



Photo courtesy of Jim Kemp

The University's Pine Mountain Observatory is the home of University astronomer Jim Kemp for his studies to predict the occurrence of sunspots and other solar activity.

## University astronomer studies method to predict solar activity

By Sandy Johnstone  
Of the Emerald

Jim Kemp is shedding some light on the sun — specifically on sunspots, the solar outbursts caused by magnetic storms on the sun.

Kemp, a University astronomy professor, spends part of his time working near Bend at the University's Pine Mountain Observatory, where he experiments with a new method which measures the sun's submerged magnetic fields using infrared polarized light.

"Giant bubbles arise from inside the sun and carry the magnetic field to the surface," he explains. "My goal is to detect buried magnetic fields before they come to the surface. Then we'll be able to predict the onset of solar activity."

Kemp's polarimetry method can obtain "extremely sensitive measurements," he says. Using precise measurements of submerged magnetic fields, scientists can predict solar activity such as sunspots.

Polarimetry allows Kemp to probe about 500 miles below the sun's surface. Previous methods allowed scientists to explore only about 10 miles down. When he first tried the method in 1981, Kemp achieved "an immediate success and got the most sensitive measure of sunspots so far.

"It is important for the worldwide community to know about the onset of solar activity and events," he says. Operations

such as space launches, which depend on perfect communication, could benefit from this type of knowledge because the energy sunspots send to the earth influences radio communication and the weather.

Kemp is working with Joseph Macek, an atomic physicist from the University of Nebraska, on a theory which explains the magnetic polarization of sunspots by looking at the complicated motions of spinning electrons and atoms combined with unusual conditions in sunspots.

Beginnings of his theory emerged with some laboratory research in 1975, but Kemp only began to concentrate on developing his theory about two years ago.

"The problem before was nobody did good enough ob-

servations to test any theory," he says. "And besides, no one else thought of this."

Kemp has a grant for \$39,000 from the National Science Foundation, which probably will be renewed, he says. He plans to continue his sunspot research through the 11-year sunspot cycle.

Kemp also is relating his discoveries about sunspots to other stars.

For example, he is trying to pin down what causes the brightness changes observed in flare stars, which are like the sun but have brightness changes at irregular intervals.

"If the sun did that it would wipe us out," he says.

Kemp speculates that the sun may evolve into a flare star "in a billion — but maybe a hundred million years from now."

## Federal crime, draft legislation scheduled for ACLU discussion

Frank Wilkinson, founder of the National Coalition Against Repressive Legislation, will be on campus for two speeches today, sponsored by the American Civil Liberties Union.

The first speech, dealing with the prosecution of draft resisters, the Solomon Act and other draft-related topics starts at 2:30 p.m. in the EMU Forum Room.

The Solomon Act would require all eligible male college

students to register for the draft before they can receive federal financial aid.

Wilkinson's second speech, focusing on an anti-crime bill and the threat it poses to civil liberties, will begin at 7:30 p.m. in Room 125 of the law school.

The bill, which would allow suspects to be held without bail, was sponsored by Sen. Strom Thurmond of North Carolina, chairman of the Senate Judiciary Committee.

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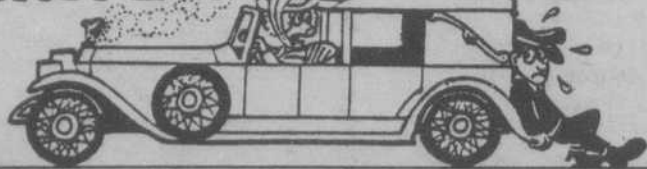
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