

BULLETIN

VOLUME 9 NUMBER 4

DECEMBER 1994



• STEGOCERAS •

ALBERTA PALAEOONTOLOGICAL SOCIETY

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The Society was incorporated in 1986, as a non-profit organization formed to:

- a. Promote the science of palaeontology through study and education.
- b. Make contributions to the science by:
 - 1) discovery
 - 2) collection
 - 3) description
 - 4) education of the general public
 - 5) preservation of material for study and the future
- c. Provide information and expertise to other collectors.
- d. Work with professionals at museums and universities to add to the palaeontological collections of the province (preserve Alberta's heritage)

MEMBERSHIP: Any person with a sincere interest in palaeontology is eligible to present their application for membership in the Society.

Single membership	\$10.00 annually
Family or Institution	\$15.00 annually

THE *BULLETIN* WILL BE PUBLISHED QUARTERLY: March, June, September and December.
Deadline for submitting material for publication is the 15th of the month prior to publication.

Society Mailing Address:
Alberta Palaeontological Society
P.O. Box 35111, Sarcee Postal Outlet
Calgary, Alberta, Canada T3E 7C7

Material for *Bulletin*:
Howard Allen, Editor, APS
7828 Hunterslea Crescent, N.W.
Calgary, Alberta, Canada T2K 4M2
(E-mail 75272.1316@compuserve.com)

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†APAC is the Alberta Palaeontological Advisory Committee

UPCOMING APS MEETINGS

Meetings take place at **7:30 p.m.**, in Room **B108**,
Mount Royal College: 4825 Richard Way SW, Calgary, Alberta

Friday, December 16—Gordon Holland, Calgary geologist, will present the second part of his talk on the geology of the Rocky Mountains, this time focussing on the role of continental drift.

Friday, January 20, 1995—Wendy Sloboda, discoverer of the Devil's Coulee nest site will give a presentation on Devil's Coulee, and updates on the Eastend *T. rex* discovery.

Friday, February 17—To be announced

Friday, March 17—To be announced

ON THE COVER: The Late Cretaceous pachycephalosaurid *Stegoceras* sp., by APS member Cory Gross.
 ©1994, reproduced by permission.

President's Message

by Les Adler

1994 was a very successful year for the APS. A continuing series of excellent speakers presented talks accompanied by videos and slides and all of the field trips came off as advertised and were well attended due to a combination of planning, preparation and the cooperation of the weather. The membership list reached 78 and a full set of informative bulletins were produced. Many of us went on private field trips and brought in a terrific variety of specimens personally collected to present for a series of "show and tell" sessions at our regular meetings. Keep it up!

One thing that was noticed this year was the sudden appearance of many NO TRESPASSING signs that weren't there on previous visits. It is now becoming imperative that you obtain the landowner's permission before looking for fossils. Also on our own field trips we now require a release form designed by lawyers to be signed. We have never had any real problems ourselves but it means that executive members on field trips will have peace of mind.

Recently our attendance at general meetings has been running at the 20 mark. We are slowly adding volunteers so that the meetings will run smoothly, with everyone getting fed and having time to examine the marvellous specimens that have been coming in. We are looking for a volunteer to take over **Roger Arthurs'** bookkeeping activities. We are sorry to see Roger stop due to problems cause by shift work. **Dr. Gerry Morgan** has done a fantastic job of bringing the library into excellent order.

The feature of the September *Bulletin* was the wide participation of members with cartoons, notes, reviews and comments. The executive wishes all members and their families a Happy Xmas and a prosperous New Year and hope that you will continue your membership with a delightful, friendly group of people who either collect and/or read and talk about fossils. □

1995 Dues are now Payable!

If you haven't yet renewed your membership, please take the time **NOW** to fill out the renewal slip, enclosed with your Bulletin.

The deadline is Jan. 20, 1995!

From the Editor...

by Howard Allen

At first glance, you may notice two things about this issue: first, the issue is thicker than usual, thanks to an increase in the volume of submissions. For a change, I had lots of material to work with in compiling the *Bulletin*—and most of it arrived before the deadline! Special thanks are due to first-time contributor **Joe LeBlanc**, for his great article on collecting in the Scollard Formation (page 5). Joe's article proves once again my favourite axiom: "fossils are where you find them." Although I fear that some readers may be starting to find the phrase a bit over-used in these pages, it bears repeating if only to reinforce a point that is so important in our hobby. There is only one sure thing in fossil collecting: if you don't look, you certainly won't find anything.

Something else Joe's article proves is how easy it can be for relatively new members to get into the act and start contributing to the Society. I'm sure if you ask him, Joe will tell you that, contrary to the opinion of many members, writing a short article for the *Bulletin* is not really comparable to a visit to the dentist!

Heather Whitehead has again come through with late-breaking news on things dinosaurian, in her report on the 1994 Society of Vertebrate Paleontologists Conference (page 3). Also appearing are two more pages of Heather's fascinating DINOTOUR field notes.

By a lucky coincidence, Heather's notes on the Dinosaur Provincial Park ceratopsian bone beds have been dramatized by **Cory Gross** in his latest offering of expertly drawn paleo-comix.

Those of you who are interested in field trips should take special note of the Field Trip Coordinator's message, on page 13, and the questionnaire included separately with your *Bulletin*. I urge you to make the effort to fill in the survey and return it to **Les Fazekas** as soon as possible.

The second thing you may have noticed about this issue occurs in the fine print on the cover: this is Volume 9, Number 4, which means that next March's edition will be the *Bulletin's* tenth anniversary issue! This is a good excuse to get busy and start working on some of those articles you've been meaning to submit!

Finally, belated Season's Greetings to all the members: belated, because once again my work leaves me stuck out in the boonies, on short notice—this time for the entire month of December—miles from any printing facilities. My apologies and best wishes to all. □

The 1994 Society of Vertebrate Paleontology Conference: Seattle

by Heather Whitehead
(This article copyright ©1994)

Although I wasn't able to attend the 1994 Society of Vertebrate Paleontology conference in Seattle this fall, discussions and summaries on the Dinosaur LISTSERV on the Internet [see *Bulletin* June 1994] made me feel like I didn't miss out on everything! Dino-netters Ralph Chapman of the National Museum of Natural History (Smithsonian) and Tom Holtz of the US Geological Survey in Reston agreed to let me use parts of their discussions. With thanks to Ralph and Tom, here are some selections:

- Talks on new Mongolian material included the news that they finally found a fetal dinosaur in one of those abundant "*Protoceratops*" eggs and—surprise—it's an *Oviraptor*! It seems they

We discovered how to clear a dining room of vertebrate paleontologists: a dance medley!

were *not* hanging around the nests to eat the eggs, they were *producing* the eggs. The *Oviraptor* egg was spectacular. Longtime dinosaur worker Jack McIntosh commented that this was the most fantastic specimen he'd ever

seen at one of these meetings. The assumption that the most abundant eggs belong to the most abundant dinosaur (*Protoceratops*—the city rat of the Mongolian Cretaceous) is an excellent example of the dangers of assuming associations based solely on abundance data. It gave *Oviraptor* a bad rap though—the eggs were associated with the wrong end of the animal...

