exhaustive. Lawrence S. Cohen has contributed an interesting article on the results of Coronary by-pass surgery. The chapter on Irritable bowel syndrome by Thomas P. Almy and others have convincingly discussed the psychoneurotic personality traits in patients with irritable bowel syndrome. The role of digitalis-like factor that inhibits (Na + K) ATPase in the causation of systemic hypertension is well brought out by S. W. Graves and G. K. William in the topic on Endogenous digitalis like natriuretic factors. Detailed informations are given by Tom Jaksic and John & Burke on the use of artificial skin. There is a separate chapter on IGA Nephropathy by A. R. Clarkson, A. J. Woodroffe, I. Aarons, Y. Hiki and G. Hale who are themselves eminent specialists in various disciplines and who have taken immense pains in bringing out this excellent book. The information is exhaustive and comprehensive. As a convention, literatures are cited at the end of every chapter for further references. The book would be useful to the students in general and research workers in particular.

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Annual Review of Neuroscience, 1987, Vol. 10, pp. 716, (ed.) W. M. Cowan, (Published by Annual Reviews Inc., 4139, El Camino Way, Palo Alto, California 94306, USA), Price: USA \$ 31, Elsewhere \$ 34.

This year's volume is much bigger than that of last year and contains nineteen reviews. The first two chapters are on historical perspectives of the outstanding developments, the first on discovery of neurosecretion (from the beginning to the present directions in neuropeptide research) by Berta Scharrer (USA) and the second on discovery of central monoaminergic neurotransmission by Arvid Carlsson (Sweden). Mrs Berta Scharrer reveals interesting insights into making of probably one of the greatest discoveries of the century in neuroscience, and it is inspiring to hear about it directly from the one who participated in it along with her husband

late Ernst Scharrer. Ernst reported in 1928 "Gland-like nerve cells in the hypothalamus of a teleost fish" at a time when no one ever even dreamt of such a possibility for neurons. Similarly, the chapter of Carlsson will also be inspiring to the new neuroscientists, as he has unfolded the excitement of development of techniques of spectrofluorometry and histofluorescence and their applications culminating in the visualisation and mapping of neurons containing monoamines and several other consequential developments. The personalities involved in this drama were the late Hillarp, Udenfriend, Falck, Fuxe, and many others. Neuroscience has become one of the most rapidly expanding areas, among all sciences, during the past decade. Hence, these reviews will be of great value in revealing some of the foundations that have led to the current explosion of neuroscience and its applications.

The volume contains, as usual, reviews contributed by established authorities in respective fields of neuroscience. It is not appropriate to single out some reviews, as all are equally outstanding.

Recent work on molecular biology of visual pigments that convert a photon stimulus into a neuronal signal has been reviewed by J. Nathans, on actions linked to muscarinic cholinergic receptors (inhibition of cAMP, increase of cGMP and phosphatidylinositol turnover) by N. M. Nathanson, on nicotinic cholinergic receptors by S. M. Schuetze and L. W. Role, on toxins of voltage-gated sodium channel by G. Strichartz, T. Rando and G. K. Wang, and on the action of calcium in transmitter release by G. J. Augustine, M. P. Charlton, and S. J. Smith. These reviews deal with the recent advances in membrane molecules involved in signal transduction process.

The genetic basis for neurological diseases has been comprehensively covered by X. O. Breakefield and F. Cambi. The review deals with genetic, molecular and neurochemical studies on Huntington's disease, Wolf-Hirschhorn syndrome, Duchenne muscular dystrophy, familial dysautonomia, nerve growth factors, neural tumors (retinoblastoma and neuroblastoma genes), amyloid neuropathies, Alzheimer's disease, Pelizaeus-Merzbacher disease, and Lesch-Nyhan syndrome. Neuron specific protein enolases (soluble glycolytic enzyme) and their clinical usefulness as markers of nervous system damage in certain diseases (stroke, head trauma, neuroblastoma and neuroendocrine tumours) and their predictive or prognostic value have been reviewed by P. J. Marangos and D. E. Schmechel.

Recent understanding in neuroscience of fever has been reviewed by K. E. Cooper.

Molecular mechanisms of memory involving modifications of protein kinases have been reviewed by J. H. Schwartz and S. M. Greenberg. T. J. Teyler and P. DiScenna reviewed the probable mechanisms involving calcium, catecholamines, opiates and protein synthesis in causing long lasting change (potentiation) in the post-synaptic responses to afferent inputs and consequent alteration in the mnemonic function of brain.

