**Meteorologist Saved D-Day 50 Years Ago**

PAGE 270

June 6, 1944, might have been remembered as doomsday instead of D-Day if General Dwight D. Eisenhower’s chief weatherman had been wrong about his forecasts.

When J.M. Stagg was appointed chief meteorological officer of the Allied Forces in October of 1943, he had no idea he would pay a crucial role in shaping world history. Little did he know it would be his analysis on the beaches of Normandy.

First, the weather team advised Eisenhower on June 4 to delay Operation Overlord by 24 hours, which meant that thousands of Allied troops and seamen were waiting on the high seas. The weatherman then faced a monumental dilemma: Either the mission had to go forward within the next several hours or the entire invasion would have to be postponed for at least 2 weeks. If the weather didn’t improve, the men would not have made it across the waters of the English Channel. However, if the mission were stalled, the Allied Forces might miss the strategic opportunity on the shores of Normandy.

Then on June 5, when the weather team eyed a short break in the storms, it recommended that Eisenhower go ahead with the operation. He again heeded their advice. And indeed, Overlord was a success.

Stagg maintains that even if the meteorological officers had modern day innovations and equipment on hand during the period before D-Day, the team wouldn’t have been able to produce better weather forecasts, but he does acknowledge that the forecasts would probably have taken less time to make.

Even President Harry Truman touted Stagg’s efforts in helping choose June 6, 1944, as the day to launch the Overlord assault; considering his forecasts central to the success and likely the only day in June 1944 that the assault could have succeeded.

**New Generation of Earth Observing Satellites Born**

PAGE 269

Following on Landsat’s seeming “Generation X” of satellite technology, NASA has hatched a plan to build a new era of Earth observing crafts called “Smallsat” to help put NASA’s “faster, better, cheaper” policy into practice, NASA administrator Daniel S. Goldin announced last week.

NASA selected two commercial teams, CTA of Rockville, Md. and TRW Inc. of Redondo Beach, Calif., to develop, build, launch, and deliver the new duo of satellites to orbit within the next 2 years—and for under $60 million apiece. The minicrafts, which will provide global atmospheric pollution dynamics data for NASA’s Mission to Planet Earth program as well as space physics and cosmic ray data, will be launched from a $12 million Pegasus vehicle. This will also reduce overall costs as many larger satellites must be launched from rockets, which generally run about $600 million.

The new tandem of Smallssats dubbed Lewis and Clark will be applications of an advanced sensor technology previously used exclusively for defense, Goldin explained. TRW’s Lewis will have 384 separate spectral bands for scanning, compared with the seven available in the Landsat satellites. In addition, Lewis will be able to selectively pass over cloud-covered sites. CTA’s Clark, which will combine a high-resolution optical element with stereo imaging capabilities, will mainly be used to “locate utility pipelines and cables from the sky, help city planners evaluate their transportation needs and problems, and help developers and contractors assess construction sites,” Goldin said.

Somewhat like the joint NASA-Defense Department Clementine spacecraft, which recently successfully mapped the Moon but failed to meet its second objective of mapping an asteroid, TRW’s program is a high-risk project, which if successful, will accelerate the transfer of technology to commercial applications and meet scientific goals at the same time, NASA officials said.

“This is a new way of doing business for NASA. We told the industry what to do—not how to do it. If the satellites don’t perform, they don’t get their performance fees. If they run into cost overruns, they’ll face a dollar-for-dollar reduction in their fees,” Goldin said.

---

**SECTION NEWS**

**SPACE PHYSICS & AERONOMY**

**Editor:** Edgar Bering III, University of Houston, Department of Physics, Houston, TX 77204-5504, tel. 713-749-2848

**Parallel Electric Fields in Lab and Space Plasmas Reviewed**

PAGE 276

A symposium was held at the Union Radio Scientifique Internationale (URSI) General Assembly in Kyoto in 1993 to review research concerning electric fields that have a component parallel to magnetic field lines; that is, when E.B is not equal to zero. Under these conditions the frozen-in-theorem of ideal magnetohydrodynamics is not applicable. Indeed, E.B = 0 is one of the cornerstone conditions on which the demonstration of this well-known theorem is founded.

The similarity between laboratory double layers and those observed in the magnetosphere is not always obvious. However, the symposium, Parallel Electric Fields in Laboratory and Space Plasmas, showed that cross fertilization of laboratory plasma physics and space plasma physics can be achieved.

Although the existence of parallel e-fields has been a controversial issue for several decades, field-aligned electric fields have been observed in magnetospheric plasmas as well as in laboratory experiments.

Space and laboratory experiments were comprehensively reviewed by C.-G. Falthammar and N. Sato. Both presented stimulating results from the Viking and Freja satellites as well as from laboratories where double layers are studied from experimental points of view.

A historical review of controversial issues on Birkeland Currents and on an ongoing debate concerning the implication of dc parallel electric fields in the acceleration mechanism of auroral electrons was presented by T. Potemra. He illustrated both points of views and the reasons behind the long-standing resistance of the scientific community to accept the paradigms of field-aligned currents and dc parallel electric fields.

Oral contributions on various theoretical and experimental aspects were presented by C. Kletzing, Carl E. McIlwain, and M. Roth.

Eight papers on experimental and on theoretical aspects related to field-aligned electrostatic potential drops and double layers were displayed during the poster session. A. Miura presented a new current-voltage characteristic relationship applicable to auroral magnetic flux tubes; H. Washimi’s presentation indicated that the field-aligned potential drop cannot exceed some saturation value. He discussed the role of this maximum value for the equipartition of energy in magnetoplasmas; S. V. Fridman displayed results of a dynamical model for
the generation of field-aligned currents by magnetospheric drift currents; J. F. Lemaire and B. D. Shizgal emphasized that quasi-neutrality is only a "special solution" of Poisson's equation, but is not the most general solution.

Interesting laboratory results on double layer experiments were displayed at the poster session. T. Honzawa presented new results on ion acceleration by electrostatic wave fields; Y. Takeda, H. Inuzuka, and K. Yamagina showed observations of strong double layers formed by nonlinear Buneman modes in a high-current plasma discharge; T. Tanikawa and A. Y. Wong showed results from caviton-induced double layer-like potential structures; N. Sato, N. Nakamura, Y. Watanabe, and R. Hatakeyama presented new results on field-aligned electric fields in magnetized plasmas.—E. C. Whipple, NASA, Washington, D.C.; and J. F. Lemaire, Institut d'Aeronomie Spatiale de Belgique, Brussels