- Also from Mongolia: many *Protoceratops* skeletons, new *Mononykus* material and (probably most significant) hundreds of Cretaceous mammals, apparently mostly articulated. The pictures of this material were astounding. For people who go nuts when they've found just a mammal tooth or jaw or a multi and who think it a real jewel, it was amazing! It should also help clarify the Cretaceous history of mammals.

- Two "new" horned dinosaurs: *Einiosaurus procurvicornis* and *Achelousaurus horneri*. Both are related to *Pachyrhinosaurus*. *Einiosaurus* is the animal illustrated in some recent dinosaur

books as "*Styracosaurus makeli*."

- The fragmentary dinosaurs *Chirostenotes*, *Macrophalangia*, and *Caenagnathus* all look like they come from the same species.

- A pterosaur skull with a very slender toothless beak, possibly *Quetzalcoatlus*, was described.

- On the lighter side: We discovered how to clear a dining room of vertebrate paleontologists: a dance medley! SVP had a Puget Sound cruise on one of the bad weather nights, so the waters were choppy. We had planned to talk, as usual, and were sitting at tables near the food (naturally). As we were leaving the dock, the waiters and the band broke into lively music—and cleared the SVP crowd pretty quickly out onto the cold decks for the duration of the evening! This is in contrast to a wedding reception a couple of years ago, when a "stuffy" paleo crowd became infamous for dancing to "Walk the Dinosaur": one member would call out different taxa *and* the various paleo types would dance to mimic it. The *Velociraptor* was the most popular that evening...

- The annual auction of books, art, casts, etc., led by Dan Chaney and friends was, as usual, pretty light and very bawdy and everyone had a good time. It raised over US\$9000 this year, highlighted by the purchase (for around \$200) of a cast of a fossil bent (in life, by accident) baculum¹. □

Program Summary

by Les Adler

September 16, 1994: *The Evolution of Plant Life, with Dr. Fazal Muhammad*

Dr. Fazal Muhammad is a botanist on the staff of Mount Royal College. He was employed by the federal Science Museum at Ottawa as a consultant in palaeobotany and later he helped the Royal Tyrrell Museum as a consultant to establish the Palaeoconservatory and provide advice to the background murals.

He has put together a collection of colour slides of present-day plants and organized them in a sequence to match discoveries of fossil plants. He showed us this sequence which starts with microscopic forms going through the Palaeozoic, Mesozoic and Cenozoic Eras in order, finishing with grasses and flowering plants. We very much appreciated Dr. Muhammad's friendly talk and the audience responded with a sincere round of applause. □

¹ Look *that one* up in your Funk & Wagnall's – ed.

1994 Field Trip Reports

Genesee, Alberta (August 20)

by Peter Meyer

Seven participants attended, meeting on highway 39 at the appointed camp-ground (now defunct). Once again, the day was sunny with few winged pests—a suitable cap for the field trip season.

Your fearless leader, having traversed the pitfalls of the route on two previous occasions, led the group bushwhacking the dry route on the ridge between two ravines. As is usual, each trip seems to go by a different track; we found ourselves somewhat east of previous sites which begin at the creek confluence.

Unfortunately, the water level was higher than on the previous week and each incursion toward the river had to be made from the steep, upper embankment. Not only was access restricted; but the continuous, productive outcrops just above the low water mark were inundated.

This Tertiary (Paleocene) site has certain affinities with the Paskapoo Formation sites at Joffre Bridge and Burbank—the former having a somewhat different plant assemblage, as well as fish and gastropods; the latter has a similar plant assemblage—and insect parts—but specimens are considerably more fragmented, with clear preservation. I mention these sites because they are useful for plant-comparative purposes and for species discrimination.

In order of occurrence, the species collected by myself were: *Metasequoia occidentalis*, *Cercidiphyllum* sp., *Ampelopsis acerifolia*, *Platanus raynoldsii*, and others yet to be identified.

Specimens are largely complete, well preserved and vital (turgid) in appearance. Many compound gymnosperm leaves occur. As reported by Chandrasekharam,¹ the assemblage yielded about half each of gymnosperm/angiosperm overall, with numbers grading one to the other or exclusively one or the other. Species numbers were not exactly as reported, probably due to the limited extent of the area collected.

Although slumping has made it difficult to place the position of the section, comparison of the shale and the fossil assemblage leads me to believe that it is near the lower part of the stratigraphic section. □

¹ Chandrasekharam, A. 1974. *Megafossil flora from the Genesee locality, Alberta, Canada*. Palaeontographica, Abteilung B, Paläophytologie, Vol. 147, pp. 1–47.

South Ram River, Rocky Mountain Foothills, Alberta (June 18)

by Les Adler

If your idea of a field trip is to take a leisurely drive of about half an hour, followed by a ten minute walk to pick up fossils close to a road on a flat-lying outcrop on horizontal rock beds then this trip is not for you! What happened was as follows:

After rising at 5:30 A.M. I was picked up at 6:30 to be taken via Red Deer, Rocky Mountain House and the Forestry Trunk Road to a campground near the Ram River Falls, arriving about 10:15 A.M. after about a 200-mile journey. Two noticeable incidents on the way were the appearance of three moose—a female and two daughters—east of Rocky Mountain House and an encounter with two colossal water trucks on a rough, narrow gravel road about 20 kilometres from our destination.

By 10:45, 10 other participants had arrived. After signing a release form designed by Mobil Oil lawyers we were given a set of field notes which described the geology and illustrated the fossils to be expected. Wayne Braunberger took us to a lookout above the falls, gave a verbal report similar to the content of the notes and then directed us to the collecting areas. There were about four different sections; you could walk along the main road, investigate outcrops above the road, hike along a creek with steep sides or undertake to climb up steep slopes with loose material to another high outcrop.

The Tumbleweed Club from Edmonton was also there so there were about 20 people looking for fossils. Poachers had killed two Rocky Mountain bighorn sheep and their carcasses had to be removed from the creek by a ranger who had been brought in. Although the location is not prolific, each person collected about five specimens each. In my case, I scavenged along the edge of the road and found half an ammonite of about three inches in diameter. Along the creek I finished up with two types of pelecypods and a portion of another *Scaphites* ammonite I also found a good quality *Baculites* specimen. All of these came from the Later Cretaceous Wapiabi Formation. Several members moved up the slopes diagonally to intersect productive fossil layers.

