

photographed with the time variations occurring at the same speed an observer would see them. The color presentation is as close to that which one would see with the naked eye as reproduction will allow. Because of the sophistication of the instrumentation used to record the auroral displays, the video does not suffer the smeared look often obtained from methods where long exposure times are required. The inclusion of trees and features on the ground gives an excellent perspective from which the viewer can assess the scale of the phenomenon.

While the aurora generates significant scientific interest, the purpose of the video is to present to the casual observer the stunning array of visual forms and colorful displays that can be seen. Those who have never seen the aurora will be impressed by the amazing scale over which the aurora occurs and the rapidity with which it changes shape and color. Even to the seasoned observer, the quality and beauty of the displays in this video are appreciated. The range of displays shown are brought together from sets of observations. Typically the aurora lasts many hours and it would take many nights of observations to see the tremendous variety presented. The blending from one sequence of aurora to another is done very well. The viewer will, I think, be amazed at the dynamics that occur within the aurora over just a few minutes. Starting from a quiet "curtain-like" appearance over a limited portion of the sky, the aurora develops large-scale folds and distortions often associated with color changes from a predominant green to features with beautiful reds, particularly at the lower edge of the displays. These color changes are perhaps the most dramatic part of the individual displays shown and reveal the tremendous natural beauty of the aurora.

The stunning visual display is accompanied by some rather austere music from the *Symphony in Ursa Major* composed by G. Wright, of the University of Alaska. At times a bit foreboding, the music nevertheless adds to the presentation by emphasizing the grand scale and magnificence of the visual auroral forms.

At the end of the main presentation is a short verbal explanation of some facts about the aurora. Accompanied by a few static visual aids, the quality of this presentation falls below that of the major portion of the presentation. For those interested in pursuing this line further, a short booklet is enclosed with the video that touches the highlights of their explanation. By no means scientifically elaborate, it does provide the casual observer with the basic facts about the aurora.

This video offers what I believe is an excellent presentation of a phenomenon that is by and large ignored in the popular literature. It should appeal to a large cross section of educators who can use it to illustrate some of the beauty that the natural world provides us.

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THE AURORA EXPLAINED. By THE AURORA COLOR TELEVISION PROJECT (T. HALLINAN, N. BROWN and D. OSBORNE). Fairbanks: Geophysical Institute, University of Alaska Fairbanks, 1992. Video, 30 minutes. US\$30.00 + \$4.00 postage and handling.

Many people are aware of the existence of the aurora (or northern lights, for those of us in the Northern Hemisphere) but are unfamiliar with why it occurs and the effects it can have on our activities. While such knowledge is not necessary to appreciate its beauty, for those interested in understanding the cause of the aurora and the various effects it has on society, this video provides a reasonable, though simplistic, explanation. The video builds on the auroral observations presented in the previously published video *Aurora* by the same group (reviewed above) by attempting to give an overview of what causes the aurora. It begins naturally by illustrating the beauty and variety of the aurora and then posing a number of interviews with researchers from the Geophysical Institute in Fairbanks, Alaska. The central theme that comes through the explanations is still that while the aurora is scientifically interesting, even scientists do not lose sight of its beauty.

The video does a good job of avoiding the scientific jargon that accompanies most explanations of the aurora. In the various interviews are discussed aspects of the aurora that can be illustrated by everyday objects. The sequence of explanations quite reasonably takes the viewer from the auroral displays themselves, which are illustrated by nice color pictures showing the dynamics and visual characteristics, and then slowly fills in the background, ultimately discussing the (indirect) solar control. From a scientific point of view, the explanations are all technically correct, with only the inclusion of a few imprecise words.

Casual observers may be surprised to learn that the aurora occurs some 100 km above the surface of the Earth. As the video explains, the light that we see at the surface of the Earth is the result of particles (primarily electrons) colliding with oxygen and nitrogen in these upper reaches of the atmosphere. An analogy with a pinball machine is given where electrons successively collide with these atmospheric species, causing them to emit light while at the same time the electron loses its energy. The color of light that we see from the aurora depends on whether oxygen (green or red) or nitrogen (purple) are excited.

The resulting auroral forms have a bewildering variety of shapes to the casual observer, but one common characteristic is that their north/south thickness (typically around 1 km) is much smaller than their east/west extent (sometimes thousands of kilometres). Technically the result of thin magnetic field-aligned current sheets, the video provides a nice demonstration using lawn edging. The variations one sees in the aurora can be illustrated by bending the lawn edging to form, for example, S-shaped patterns. While it is difficult to simply explain the reasons for such characteristics, more than a passing reference to the significance of the Earth's magnetic field seems warranted in this regard.

The emphasis of such a presentation is quite naturally one based on what the casual observer might be able to see.

However, it should be stressed that the aurora is not limited to the night sky but rather exists at all local times. This was quickly illustrated by the single reference to a satellite view of the aurora and graphically suggested by the so-called "statistical auroral oval." As this continuity of auroral light at all local times and the fact that very similar auroral displays exist simultaneously in both the Northern and Southern hemispheres (which is mentioned briefly) are rather fundamental characteristics, some more emphasis could have been provided. For the casual observer, the aurora is not visible during daytime simply because its light output is considerably less than the daytime sky. The explanation of the intensity of the aurora in terms of night lights and hall lights provided by the video gives one a good feeling for the vast intensity difference.

