organisms that much more fascinating to us. It is somewhat harder for us to appreciate the language of chemical communication, described as "radically non-human" by the renowned ant biologist E. O. Wilson. Yet almost all living organisms, from ants to humans, use chemical messaging to communicate both with their conspecifics and with other species. Plants are no exception; they too employ a staggering diversity of volatile compounds that send messages to animals that range from "Come hither and sample my nectar" to "Danger; stay away; I'm toxic".

Pollination biologists have traditionally tended to focus on colour and morphology in studies of how flowers become specialized for pollination by different animals. Floral scent, the third component of the floral phenotype, has been sorely neglected, even in some recent reviews (e.g. Schaefer et al., 2004). This in itself is not surprising — scent is intrinsically invisible, sometimes not even detectable by human olfaction, and requires specialized equipment and skills to be analysed. Yet it is becoming increasingly apparent that floral scent plays an absolutely pivotal role in the majority of plant–pollinator interactions. Indeed, studies have shown that colour and morphology alone, or even together, cannot explain the specialization which is evident in plant pollination systems (cf. Gumbert et al., 1999). Thus, the recent publication of an edited volume on the subject of floral scent (Dudareva and Pichersky, 2006) is especially timely.

Twenty-seven authors contributed to the 14 chapters that make up *Biology of Floral Scent* and the result is a comprehensive and somewhat eclectic treatment. The first two Chapters cover identification and diversity of floral volatiles, particularly useful for a novice like me. The next five Chapters cover biochemical aspects of scent production in plants. These include contributions from the editors who both are renowned for their work on the metabolic pathways that give rise to floral volatiles. Most authors in this section, and the last one of the book on commercial aspects of floral scent, have their sights firmly fixed on the identification, and ultimately, manipulation, of genes that are responsible for floral volatiles.

Almost all of the chapters in the second half of the book deal with the responses of animals to floral volatiles. The scene for this is set by an extremely comprehensive review by Heidi Dobson of the relationship between floral fragrance composition and types of pollinators. Dobson seeks pattern by focusing on the most abundant compounds in each fragrance blend. While it is logical to assume that selection increases the relative abundance of compounds that play a functional role, several studies show that compounds that are less abundant in floral headspace can be critical for the functioning of a particular system. Sexually deceptive orchids and their pollinators, the subject of a Chapter by Manfred Ayasse, are a case in point, as the attraction of male hymenoptera by some of these orchids depends on blends of alkane and alkene hydrocarbons that are scarcely present in the floral headspace because of their low volatility (Schiestl et al., 1999).

What I enjoyed most about the chapters in the second half of the book is the sheer disrespect shown by their authors for traditional boundaries in biology. Here, plant physiology meets animal behaviour and the result makes for fascinating reading. It is extraordinary that to fully comprehend the evolution of floral volatiles in plants, it is necessary to look not only at their effects on electrophysiological activity within insect antennae, but also the memorization, and, ultimately, behaviour of insects. The second last chapter, by Rob Raguso, is a fitting close to this section as it takes this multifaceted approach yet one step further by showing how fragrance cues often function synergistically with floral colour and morphology to influence animal behaviour.

The most important contribution of this book may ultimately be about the futility of trying to tackle biological problems from a single, narrow perspective. In an age of the triumphalism of molecular biology, in particular, the editors should be congratulated for recognizing the value of an approach that integrates plant physiology, genomics, whole organism biology, and dare we mention it here, even zoology.

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Handbook of Medicinal Plants, Zohara Yaniv and Uriel Bachrach, editors, 2005, Binghampton, N.Y.: Food Products Press®, The Haworth Medical Press®, London, United Kingdom. 500 pp, ISBN 1-560-22995-0, price US$59.95 (Paperback).

Over the last three decades scientific interest in medicinal plants continues to grow with no apparent signs of abatement. Israeli biologists Zohara Yaniv and Uriel Bachrach have compiled a collection of studies by international experts providing a comprehensive summary of the history and future of medicinal plant research.

The Handbook of Medicinal Plants comprises five main sections; the first chapter by Professor Dr. h. c. Hildebert Wagner, a world renowned pharmacognosist, provides an enlightened look at the trends and challenges facing medicinal plant research. He emphasises the need for continued research in key areas such as the search for new bio-active compounds and highlights major concerns which include quality assurance and herb–drug interactions.

The second section covers the use of herbal medicines throughout history in China (in considerable detail), the Americas, the Middle East, the Mediterranean, lastly Africa and Australia, which are often neglected. The third section discusses the latest technologies in production and breeding, crop improvement, farming, biological screening and plant research.