During the trip a deer, two mountain sheep, several blackbirds, and swallows feeding their young under the bridge were seen. Almost everyone had reliable vehicles, we learned about the very complex geology, wildlife was abundant and most of us were able to add to our fossil collections. □

Joe and Nora's *Excellent* Adventure in the Scollard Formation

by Joseph LeBlanc

Frozen ground and chilling winds have closed this year's "Scollard Adventure." Our prizes lay before us, each with its own story to tell. Tyrannosaurid teeth, hadrosaur vertebrae, fish jaws, gastropods and other treasures are ready to be photographed and catalogued. These fossils are the rewards from many hours scrambling up hoodoos, bending over "hopeful rocks" and balancing on all fours with nose to the ground.

What has the Scollard revealed? This formation has definitely given up selective secrets from the end of the dinosaur reign, 65 million years ago. We can still feel the rush from eying the first *Tröodon* tooth, the shout of "Eureka" at puzzling together the fragments of a tyrannosaurid phalanx and, yes, the sense of loss as an ornithomimid unguis turns to powder in the hand.

We think back to early summer when an "expert" advised that there was nothing at the location (east of Huxley, Alberta) left to find. The tally at collecting season's end? About 90 carnivore teeth, including those of tyrannosaurs, dromaeosaurs and *Tröodon*; other teeth from hadrosaurs, ankylosaurs and *Triceratops*. A couple dozen vertebrae, phalanges from theropods and plant eaters, numerous invertebrate fossils and, as usual, various unidentified curiosities. Yes, looking over these Scollard fossils evokes the same excitement I had as a child tallying my loot after a night of Halloween trick-or-treating.

What useful experience has a season of bone hunting revealed about the Scollard Formation? Information and hints include:

- The Scollard spans the Cretaceous-Tertiary boundary so be sure to look *below* the boundary for dinosaur remains. Above the boundary we did find turtle fossils.

- Dinosaur fossils are abundant. Curiously, however, the percentage of *identifiable* bones is less than at most locales. Fortunately, the large numbers make up for this.

- Remains of several species were found. The hadrosaurs and ornithomimids dominate. Ceratopsian remains were limited.

- Carnivores yielded mostly teeth and

phalanges but also a few vertebrae and one long bone.

- Many large bones can be seen on the surface. Most, however, are partially buried and fragile. We did not disturb these.

- Look for ironstone! Ironstone has an affinity for bone. Several nodules in a row may be vertebrae. Crack a few open. The quality of fossil material found is excellent. A "jumble" of bones was found in an ironstone matrix. Again, we did not disturb these (but it was tempting).

- Dinosaur fossils come in a variety of colours. Most striking is an eye-catching steel blue that we had not encountered elsewhere.

- Vertebrae tend to roll down slopes. Look for them in small gullies. Where one is found, a second may be lurking. Warning! Some phalanges can resemble vertebra fragments. Check again before discarding.

An "expert" advised that there was nothing left to find...

- Dinosaur fossils were *never* found at the same sites as petrified wood. Reason...?

- Carnivore teeth were often found at the same sites as non-marine clams and other invertebrates. Reason...?

- Look for teeth in "rills" and use the sun's rays to highlight their location. Teeth were rarely found when the sky was overcast.

- Reddish brown "iron layers" can be *teeming* with excellent quality non-marine shells (several species).

- *Myledaphus* (a ray-like fish) teeth and fish scales were found below the layers containing dinosaur remains. Fish vertebrae, however, were found alongside dinosaur bone. Reason...?

Nora and I had a fun season of collecting. We never found our *T. rex* skull but this just means that we will find "Mr. T" next year. Anticipation for finding "goodies" increases with experience. Nora (a geologist) set the agenda for next year's discoveries while on a recent visit to the Tyrrell Museum. "Oh, that's what those were!" she stated excitedly, remembering some layered rocks we had seen while collecting. Nora was staring at a display of dinosaur eggs! □

DINOTOUR Field Notes by Heather Whitehead

During DINOTOUR's 1994 tour of southern Alberta and Saskatchewan, on-board scientific leader Dr. Phil Currie of the Royal Tyrrell Museum of Palaeontology gave talks in the field, and helped pass the miles on the bus with question-and-answer sessions. What follows is a summary of some of my notes from these sessions...

Dinosaur site notes

Dinosaur Provincial Park Bonebeds

Bonebeds are more common than skeletons. Worldwide, there are ≈ 10 bonebeds for every skeleton. Bonebeds take immense time to excavate—the contacts between the bones may be more important than the bones themselves. Bonebeds can tell things that articulated dinosaurs cannot, and can tell things faster; the context of the bones (orientation, associations, and absolute numbers of bones) is as important as the bones themselves.

The bonebeds at Dinosaur Provincial Park (DPP) occur in channel sands that can extend for several kilometres. The channel deposits are laterally discontinuous and complex in three dimensions. Although bones and bodies can be transported for long distances, here there is sedimentological evidence that little transport occurred—e.g., mudballs in the sediments, small bones occur in "normal" numbers. Abundances change from one bonebed to another, implying that local faunas are represented. Bone density of up to 50–60 bones per square metre is possible.

The *Centrosaurus* bonebed was found in the 1970s, but was probably seen by the Sternbergs and Barnum Brown much earlier. You could not walk without stepping on bones. About 30% of the bonebed has been excavated, and yielded 80 individuals, implying herd size of ≈ 240 individuals. The fauna is 85–95% ceratopsian, 5% theropod, and 2–3% hadrosaurian. A "Normal" mixed bonebed makeup is dominated by hadrosaur bones, with some ceratopsian, and lesser numbers of theropod bones.

Studies based on this bonebed have proposed herding behaviour (and, by extension, migratory behaviour) to explain results. Detailed study of the sediments and the bones tell the story of a flood, mass death, carcasses washing into an oxbow lake, and carnivores moving in (leaving behind shed teeth and bones with ends missing or gnawed). The bones were exposed to the elements for a time and fell apart. Subsequent floods buried the oxbow and undercut parts of it, washing out some bone to be sorted or removed or reburied.

(over)

Dinosaur site notes

Bonebed studies have also helped with taxonomic identifications. Ceratopsian remains vary in size, from babies with 30 cm skulls to medium, large, and full adult, generally in 4 discrete sizes. There had been 7 species of Centrosaurus described from Dinosaur Provincial Park, but 6 were found in the bonebed, showing the differences were age and gender, not species.

