

SOUTHWEST CENTER FOR ADVANCED STUDIES

FORMERLY

GRADUATE RESEARCH CENTER OF THE SOUTHWEST

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Al Mitchell, Information

SEVENTEEN PAPERS BY S.C.A.S. EARTH SCIENTISTS ON NATIONAL PROGRAM

Seventeen papers will be given by Geosciences Division faculty and staff Southwest Center for Advanced Studies, members, Monday through Thursday, April 17-20, at the American Geophysical Union national meeting in Washington, D. C.

Prof. Anton L. Hales, who heads the Geosciences Division, will also be chairman of two national meeting sessions on Monday and Tuesday afternoons. The first will center on observations and interpretations of heat flow from the Earth's interior; the Tuesday session will cover structure of the crust and upper mantle.

Asst. Prof. Glen H. Riley will be chairman of the Wednesday morning session on radioisotopic studies, the use of isotope decay timetables and precise chemical-physical steps to determine ages of rock samples.

Prof. Mark Landisman will be chairman Thursday afternoon, for the national session on earthquake surface waves and ~~their "ringing" effects~~ "ringing effects" that persist several hours after large primary shocks.

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Asst. Prof. John Reitzel will report preliminary results of magnetic deep soundings near the Rocky Mountain Front in a Monday afternoon paper. The field experiment, using an inexpensive portable variometer array, will be carried further this year after revealing an unusual magnetic structure in central Colorado. The variometer itself will be explained by Professor Reitzel and Prof. D. Ian Gough in a second paper. Capable of recording

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substantially the same magnetic events as fixed stations -- similiar to the Dallas Geomagnetic Center -- the portable unit requires little electric power and can operate for as long as 25 days unattended, providing a 35 millimeter film record.

Three papers will be given by the Dallasites on Tuesday. Professor Hales and Research Scientist Rodleigh W. E. Green will report on seismic travel times in the central United States, from "Early Rise" project records. The project recorded man-made shock waves produced by explosions set off in Lake Superior along a line stretching from the Texas border to upper Wisconsin.

Professor Hales and Research Associate Hugh A. Doyle will also give papers on long-range shear wave travel times and interpretations of unusual recordings of both primary and secondary earthquake waves.

Research Associate John J. Dowling will report on the large-scale East Coast On-Shore, Off-Shore Experiment (ECOOE) which was co-ordinated by Geosciences Division. The co-operative experiment, bringing together teams from 11 universities and agencies, also used high explosive shock waves to reveal continental shelf and basement structural layers through sound travel recordings.

Professor Riley will give three papers based on rubidium-strontium isotope studies on Wednesday. One paper is co-authored by C. R. Bowman and R. S. Foote.

Asst. Prof. Martin Halpern will report on an expedition and laboratory analysis of rock samples from West Antarctica in a Wednesday paper. Early results indicate a closer linkage in rock ages between the Tierra del Fuego region of Chile and the Antarctica peninsula, down to eastern Ellsworth land, than to the Antarctic's Sentinel Range nearby.

Three papers by Assoc. Prof. Charles E. Helsley, two co-authored by Amos Nur, are scheduled Thursday. In Professor Helsley's report on magnetic studies of Cretaceous rocks -- 60/million-year-old rocks -- from 11 North American sites, the probable location of the North Pole is identified as the vicinity of Siberia's eastern tip, just above the Arctic circle. In addition, some indication has been obtained that the Earth's magnetic poles reversed during the period, perhaps more than once.

Studies of rocks from Israel, to be reported in the other two papers, show the Arabian sub-continent ~~to~~ may structurally have been/part of Africa at least as far back as 180 million years. The same analysis of magnetic pole wanderings puts Israel on the equator in that (early Jurassic) period.

Asst. Prof. Ian D. MacGregor will discuss methods of defining the depths of origin of basalt magmas -- fine grained, dark rocks cooled from liquid states -- by heat and pressure experiments on mafic and ultramafic nodules. These are rock structures rich in magnesium, iron, aluminum and silicon oxides. The experiments use pressures up to 40 kilobars, or 40,000 times atmospheric pressure, and temperatures approaching 1500 degrees centigrade.