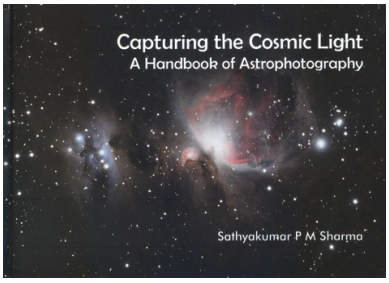

Capturing the Cosmic Light: A Handbook of Astrophotography. Sathyakumar P. M. Sharma. Manipal University Press, Behind Post Office, Manipal 576 104. 2016. vi + 141 pages. Price: Rs 670.

Astrophotography is a great way to learn about astronomy as I am yet to meet a person who is not fascinated by gazing at the sky and wondering about it. It is a way of not just seeing, but also recording what one sees for oneself and for the others. It is what makes people, specially young students into amateur astronomers, if not into professional ones. Many discoveries of the evolving universe where stars are exploding and going supernova or just expanding into novae, or comets and asteroids making an appearance into our solar neighbourhood, sudden brightening or eruptions of very distant objects like quasars have been first recorded by amateur astronomers using astrophotography and then followed by the professionals. In either case not only the basic understanding of many concepts in science is enhanced by this activity, it gives a hands-on experience to people to handle and learn about devices like telescopes, cameras, associated software, etc. This curiosity and the current development of digital sensors in cameras has brought the thrill of getting beautiful pictures of the myriad of objects in the sky within the reach of amateur societies, schools and colleges at nominal cost – though not yet within the reach of most individuals in India. This activity is slowly catching up in our country too, but is still confined to only the elite. As a result, there are several books on this subject in the market, ten of them are listed in Appendix A of this book. All books have varying degrees of detail, depth, and coverage of the subject, and there is always room for another book depending on the targeted readers (users in this case, this being a handbook), and also the cost (this one is not expensive). The author of this book is an amateur astronomer and though trained as a professional aerospace engineer, appears to be passionate about this subject. This book is his attempt to make what he has learnt over the years in pursuit of his passion available to the budding amateurs.

Lagoon nebula

The book has been deliberately kept very simple as a handbook should be, and is written in an easy and almost colloquial language. It basically guides a person on choosing the right kind of a telescope, and mount and camera for an amateur astronomer starting out in this field. The chapters on alignment and astrotrac should be useful, in particular. All in all, the book is geared towards getting a person started quickly into this great hobby. It covers the practical aspects and does not delve into details of the various kinds of telescopes and their functioning. The diagrams for the telescopes appear to be oversimplified and some of the essential information regarding rays and directions deliberately suppressed, which in my view is not a good idea while learning about their functioning. The mounts are well described and the basic functions of cameras are given without getting into the details of the sensors; the more curious can find these details elsewhere, for example, the books mentioned in Appendix A. The book covers both the photography of bright planetary objects, as well as, the wonders of the deep sky, and also narrow field and wide field photography. The most useful part of the book is the detailed guidelines for processing the images. This covers nearly half the book and should be a immense to use amateurs to obtain stunning results. Appendix B of the book covers the software that can be used freely in most cases, but also lists more professional software packages that come at a cost. The websites and discussion forums listed in Appendix A would be helpful to amateurs. This book is a useful contribution by a passionate amateur astronomer to youngsters who wish to become one.

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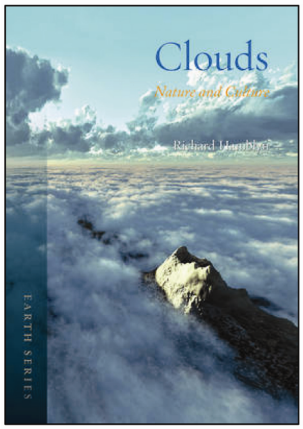

Clouds: Nature and Culture. Richard Hamblyn. Reaktion Books Ltd, Unit 32, Waterside, 44-48 Wharf Road, London N1 7UX, UK. 2017. 240 pages. Price: US$ 25/£14.95.

It is perhaps the only instance when science surrendered to symbolism, and for some good reasons. The expression 'to be on cloud nine' has been in vogue since the 1890 discovery that the highest-rising cloud was the ninth and last on the list. However, later scientific research proved it to the contrary, identifying cumulonimbus to be tenth, and the last cloud. Despite such finding, the World Meteorological Organization sustained euphoric status to cumulonimbus as the true cloud nine. As a result, numerical expression cloud eight for 'drinking too much liquor', and cloud seven for 'seventh heaven' stay.

However, there is more to clouds than just these numbers. From the realm of literature and arts to the domain of astronomy and science, clouds have emerged from the muddle of uncertainty into the world of scientific certainty in the context of climate change and cloud computing. Capturing their picturesque journey from 'an ultimate art gallery

above' in the words of Ralph W. Emerson to the 'center of digital life below' as propounded by Steve Jobs, the author Richard Hamblyn provides a multifaceted narrative on nature's most versatile creation. Packed with colourful pictures, this book could easily be the most comprehensive and authoritative text on the subject. And, indeed it is.