In 1992, a re-study of Dinosaur Provincial Park monospecific ceratopsian bonebeds (5% of DPP bonebeds are monospecific—i.e. containing only one species) was undertaken in relation to a newly described unconformity (used as a time line). Each Centrosaurus bonebed was found to be 3 m above the unconformity. These bonebeds are connected — the ill-fated centrosaur herd probably numbered in the thousands, not just hundreds. The original bonebed was the width of the river channel and 5 km long — and maybe much more.

Drumheller

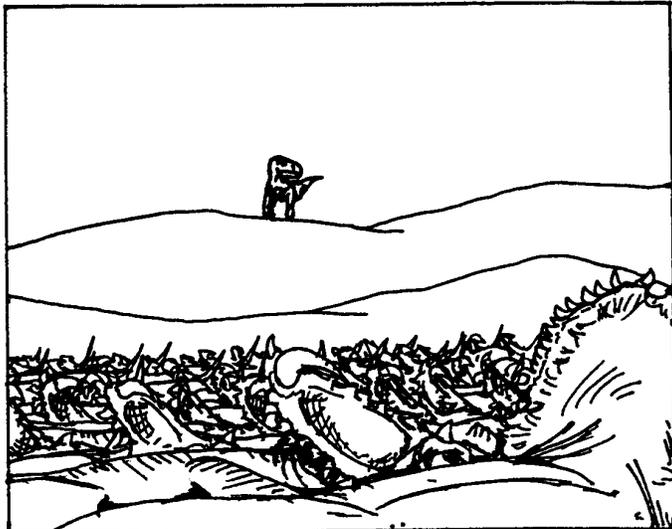
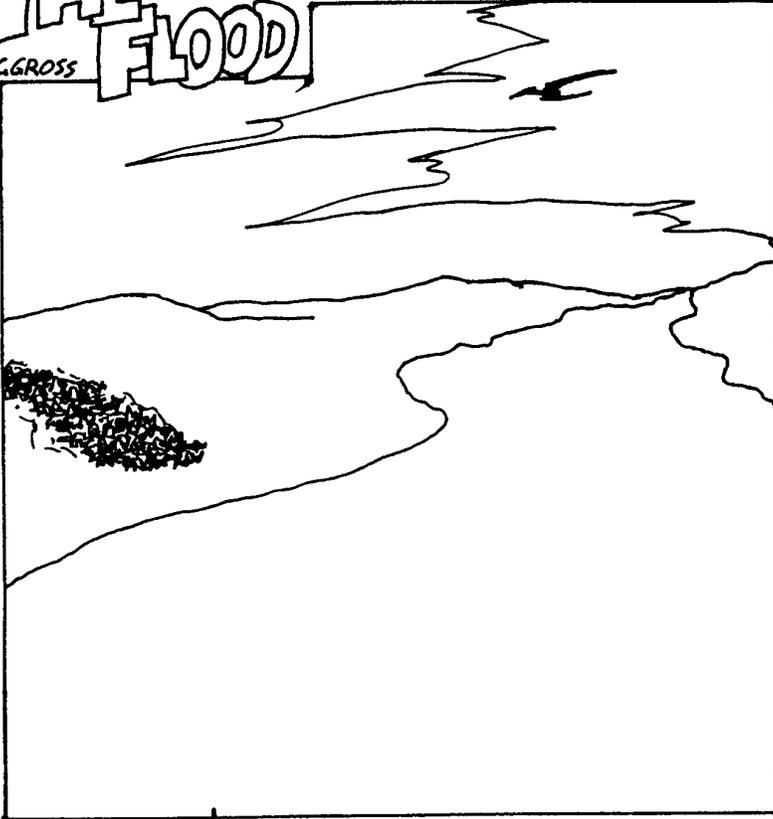
About 150 dinosaur skeletons have been taken out of the Drumheller area (mostly from the Horseshoe Canyon Formation). The Drumheller region is poorer than Dinosaur Provincial Park, but not poor—as more time is spent searching in the area, more finds are made. There have been 12 dinosaur skeletons found within the Drumheller city limits since the RTMP became a factor.