The fourth section focuses on groundbreaking advances in the medicinal application of therapeutic herbs. Areas discussed include cancer therapy, prevention of coronary heart disease, gastrointestinal tract treatments, the treatment of endocrinological and metabolic diseases. The use of plants to treat central nervous system (CNS) disorders has gained interest recently with the popular use of Ginkgo (*Ginkgo biloba*) and St. John's Wort (*Hypericum perforatum*). These and other CNS-acting plants are covered by Peter John Houghton professor in pharmacognosy in the Department of Pharmacy, King's College London.

Michael Heinrich, professor and head of the Centre for Pharmacognosy and Phytotherapy, The School of Pharmacy, University of London, concludes by reflecting on the aspirations, challenges and threats to interdisciplinary medicinal plant research.

The Handbook of Medicinal Plants' objective is to encourage further research and public understanding of this complex, intriguing subject. It demonstrates the global relevance of sharing local knowledge about phytomedicines, and highlights the need to make information on plants available on a worldwide basis. From a research point of view, this book will help meet the challenges in delivering scientifically rationalized medicines that are safer, more effective, and readily available to patients from all walks of life.

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Dictionary of Plant Tissue Culture, AC Cassells and PB Gahan, Food Products Press (Haworth Press), 2006, Recommended price USD 29.95 ISBN 13: 978-1-56022-919-3.

The Dictionary of Plant Tissue Culture by AC Cassells and PB Gahan is a useful source of information on almost all matters relating to the techniques of plant tissue culture. Rather unusual for this type of dictionary (compare, for example, those of Life Sciences or Environment) the entries – or about 75% of them – are furnished with reference citations. In itself this may at first hand be seen as helpful but the reader is soon left with two main impressions. The first is that in numerous cases these are not the most authoritative references. Three such examples are: (1) the omission under protoplast fusion and cybrids of any reference to the pioneering work of Otto Schieder and Kristina Glimelius and their colleagues; (2) concerning the broad-spectrum-medium, failure to acknowledge RA de Fossard, creator of the concept and who presented a comprehensive experimental broad-spectrum set-up in his now classic book Tissue Culture for Plant Propagators 1975, The University of New England Printery, Armidale, NSW, 2351 Australia; and (3) if only one reference were to be cited for somaclonal variation then surely this would have to be that of Larkin PJ, Scowcroft WR 1981 (Somaclonal variation—a novel source of variability from cell cultures for plant improvement. Theoretical and Applied Genetics 60: 197–216).

The second impression is that the senior author, his wide tissue culture experience notwithstanding, has used this dictionary to publicise his own work. The reference section with 12% of the listings and a glossary with 95 citations of the work of Cassells and co-workers make the Dictionary read like a personal CV.

An obvious weakness is the treatment accorded light or irradiance, an area of plant physiology in which plant tissue culture generally is weak. It is surprising how many manuscripts are submitted still using lux, the measure of illuminance based on the candela (and sensitivity of the human eye). Some investigators probably have access only to devices calibrated in lux, but unless a careful description is given of the light source, interconversions to photon irradiance (expressed in mol m^{-2} s^{-1}, most commonly as μmol m^{-2} s^{-1}) or energy irradiance (expressed in W m^{-2} but not mentioned by the authors) are *sensu stricto* not possible. In this regard a word of caution would not have been amiss. However, the unit for photon irradiance is not written as μmole m^{-2} s^{-1} as on pp 102 and 172 and elsewhere. There is confusion in the number of units of photosynthetic photon flux used in tissue culture lighting. Compare mmol m^{-2} s^{-1} on p. 22 and μmol m^{-2} s^{-1} elsewhere. At the millimolar levels mentioned, plants grown *in vitro* would be severely light-inhibited or more likely totally frizzled. In the two upper blocks of Fig. 4, in addition to mmol instead of μmol, there are also typographical errors in the remainder of the units.

My overall impression is of a hastily-written and poorly-proofread text. In fact, typographical and other errors abound. The worst case is the misspelling of Zeiger, co-author of the Taiz and Zeiger Plant Physiology textbook that is so copiously cited. Throughout the dictionary Zeiger is written as Zeigler and at least once also as Zeifler (p. 202). See also Jelska instead of Jelaska (p. 258) and Hartmnann instead of Hartmann (p. 218), napthalene acetic acid (instead of napthaleneacetic acid, p.149), abscissic acid (instead of