Neural processing in hind brain related to gustatory function has been discussed by J.B. Travers, S. P. Travers and R. Norgren, processing of visual signals in extrastriate cortex has been discussed by J. H. R. Maunsell and W. T. Newsome, and processing of chemo-signals by accessory olfactory, vomeronasal system has been discussed by M. Halpern.

The volume contains three chapters in general neuroscience of complex subsystems: one on visual processing of motion and sensorymotor integration ("Much of our motor activity is guided by what we see, with a final goal of grasping or tracking an object.") by S. G. Lisberger, E. J. Morris, and L. Tychsen, another on modulation of thalamo-cortical system by recently discovered extrathalamic cortical projections of cholinergic, noradrenergic, dopaminergic and serotonergic neurons by S. L. Foote and J. H. Morrison, and the third by E. I. Knudsen, S. de Lac and S. D. Esterly on principles of transformations in reception of information and formation of "maps" in the brain and in programming behavioural actions.

The Annual Review of Neuroscience will certainly be of outstanding value for study and reference for all those working in different areas of basic neuroscience and in all other specialities on brain.

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Rothamsted Experimental Station: Report For 1986
Published in June 1987 Lawes Agricultural Trust,
(Published by Rothamsted Experimental Station,
Harpendon, Herbs AL5 25Q, UK), Price: 12.00£,
Post free, Obtainable from the Librarian. pp. 341.

The report is in two parts. Part I deals with general report, multidisciplinary agronomy, divisional re-

ports, soil survey of England and Wales.

The occurrence of the perfect stage of *Pyrenopeziza brassicae* within the crop may be an important finding in the etiology of light leaf spot of brassicas. The dispersal of ascospores from an infected crop was previously reported from the debris of brassicas from fields of New Zealand and Ireland.

The heavier soils under cereals in Eastern England often contain between 60 and 120 kg ha⁻¹ of nitrate nitrogen in top 9 cm. A major problem seems to be to devise strategies to control either the mineralization of nitrate in autumn or perhaps more importantly in the short term to ensure that soils with large amounts of nitrate in them are left fallow during the autumn and winter period when leaching of large quantities of nitrate will almost certainly occur.

The sludge-treated plots had more total organic matter but less microbial biomass than FYM treated soils and this is possibly due to heavy contamination with various metals. Blue green algae grew poorly and fixed little atmospheric nitrogen in the sludged soils and nitrogen fixation decreased by 50% in soils containing metals at about half the extractable Zn equivalent limit and 0.8 times the total cadmium limit of 3.5 µg Cd g⁻¹; soil. These findings have implications for long-term fertility of the soils which are now being treated with sewage sludge. There is an urgent need to reconsider not only the growth of agricultural crops in these soils but also the growth and function of the microbial populations especially their ability to support legumes. Chlorsulphuron, a sulphonyl urea applied to winter barley has affected sugarbeet at Broom's Barn. Nationally some crops were severely affected by the residues of this herbicide. Apparently, the manufacturers have now withdrawn recommendations for its use in cereals that are to be followed by any broad leaf crop except oil seed rape. The weed research unit of Log Ashton Research Station based at Broom's Barn is starting field and laboratory experiments to provide the necessary data and is developing bioassay methods for the residue detection. Pathogen related proteins (PR) serologically related PRs from Xanthine have now been found in a wide range of hosts of agricultural importance including cereals, forage legumes, potato, tomato and sugar beet.

Biochemical techniques for the taxonomy of plant parasitic nematodes are being developed. The techniques are less subjective and have the potential to separate species complexes. So far, work has concentrated on using high-resolution isoelectric focus-

ing of nematode proteins to identify species of cyst and root knot nematodes. Electrofocusing technique with ultrathin agarose sheets has enabled the successful use of the technique to characterize species-specific proteins through enzyme-linked immunodetection assays.

The parasitic mite *Varroa jacobsoni* is the cause of loss of many honey bee colonies in Europe and continent. Previous work indicates that death of infested colonies is associated with acute paralysis virus (APV) and this contrasts with the findings in Britain where the mite does not occur and APV has not been associated with field mortality of honey bees. With Aphid resistance immunoassay or DNA probes for the proteins or genes responsible for resistance in *Myzus persicae* are being examined. The suitability of Rothamsted immunoassay for resistance conferring enzyme in the aphid is being used fairly accurately.

Potato somatic hybrids are now being produced by electrofusion which method apparently is giving higher frequency of protoplast fusions than the chemical methods by at least 4 or 5 times.

In the Crop Protection Division work on *Erynia neoaphidis* the aphid entomogenous fungus is in progress. The earthworm *Eisenia foetida* is being used for assessing the heavy metal contamination and bioavailability in soils.