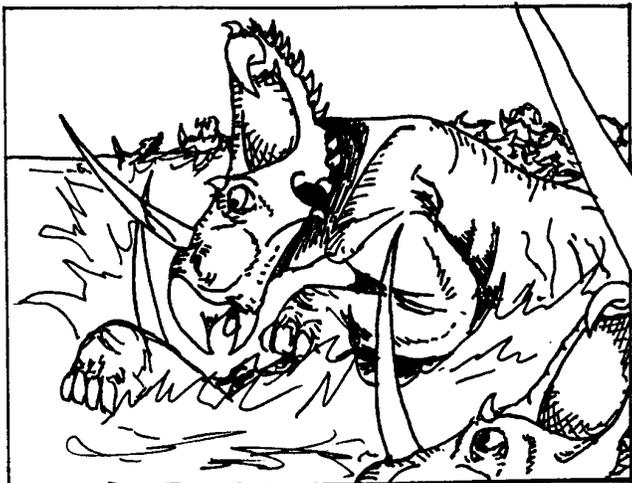
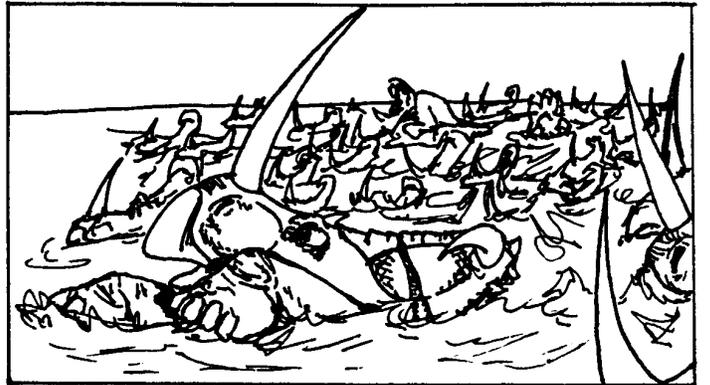
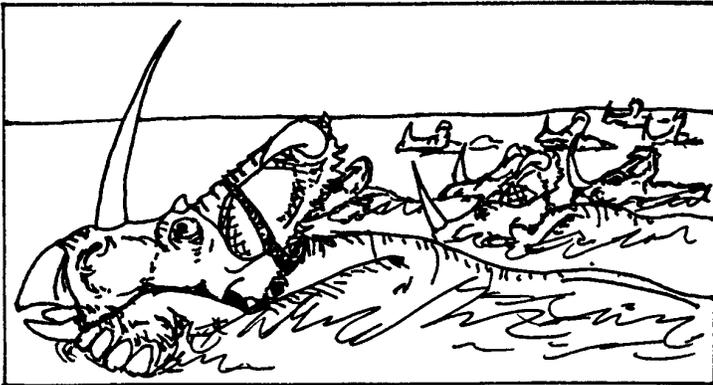
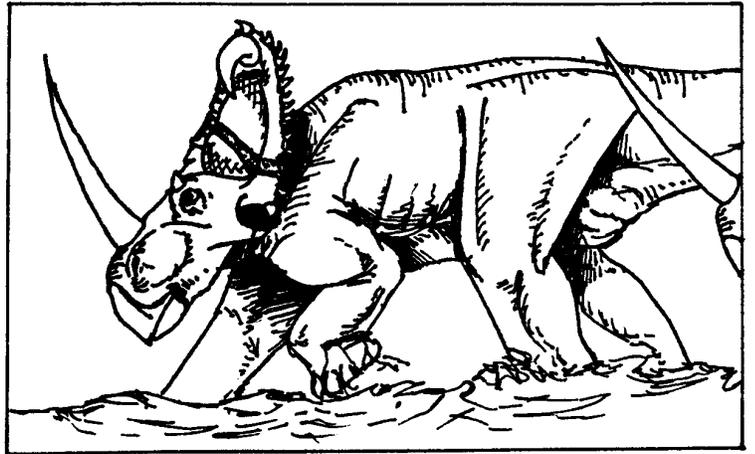
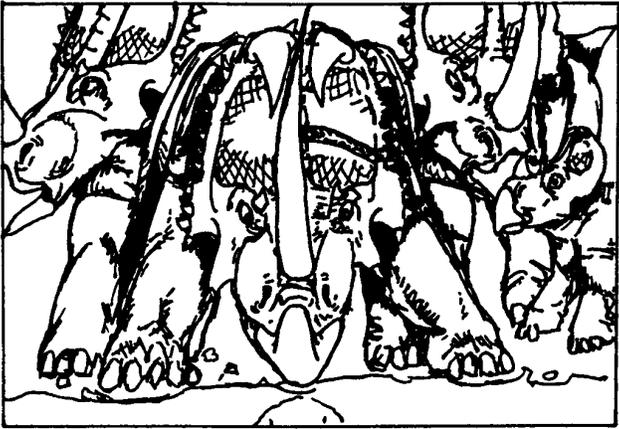
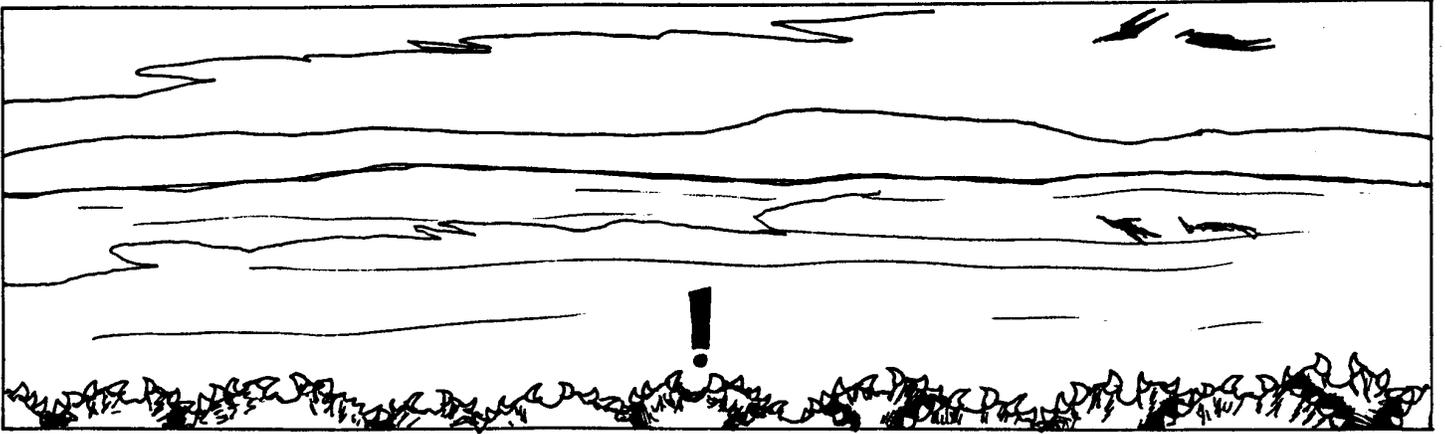
Huxley

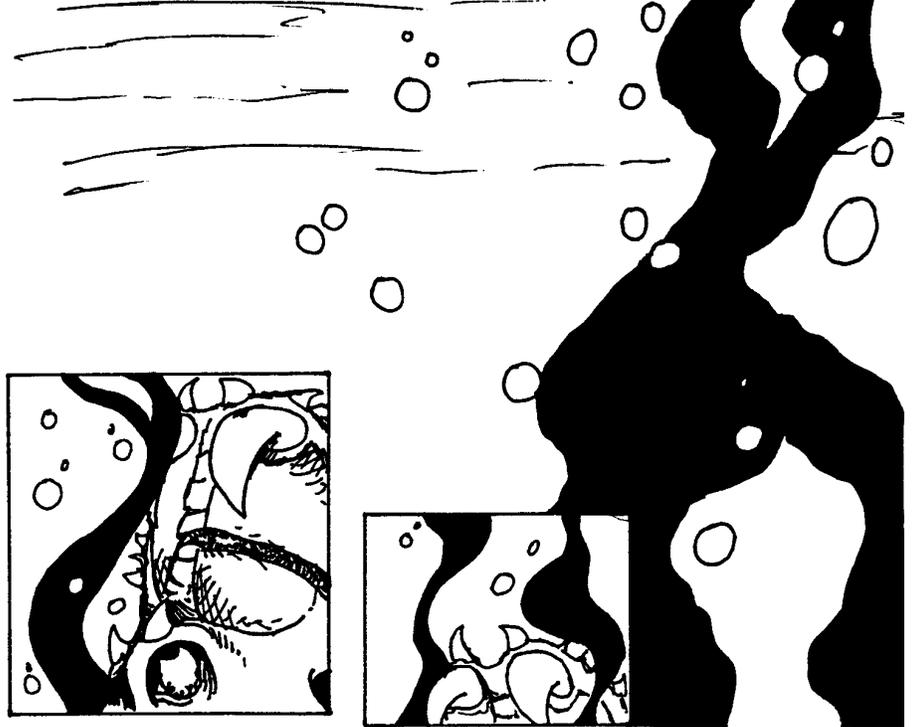
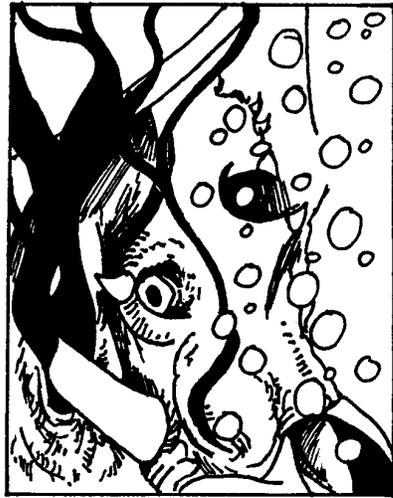
The Huxley T. rex comes from 10 m below the K-T boundary, which has been identified to a 5 mm wide band here. The skeleton was first found in 1943, and was excavated over time, first by Ontario-based palaeontologists and later by the RTMP. The bones that went to Ontario have not been returned to Alberta. The specimen was in ironstone and very difficult to extract. Field conditions were difficult, with much overburden and a steep hillside. The skull was not recovered, and may be lost as the site has collapsed.