Hamblyn, an English lecturer at the University of London, has attained undisputed mastery on the subject, having already published two books on clouds – *The Cloud Book* and *Invention of Clouds*. While the first book captures all things to do with the origin and development of clouds, the second is a cultural excavation on understanding the science of clouds. In this his third book, Hamblyn has brought clouds down to earth and unveiled their mysteriousness. Throughout human history attempts to understand clouds and their behaviour have been a subject of delight and fascination, offering limitless source of creative contemplation, from Socrates to Seneca and from Kalidas to Ruskin. Each attempt has helped in presenting a different story.

This book emerges as a magnificent collection of these stories – from their wooly journey through art, literature, music and photography, to their sinister manipulation for military use and anthropogenic modifications. American (failed) attempts at precipitating flash floods during the Vietnam War are part of the legend. Such secret military trials have invoked widespread concern from international community to declare clouds as 'a resource that belongs to no one'. Legal remedies for trespassing territories for appropriating clouds through artificial seeding would need to be curtailed as competition over access to rainwater escalates.

Since science is only beginning to understand the role of clouds in shaping future conditions on earth, a warm atmosphere may reorganize the day-to-day behaviour of clouds that could either amplify or mitigate climate change. The trouble, warns Hamblyn, is that clouds have a habit of behaving in complex and surprising ways. The fact that our warming climate is producing ever more lightening strikes is one of many surprises that clouds have in store. Each 1° rise in temperature increases lightening activity by around 12%. Will clouds turn out to be agents of global warming or will they end up saving the day by reflecting ever more sunlight back into space remains unanswered?

It is evident that clouds are challenging human intelligence. Philosophers like Aristophanes, who always had their heads in clouds, had long professed that 'from clouds come our intelligence, our dialectic and our reason; also, our speculative genius and all our argumentative talents'. Wondering if clouds were objects or phenomenon or processes, Leonardo da Vinci had described them as formless triggers of visual invention; their fleeting magnificence and endless variability provides food for thought for scientists and daydreamers alike. The current predicament with clouds is taking us back in time to reimagine and re-understand clouds. There may be clues in arts and literature to make a fresh beginning.

Hamblyn's contention is that the law of unintended consequences needs to be kept in mind while embarking on geo-engineering projects that tamper with the atmosphere and clouds. Clouds are too sensitive not to be taken into account in such anthropogenic adventures, he cautions. In short, it is clear that there is no way of knowing what is really going to happen to our increasingly changing atmosphere, and just as in centuries past, when clouds were employed as ready metaphors of doubts and uncertainty, it looks as if they will continue to be so for centuries to come.

The crucial issue is that life without clouds would not be physically possible. Far from just being a source of water, these have a larger role in keeping the earth hospitable to living beings. The book provides insights into the history and science of clouds, and acts as a guide to pursue mankind to get a sensitive handling on the wooly product/process hovering between sky and the earth. Cogent and colourfully illustrated, this is the ultimate guide to the past, present and future of clouds.

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Annual Review of Physiology, 2017. David Julius and David E. Clapham (eds). Annual Reviews, 4139 El Camino Way, P.O. Box 10139, Palo Alto, California 94303-0139, USA. Vol. 79. vii + 655 pages. Price: US$ 114.

The personal reflections of a scientist, which has been part of so many earlier *Annual Reviews of Physiology*, is missing in this particular volume. I found that disappointing – there is something about being taken along a life's journey, sharing the pain, tribulations and ultimate triumph that has marked the lives of so many great scientists. Personal reflections allow scientists to share the uncertainties that they have faced and the measures they took to overcome them. These are lessons which are increasingly difficult to understand from published scientific papers, given the constraints of space and editorial oversight.

The special topic in this volume focuses on 'macrophages'. An understating of these cells has moved a long way from the 'scavenger' status that they were originally and solely endowed with. There are four articles devoted to macrophages. Peter Murray focuses on how macrophages are activated in space and time – a phenomenon called macrophage polarization. He provides a succinct timeline on a historical perspective of macrophage polarization and discusses various misconceptions that have existed. The article is comprehensive and covers issues of macrophage polarization in inflammation, its regulation and macrophage survival, among others. Hamidzadeh and colleagues focus on macrophages and recovery from acute and chronic inflammation. An important part of their article which will be of relevance to clinicians is the discussion of macrophage activation syndrome – a failure to regulate macrophage activation during inflammation. Macrophages can regulate tissue regeneration following injury and can also worsen tissue injury. Vannella and Wynn discuss how macrophages help in tissue repair across a range of organs and tissues, including the liver, heart, lungs, nervous system and intestine. The nature and role of glial cells have had an interesting history involving people like Rudolf Virchow and Ramon y Cajal. Microglia, which are the phagocytes of the brain and which play an important role in coordinating the immune response