Variants used to replace the central ester group in pyrethroids have now been extended to central units containing ketonic groups. Work on the compounds that influence the behaviour of the invertebrates is in progress. Preliminary field trials of the plant extract derived antifeedent (-)-polygodial against aphid-borne barley yellow virus are being extended to a range of other pests.

A number of new species of plants, particularly the family Labiatae are being investigated. The most active so far examined is the ground pine *Ajuga chamaepitys* containing 14-hydroxy-15-hydroxy ajugapitin.

Part II of the report contains sample survey work of the statistical department which began before the 1939-45 war. Information from recent fertilizer survey on the timing of N application to winter cereals is summarized. This part also deals with synoptic monitoring for immigrant insect pests in Britain and western Europe; a review of the activity during 1965-1986 at Saxmundham Exp. Station; use of fertilizers in England and Wales; 18th Annual survey of Rothamsted Insect Survey; weather tables and maps of the farms.

The report is most useful for agricultural research workers and institutions.

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Vegetable and Flower Seed Production by D. K. Salunkhe, B. B. Desai and N. R. Bhat, (Published by Agricole Publishing Academy, 208, Defence Colony Flyover, New Delhi 110 024), 1987, pp. 486, Price: Rs. 300 or \$ 60.

Scientific methods of vegetable and flower seed production are still in their infancy in India. With the proliferation of seed companies and several agricultural universities offering courses in seed technology, this book satisfies the long felt need.

The first five out of the 18 chapters deal with vegetable and flower seed growing business and industry, morphology and development of seed, vegetable and flower seed production, basic principles and post-harvest bio-technology of vegetable and flower seed production. The chapters on morphology and development of seeds and basic principles of seed production are informative and make smooth reading.

The science of vegetable seed production is presented in ten chapters: (i) tomato, pepper and egg plant, (ii) carrot, celery, parsley and parsnip, (iv) lettuce, endive, salsify and chicory, (v) cucurbits, (vi) leguminous vegetables, (vii) crucifers, (viii) chenopods, (ix) sweet corn and popcorn and (x) minor vegetables. This format is probably based on the book by L. R. Hawthorn and L. H. Pollard, (1954) which has the same title. Details under each crop include botany, breeding, methods of seed production (cultural aspects, pests and diseases and post harvest operations). Rearrangements of crops based on priorities would be useful for Indian workers.

Detailed and critical information on hybrid seed production including the use of male sterility, incompatibility, hybrid seed yield, choice of parents, economics is expected from a book on seed production. Besides these, it is suggested that the revised edition could also include seed standards, isolation distances for breeders', foundation and certified seed, main characteristics to be observed in various stages of roguing, triploid watermelon,

synthetics in cauliflowers and chromosome numbers of crops besides important varieties in India.

The chapters on flower seed production include commercial flower seed production, seed production of biennial and perennial flower crops and production of plant materials in vegetatively propagated plants. The list of flower crops included, is vast. However, the following need inclusion: roses, tuberose, chrysanthmum, crossandra, barleria and jasmine. Information on tissue culture which is one of the commercially used method of propagation, especially in gerbera, orchids and anthuriums could find place in later editions.

This could be useful as a reference book.

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Symbiosis: An Introduction to Biological Associations by V. Ahmadjion and S. Paracer (Published by University Press of New England, 3, Lebanon Street, Hanover, New Hampshire 03755, UK), 1986, pp. 212, Price: £26 or \$39.

Symbiosis is the association of organisms that are members of different species. In the Foreword to the book under review, Lynn Margulis writes "It is a pervasive fact of living world. In spite of its importance to bacteriology, physiology, ecology and evolution, however, mainstream biologists working in these subsiences have tended systematically to ignore symbiosis as a principle worthy of investigation. The authors of this book have returned our attention to all of the significant associations between members of different species". This, they have done through 13 chapters dealing with viral associations, bacterial associations, symbiosis and the origin of the eukaryotic cell, fungal associations, protocistan symbiotic associations, helminthic associations, plant symbiotic associations, behavioural and social associations, and symbiosis and evolution.

The style of the book is narrative and easily understandable and the emphasis is on the wider coverage rather than deep details. In the preface, the authors say, "One of our goals was to place together in one text the many facets of symbiosis, ranging from classical observations to modern ex-

perimental approaches of molecular biology, to enable the reader to fully appreciate the vastness of the subject. Another goal was to develop in biologists, a better understanding and recognition of symbiosis". They have succeeded admirably in meeting both goals. The book comes complete with an appendix dealing with historical landmarks in symbiology, a glossary and an index. Each chapter gives review questions, suggestions for further reading and a bibliography. Besides being a good text book, 'Symbiosis' will also serve as a very good source book for those interested in numerous types of interactions between different forms of living systems.