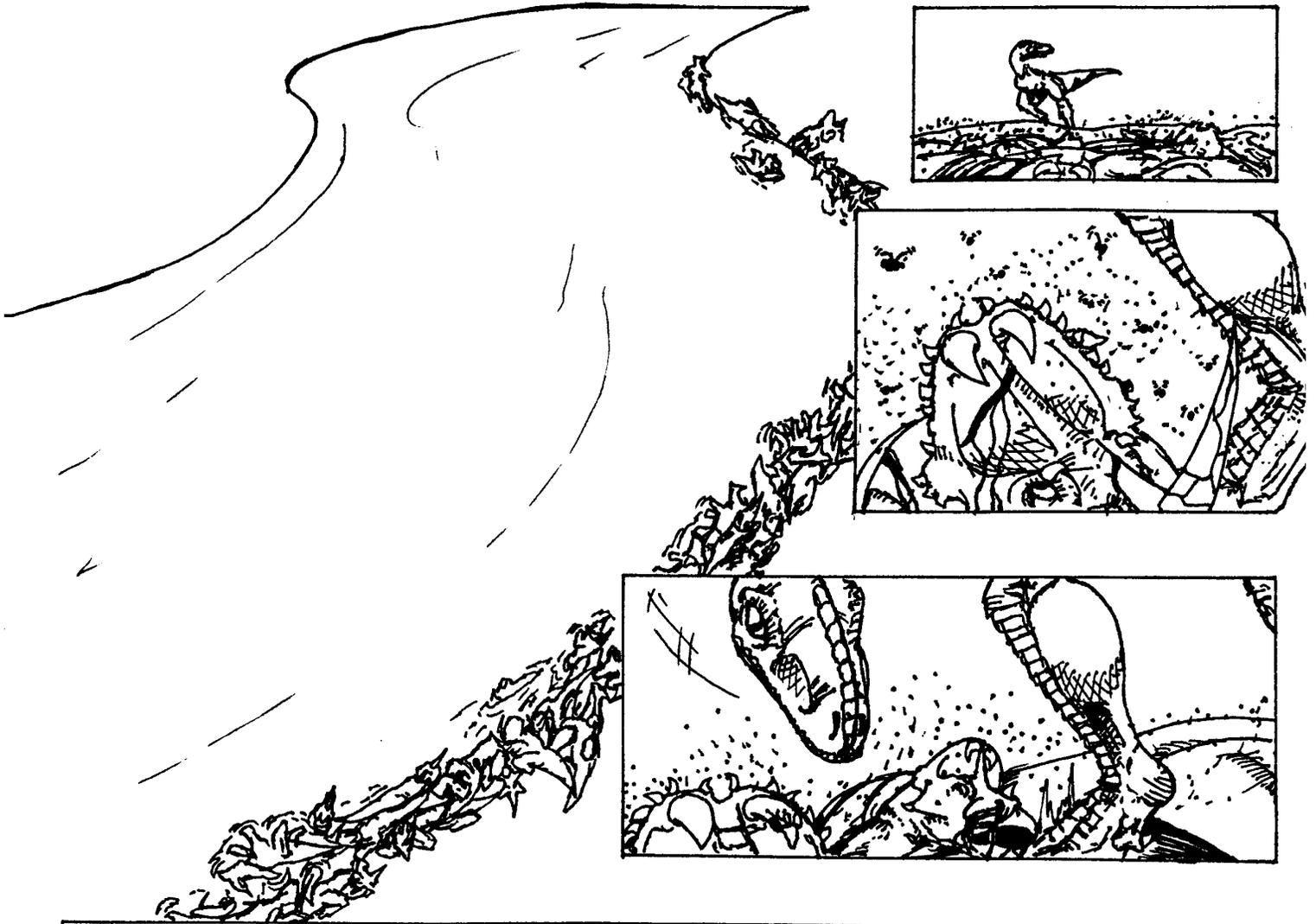
THE FLOOD

BY: G. GROSS









Fossils in the News

Newsweek, July 18, 1994:

By Their Bones, We Shall Know

The warm-blooded versus cold-blooded controversy of dinosaur metabolism has tilted further in favour of the warm-blooded camp. A team led by John Horner of the Museum of the Rockies in Bozeman, Montana, recently uncovered bones of young dinosaurs that were liberally invested with blood vessels: indicative of warm-blooded animals.

Even more recently, North Carolina State University palaeontologist Reese Barrick and geochemist William Showers, analyzing oxygen isotope ratios in well-preserved *T rex* bones from Montana, have concluded that the animal was warm-blooded.

Barrick and Showers report in the journal *Science* that the ratio of two forms of oxygen is the same in both rib and toe bones, suggesting that the animal's toes were roughly the same temperature as its torso, and thus, like mammals, had a warm-blooded metabolism.

The debate is likely to continue, however. Detractors note that, despite the good preservation of the tested bones, the oxygen isotope ratios may not have remained the same in the tens of millions of years since the bones were buried; also, the dinosaurs' bodies may have stayed warm simply through their sheer bulk, following the principle that larger bodies have a higher volume-to-surface ratio, and thus are slower to cool off.

[Another question, which I haven't seen addressed in this oxygen isotope theory, is whether birds, which are warm blooded (often more so than mammals) and are supposedly most closely related to dinosaurs, have the same isotope ratio in their toes and torsos, despite many species spending much of their lives standing or swimming in ice-cold water, or gripping metal wires in sub-zero weather!—ed.]

The Calgary Herald, August 17, 1994:

Dino makes tracks into 20th century

CALMAR, Alberta—While hunting for big game last fall, Edmontonian John Day stumbled across the tracks of *really* big game: a hadrosaur. Realizing the significance of the markings on a slab of sandstone at the bottom of a 100-metre deep creek valley near Calmar, southwest of Edmonton, Day photographed the slab and sent prints to the Tyrrell Museum in Drumheller.