For many the discussion of the effects of the aurora on ground-based activities will be interesting. The video mentions briefly such things as power blackouts and corrosion of pipelines. Though not formally a part of explaining the aurora, the fact that the aurora affects our lives on the ground could have been expanded a bit. Such effects make knowledge of the aurora not only scientifically interesting but of practical importance as well.

There is an obvious attempt to provide information suitable for a number of groups. The level of presentation is geared from essentially grade 6 onwards but is not so low as to bore the more advanced viewer. The quality of the presentation is average. While the basic auroral observations are first class (there is an unfortunate repetition of aurora displays, which perhaps the viewer will wonder about), the impression one gets is that the video was done utilizing a limited range of resources. Some of the observations seem to be thrown in with little attempt to tie them to the main theme. For example, a quick reference is made to observations from the shuttle of the aurora, which basically goes nowhere.

Not as impressive as the first video, this effort is nonetheless worthwhile for those educators who wish to provide some background to the study of such fascinating natural phenomena.

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BOOKS RECEIVED

- BUSH COP: TRUE STORY OF AN AMERICAN MOUNTIE DURING THE EARLY YEARS OF ALASKA.** By JOE RYCHETNIK. Pacific Grove, CA: The Boxwood Press, 1991. ISBN 0-940186-21-9. (Available from Boxwood Press, 183 Ocean View Blvd., Pacific Grove, CA 93950.) ix + 440 p., map, b&w illus. Softbound. US\$24.95 + p&h.
- FANTASTIC ANTONE SUCCEEDS: EXPERIENCES IN EDUCATING CHILDREN WITH FETAL ALCOHOL SYNDROME.** Edited by JUDITH KLEINFELD and SIOBHAN WESCOTT. Fairbanks, AK: University of Alaska Press, 1993. ISBN 0-912006-71-4. xii + 368 p., b&w illus., bib., index. Hardbound, US\$30.00; Softbound, US\$20.00 + \$3.00 p&h.

NO ORDINARY JOURNEY: JOHN RAE, ARCTIC EXPLORER 1813-1893. By IAN BUNYAN, JENNI CALDER, DALE IDIENS and BRYCE WILSON. Montreal, PQ: McGill-Queen's University Press, 1993. ISBN 0-7735-1107-5. (Published simultaneously by the National Museums of Scotland.) xi + 116 p., map, colour + b&w illus. Hardbound, Cdn\$42.95; Softbound, Cdn\$19.95.

POLAR POLITICS: CREATING INTERNATIONAL ENVIRONMENTAL REGIMES. Edited by ORAN R. YOUNG and GAIL OSHERENKO. Ithaca, NY: Cornell University Press, 1993. ISBN 0-8014-80609-8. xi + 276 p., map, appendix, index. Hardbound, US\$36.50; Softbound, US\$16.95.

RARE VASCULAR PLANTS IN THE CANADIAN ARCTIC. By CHERYL McJANNET, GEORGE ANGUS, SYLVIA EDLUND and JACQUES CAYOUILLE. Ottawa: Canadian Museum of Nature, 1993. ISBN 0-660-13071-8. Syllogeus Series No. 72. (Available from Canadian Museum of Nature, Direct Mail Section, P.O. Box 3443, Station D, Ottawa, Canada K1P 6P4.) 79 p., maps, appendices. Price not given.

SOAPSTONE AND SEED BEADS: ARTS AND CRAFTS AT THE CHARLES CAMSELL HOSPITAL, A TUBERCULOSIS SANATORIUM. By ANNALISA R. STAPLES and RUTH L. McCONNELL. Includes THE CHARLES CAMSELL GARMENT COLLECTION, by JILL E. OAKES. Edited by PATRICIA A. MCCORMACK. Edmonton, AB: Provincial Museum of Alberta, 1993. ISBN 0-7732-1076-8. (Available from The Museum Shop, c/o Provincial Museum of Alberta, 12845 102 Avenue, Edmonton, AB T5J 0M6.) viii + 68 p., map, b&w illus., bib. Softbound. Cdn\$9.95 + 3.00 shipping.

THE ALASKA TRAVEL JOURNAL OF ARCHIBALD MENZIES, 1793-1794. With an introduction and annotation by WALLACE M. OLSON and a list of the botanical collections by JOHN F. THILENIUS. Fairbanks, AK: University of Alaska Press, 1993. ISBN 0-912006-70-6. xvi + 247 p., maps, index. Softbound. US\$17.50 + 2.50 p&h.

WHY STUDY ANTARCTICA? By PETER J. BECK. Surrey, UK: The Apex Centre, Kingston Polytechnic, 1991. Reprinted with minor amendments 1992. ISBN 1-873152-15-9. (Available from The Apex Centre, Kingston Polytechnic, Penrhyn Road, Kingston upon Thames, Surrey KT1 2EE, UK.) xvi + 50 p., bib., notes. Softbound. £9.00 + £3.00 p&h.

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- BROUWERS, E.M.** Late Pliocene Paleoeologic Reconstructions Based on Ostracode Assemblages from the Sagavanirktok and Gubik Formations, Alaskan North Slope.
- LUZIN, G.P., PRETES, M., and VASILIEV, V.V.** The Kola Peninsula: Geography, History, and Resources.
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- REID, J.W., and REED, E.B.** First Records of Two Neotropical Species of *Mesocyclops* (Copepoda) from Yukon Territory: Case of Passive Dispersal?
- HEARD, D.C., and OUELLET, J-P.** Dynamics of an Introduced Caribou Population.
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