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Annual Review of Pharmacology and Toxicology 1987, Vol. 27, pp. 460, (Published by Annual Reviews, Inc., 4139, El Camino way, Palo Alto, California 94309, USA), Price: USA \$ 31, Elsewhere \$ 34.

The twenty chapters included in this volume cover many frontier areas in pharmacology and toxicology. One, however, misses the autobiographical prefatory chapters which were features in earlier volumes although their absence is compensated to an extent by the exceedingly interesting review of reviews by Leong Way who touches on the politics of animal welfare and research and the emotional activist movement to curb the use of animals in experimental work. In the section of the review of reviews one gets glimpses into the human side of the master-apprentice system underlying great biomedical discoveries. Examples cited are Bernard Brodie - Julius Axelrod, Julius Axelrod-Solomon Snyder, Solomon Snyder - Candace Pert. It is very comforting to learn that although all these four scientists "evinced sparks of genius, they did not always excel in the class room. Brodie was a high-school dropout. Axelrod never received A's in science courses and all his applications to medical schools were rejected". The genealogy of four academic generations reveals an elite group that made major breakthroughs in biomedical science with a common link of "unbounded enthusiasm for science and an ability to impose unusual demands on their students, whether dictatorially, benevolently, psychologically or exuberantly".

The chapter on inhibin surveys the current state of our knowledge of this interesting regulatory molecule isolated from porcine, bovine and human follicles and its feed-back effects on gonadal steroids. From the simple polypeptides isolated from seminal plasma to the dimer glycoprotein with disulphide bridges isolated from follicles, inhibins are associated with spermatogenesis.

Luster, Dean and Blank discuss the molecular basis of chemically-induced immunotoxicity with reference to polycyclic aromatic hydrocarbons, polyhalogenated aromatic hydrocarbons, heavy metals, pesticides, aromatic amines, estrogenic xenobiotics, benzene and pulmonary irritants. The adverse effects on the immune system, presumably through disruption of cell maturation processes, constitute only the "tip of the iceberg" and require more intense studies to evaluate the risk of these xenobiotics to human health.

The emergence of the discipline of pharmaco-epidemiology by the marriage of clinical pharmacology and clinical epidemiology especially after the advent of teratogenic drugs is outlined by Strom indicating possible wider use of data-bases on drug safety and drug efficacy in addition to drug toxicity.

Campanella, Roy and Barbean reviewing the state-of-art of drugs for movement disorders, particularly, Parkinsonism, give a very optimistic picture of L. DOPA, anticholinergics and penicillamine. In regard to the therapeutic management of Parkinsonism, the authors have discussed extensively the long-term scenario of Levodopa syndrome. Although chronic neurological movement disorders can be treated now, there is need for greater appreciation by the physician of the pharmacological properties of the powerful drugs in use currently because of the need for use of these drugs for several years.

The use of polymer materials of the elastomers and plastics types has been greatly beneficial for human health. Toxic starting materials like monovinyl chloride or plasticizers such as phthalate esters are used in their manufacture and have therefore

necessitated their careful safety evaluation. The problems encountered in such studies have been presented by Darby.

Many drugs, diseases and physiologic states are now known to be associated with increased or decreased numbers of receptors for the catecholamine group of neuro-transmitters. The receptors for epinephrine and nor-epinephrine are divided into four sub-types based on agonist and antagonist potencies for a variety of physiological responses. There is very little known about the turnover of the receptors on the plasma membrane. Indirect techniques have been useful to assess some aspects of adrenergic receptor metabolism. These aspects have been critically reviewed by Mahan, Mc Kernan and Insel.

The G proteins appear to be in the centre of action of adenylylase and its modulation by hormones and the signal transduction system involving signal detection and synthesis of cyclic AMP. There has been significant progress in recent years of our understanding of the genetic regulation of these proteins as reviewed by Casperson and Bourne.

The chapters on the health effects of polychlorinated biphenyls (PCBs) and polybrominated biphenyl (PBBs), of diesel exhaust and industrial solvents would be read with interest by environmental toxicologists. The progress of computer-aided drug design is made possible by the combined efforts of medicinal chemists, pharmacologists and system analysts. The volume has also reviews on purine receptors, platelet activating factors and carnitine all of potential interest to physiologists and pharmacologists.

The editors must be congratulated for the assembly of such a rich fare of reading matter to keep abreast of the explosive developments in the multi-disciplinary areas of pharmacology and toxicology.

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