Museum technician Darren Tanke investigated, and speculates that the four tracks were left by a juvenile hadrosaur, or possibly two walking side-

by-side, some 70 million years ago.

Due to budget cutbacks, the museum was unable to afford the cost of airlifting the tracks out of the canyon, until an Edmonton law firm offered to put up the money for a helicopter to hoist the two-metre slab out and onto a truck. The tracks represent the largest such find in the Edmonton area and, according to Tanke, indicate that much more may remain to be found.

The Calgary Herald, July 28, 1994:

Tourists turned away

Western People, August 25, 1994:

Hot bones

The Calgary Sun, (week of Sept. 19), 1994:

T-rex find to rest in peace

The Western Producer, September 29, 1994:

Scotty the T-rex gets grant to stay in home town

Canadian Geographic, Sept./Oct. 1994:

T. rex in Saskatchewan

EASTEND, Saskatchewan—A multitude of clippings continues to pour in over the recent discovery of a *Tyrannosaurus rex* skeleton in southwestern Saskatchewan. [*see Fossils in the News, September, 1994*]

The find has turned nearby Eastend into something of a boom-town, with hastily established tour companies, souvenir shops and, it now appears, a government-funded research station. By mid-September, at least 6,000 people had visited the excavation site, some from as far away as Europe and Asia. Sightseers arriving in cars were being turned away as security personnel scrambled to keep the situation under control.

"This year tours to the fossil find provided an estimated \$700,000 in direct economic benefits to Eastend," stated Saskatchewan premier Roy Romanow. Understandably, the good citizens of Eastend were loathe to see their golden goose spirited away to the provincial museum in Regina, prompting an announcement by premier Romanow that the province would fund a \$190,000 temporary facility to house the bones.

The fossil itself, meanwhile, is considered one of the five best *T rex* specimens in the world. Most of the skeleton, now under a protective cover for the winter, will remain unexcavated until spring.

The Calgary Sun, October 14, 1994:

Two new species of dinosaur found

WASHINGTON (AP)—A team led by Paul Sereno of the University of Chicago has announced the discovery of two new, 130 million-

year-old (Early Cretaceous) dinosaurs from the north-central African country of Niger.

The two new species, reported in the journal *Science*, include an *Allosaurus*-like carnivore named *Afrovenator abakensis* (“African hunter from Abaka”) and an 18 metre-long sauropod, as yet unnamed. Both animals represent forms that survived in Africa long after related species disappeared in North America and Asia.

The Calgary Herald, November 4, 1994:

Dinosaur wasn't an egg-grabber after all, say scientists

Newsweek, November 14, 1994:

Digging Up Baby in the Gobi

Time, November 14, 1994:

Cretaceous Parenting

WASHINGTON (Reuter)—Remember the old story about how the dinosaur *Oviraptor* got its name? About how an American Museum of Natural History expedition to Mongolia in 1923 discovered a nest of dinosaur eggs with a dinosaur skeleton draped over the clutch? And how the scientists declared that the skeleton was that of an egg-robber—hence the name *Ovi-raptor*? Well it appears that the story may be bogus. [If you found a collapsed house with bodies inside, wouldn't you logically assume that the victims were burglars? Um... er, well...—ed.] A more recent expedition by the same museum, this time headed by associate curator Mark Norell, has found similar eggs, containing an intact embryo of—you guessed it—*Oviraptor*. It seems that, rather than being an egg-snatcher, the original *Oviraptor* skeleton was more likely that of a parent protecting its own eggs.

However, in the best tradition of science, a new mystery has cropped up with the settling of an old mystery: among the contents of the *Oviraptor* nest were the skulls of two tiny dromaeosaurs (another predatory dinosaur). Were they egg-stealers? Were they food for the *Oviraptor* hatchlings? There is even speculation that they may have been placed there intentionally by a mother dromaeosaur, to be raised by the *Oviraptor* mother, the way modern cuckoos and cowbirds lay eggs in other birds' nests. Stay tuned.

The Calgary Sun, November 18, 1994:

Dino DNA found

The Calgary Herald, November 18, 1994:

Scientist claims dinosaur DNA discovery

WASHINGTON (AP)—Brigham Young University researcher Scott Woodward and his

colleagues claim to have extracted a fragment of DNA from 80 million year-old (Cretaceous) dinosaur bones. The bones, recovered from a 300-metre-deep coal mine in Utah, though not positively identified, were considered dinosaurian by a process of elimination. Rob DeSalle of the American Museum of Natural History in New York remarks: “This is pretty important because it shows you can obtain DNA from very, very old bone fragments.” A report on the findings appeared in the November 18 issue of *Science*.

[Thanks to Les Adler, Brian Allen, Trudy Martin, Harvey Plotkin and Evelyn Wotherspoon for submitting news clippings – ed.] □

FIELD TRIP COORDINATOR'S MESSAGE

First of all, I would like to thank all the APS members who participated in this year's field trips and especially those members who have helped with resource material and the compiling of the field trip guides. Special thanks to **Harvey Negrich, Wayne Braunberger, Howard Allen, Les Adler** and **Peter Meyer**. I have been field trip coordinator for the last three years and even though I didn't know what I was doing at first, I received a lot of help from other members, especially in my first year as coordinator, from **Dr. Art Sweet** of the Geological Survey of Canada. Without this help I would not have been able to pull these trips off. Although my life has had many ups and downs over the past few years, I have really enjoyed being able to guide people out on these field trips and it has been a rich and fulfilling experience. Out of the last nine field trips, only one had to be cancelled due to weather. Even though the turnout on the field trips has picked up over the last two years, it is my intention to attempt better field trips and better participation in the future.

I have supplemented this Bulletin with a survey which I would like your response to, either by mail, phone, or at meetings. I will be compiling all the information I receive over the next few months to be able to organize future field trips. I will report on this information in a future *Bulletin*. Your *immediate* response would be greatly appreciated in this endeavour. Thank you.

(P.S. Hi to Heather in New York. We miss you on the field trips.)

—Les Fazekas, Field Trip Coordinator □

Reviews

by Les Adler

This View of Life: Hooking Leviathan by Its Past by Stephen Jay Gould, *Natural History*, May 1994, pp. 8–15.

You may wonder at times why scientists are not aggressive when being challenged by creationists. The reason is that when using scientific methods, unless many independent scientists can verify results, the results are held back until scientists consider the time opportune. In a series of articles palaeontologists have been using the pages of *Natural Science* to refute creationists. This article by Stephen Jay Gould is one of these strong rebuttals to creationists.

Darwin's *Origin of Species* was mostly written in the early 1850s. Natural selection (the human analogue of differential breeding) clearly worked at small scale in the production of dog breeds and strains of wheat. Darwin was unable to provide direct evidence of the passage of reptilian lineages to birds and mammals or the origin of humans from an ancestral stock of apes. Gould states that the supposed lack of intermediary forms in the fossil record is due to the nature of the evidence: geologically, there are many gaps in the record; and biologically, patterns of punctuated equilibrium and transition within small populations of limited geographical extent. Gould states that the creationists ignore the new finds and put forward very strongly the cases where the gaps in evolution still exist, as the necessary finds to counter their arguments have not been found in large enough quantities at present.

Gould presents cases where gaps are gradually and continually being filled in:

- The discovery of *Archaeopteryx* in 1861, an early bird with many reptilian features.
- The first finding of human fossils in the nineteenth century.
- The anatomical transition from reptiles to mammals is particularly well documented in the key anatomical change of jaw articulation to hearing bones. Gould gives details of the intermediary forms.
- Creationists stress that whales could not have evolved from other mammals. Gould states that three groups of mammals have returned to the ways of distant ancestors; that is, to a seafaring mode of life: The suborder Pinnipedia (seals, sea lions and walruses) within the order Carnivora; and two entire orders—Sirenia (dugongs and manatees) and Cetacea (whales and dolphins).

Gould shows with great glee that the missing evidence for the evolution of whales can now be

produced. During the past fifteen years a bounty of evidence, the sweetest series of transitional fossils an evolutionist could ever hope to find have been arriving in a gradual and sequential fashion, step by step, to the “smoking gun” in 1994.

Gould then lays out the steps, the evidence, the conclusions, the possible objections in detail with sketches, reconstructions and theory of the various finds relating to the bending of the spinal column and the actions of tail flukes. He states that whales carried their previous terrestrial system of spinal motion to the water. The future is under the evolutionists' control.

Earth's Near-Death Experience by Joseph Alper, *Earth*, January 1994, pp. 42–51.

This article is accompanied by a series of colourful paintings, photographs, maps, and cross-sections, and provides a series of theories which bemuse the reader. The painting at the front shows the ecosystem surviving today with plants at the bottom of the food pyramid, plant-eating insects and animals in the middle and carnivores at the top. But the animals described in this article did not survive, being among the many species that perished in the worst mass extinction in the Earth's history. Besides amphibians and mammal-like reptiles which suffered an immense loss of species, 96% of all marine species disappeared at the end of the Permian period.

Discussions and drawings follow, which suggest that an asteroid or comet may have crashed into the southern part of the Pangean supercontinent. Others say that this is rubbish and that severe glaciation may have wiped out the species. Other suggestions are that tectonic movements, volcanic lava flows, dropping sea levels, climatic change, changes in ocean chemistry or a combination of many of these factors led to a slowly increasing extinction rate. There are further notes on rock types, coincidence and connections between volcanism, climate changes and mass extinctions. As the lady said as she handed out her newly cooked rock cakes, “Take your pick!” □

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Highlights from Exchange Bulletins...

The APS receives several bulletins and newsletters from other societies and clubs on a regular basis. Members are encouraged to examine copies of these, which are filed in the APS library.-ed.

The Earth Science News—Earth Science Club of Northern Illinois (ESCONI)

October 1994

- *Dinobusters*—Note on the use of geophysical imaging techniques for locating buried dinosaur bones.
- *Rockford: Window to the Ancient Past* a reprinted article on collecting Devonian fossils at a park near Rockford, Iowa.

November 1994

- *In Search of the Hylaeosaurus* by Allen A. Debus—despite being one of the first dinosaurs ever described, *Hylaeosaurus* today receives little notice: Mr. Debus corrects this in his article.

M.A.P.S. Digest—Mid America Paleontology Society

May 1994

- *Tracks predate dinosaurs*
- *Was Tyrannosaurus rex really terrible?*
- *Scientists find fossil of walking whale*
- *Australian fossils: export control*

Summer 1994

- *Introducing...Cryolophosaurus ellioti*
- *Richard Trexler, noted amber dealer, dies in pursuit of the golden gem*
- *Morphology and attachment scars of the rugose coral Bordenia knappi (Hall)*
- *T. rex found in Canada*
- *An update on Sue and the Black Hills Institute of Geological Research, Inc.*

October 1994

- *Rocks and Fossils E-mail list*
- *Mazon Creek area of Northern Illinois*
- *Missing-link amphibian found*

Paleo Newsletter—Austin Paleontological Society, Austin, Texas

June 1994

- *Dodson on Dinosaurs: Surviving Jurassic Park*
- *Black Hills/"Sue" update*
- *"Missing Link" in Pakistan? (whale evolution)*
- *New Limb on the Avian Family Tree*

July 1994

- *Turned to Stone (processes of fossilization)*
- *Fossil Legislation*
- *Texas Cretaceous Ammonites and Nautiloids* book hits the shelves—439 pages, only US\$18.50

August 1994

- *What is a Crinoid?*
- *Ascent of the Bugs*
- *Turtle Clues* (on the origin of turtles)

September 1994

- *What is a Dinosaur?*
- *Devonian Paleontology of New York* (review)
- *State Fossils in the U.S.*

October 1994

- *Geisonoceras* (notes on Ordovician nautiloid)
- *Eutrephoceras* (notes on Jur.–Tert. nautiloid)
- *Fossil Locality—Nova Scotia*

Ontario Paleontology Association

Newsletter, Sudbury, Ontario

August 1994

- *Recollections of the Summer of 92* (fossil collecting in Ottawa)

Calgary Lapidary Journal—The Calgary Rock and Lapidary Club

October 1994

- *Living Fossil* (Ginkgo trees in Kelowna, B.C.)

British Columbia Paleontological Alliance

Newsletter—Courtenay, B.C. (Formerly the Vancouver Island Paleontological Society Newsletter, now allied with The Vancouver Paleontological Society.)

July 1994

- *Jurassic Fossils of Kyuquot Sound (In Jeletzky's Footsteps)*
- *Results of the Dinosaur Project*
- *V.P.S. / V.I.P.S. Field Trip Journals*
- *Mesozoic Vertebrate Fossils of Vancouver Island*
- *The G.S.C. and Dinosaurs*
- *Yoho-Burgess Shale Research Foundation*

Fossil Trails—Alberta Federation of Rock Clubs

June 1994

- *Trilobites* (an introduction)

Journal of Paleontology—The Paleontological Society (a technical scientific journal)—articles pertaining to Canadian palaeontology:

July 1994

- *New Lower Silurian (Llandovery) encrinurine trilobites from the Mackenzie Mountains, Canada*
- *Uppermost Wenlock and lower Ludlow plectograptine graptolites, Arctic Islands, Canada: new isolated material*

September 1994

- *The lichid trilobite Borealarges n. gen., with species from the Silurian of Arctic Canada.* □