competed in the National Contest at Elmira and placed 23rd. This disappointment led him to reassess his goals.
He left PanAm to resume his education at Mississippi State University to study Aeronautical Engineering under Dr. August Raspet. While at Mississippi, he commissioned Harland Ross to build a glider for him. He took delivery of it when only about 60% complete, and under the direction of Dr. Raspet, the RJ-5 was completed.
The RJ-5 marked the beginning of high performance sailplanes. With it Dick won his first National Soaring championship in 1950 at Grand Prairie, Texas. In 1951 he won the National again, and on August 5, 1951, he flew the RJ-5 to set a new World-Single Place-Distance Record of 535 miles. In 1952 he won the Nationals again and set a World-Single Place 100 km Triangle-Speed Record.
Dick would go on to win the U.S. Nationals in 1954, 1959, 1963, 1964, 1974 (Standard Class), 1975, 1981 and 1985 for a total of eleven times.
As a pilot he represented the U.S. at World Championships in Spain (1952), Germany (1960), Argentina (1963), England (1965), Poland (1968), Yugoslavia (1972), Australia (1974), Finland (1976), and France (1978). He served as a crewman for Paul Bikle in 1958 in Poland and was the U.S. Team Captain in 1970 at Marfa, Texas.
Dick earned bis Bachelor of Science-degree in Aeronautical Engineering from Mississippi State University in 1952 and his 'Master of Aeronautical Sciences' from Stanford University in 1953.
He worked at Chance Vought Aircraft from 1953 to 1955 and at Tempo Aircraft from 1955 to 1961 as a aerodynamicist, measuring flight test performance levels on various aircraft. Since December, 1961, Dick has been Chief Aerodynamicist for Texas Instruments of Dallas, Texas.
He received the Advancement of Aerospace Science Award from the North Texas Section of the American Institute of Aeronautics and Astronautics in 1977 and became a Associate Fellow of AIAA in 1981.
In recognition of his contribution to Texas Instruments, Dick was elected to Senior Member of the Technical Staff in 1979. He received the Patrick E. Haggerty Innovation Award at the Texas Instruments stockholders meeting in April, 1987. This award is presented for significant innovations having a major impact on Texas Instruments or the economies or societies in which it operates.
Utilizing his educational and professional background as an aerodynamicist, Dick built and modified most of the sailplanes he flew in competition. These changes were evaluated, and testing expanded to the Flight Test Evaluations series sponsored by the Dallas Gliding Association and published in SOARING Magazine since 1974.
Soaring awards have included Helms Athletic Foundation Hall of Fame, S.S.A. Soaring Hall of Fame (1956), Warren E. Eaton Memorial Trophy (1967), Paul Tuntland Award (1977, 1979, 1983), Tissandier Diploma (1976), S.S.A. Expectional Service Award (1983).
Dick married Alice Gelling from Aberdeen, Mississippi, in 1952. They had four sons, Mark, Nels (deceased), Cyrus, and Ira. He plans to retire from his position at Texas Instruments in another year or so. They, he and Alice, may do some extensive world travelling, visiting and revisiting the many world gliding communities.

OSTIV-DIPLOMAS

Again two OSTIV-DIPLOMAS have been awarded for papers, presented at the XVIII OSTIV-Congress at Hobbs, one for the best technical and one for the best meteorological paper being of particular value to OSTIV.
Dipl. Ing. L.L. BOERMANS received the OSTIV-DIPLOMA for the best technical paper with the following citation:
"THE OSTIV diploma is awarded to Dipl. Ing. L. Boermans for his paper presented at the XVIII OSTIV-Congress at Hobbs, New Mexico: 'Wind Tunnel Test of Eight Sailplane Wing-Fuselage Combinations'. He delivered a concise and exciting report on his carefully planned experiments and the diligent theoretical analysis providing sailplane designers valuable information on wing-fuselage aerodynamic interference.
In previous OSTIV papers, Mr. Boermans has covered subjects ranging from sailplane optimization to airfoil design, and through his work at the University of Delft he is continuously contributing to the furtherance of sailplane technology."

Loek M. M. Boermans

Loek M.M. Boermans was born in 1946. He received bis education in Aeronautical Engineering at the Technical University of Delft, Department of Aerospace Engineering, where he graduated in 1973. Since that time he has worked at the Laboratory of Low Speed Aerodynamics of that University, first as a member of the subject group Airplane Design / Flight Mechanics (under the leadership of Prof. H. Wittenberg) and later as Associate Professor in the subject group Aerodynamics, Section Low Speed Aerodynamics (led by Prof. J.L. van Ingen). At the General Conference of OSTIV in Chateauroux 1978 he was selected as a Board member of OSTIV.
He has presented several papers at OSTIV-Congresses, which are characterized by combining theoretical methods and windtunnel – or free flight experiments directed to improve the aerodynamic design of sailplanes and lightweight aircraft. The work on airfoil design, specially commended by the Technical Section of OSTIV in Publication XVI, and the work on wing-fuselage combinations awarded now, particularly contributed to the design of a new sailplane (ASW-24) in which he was involved. More in general, his advices and experimental work, occasionally in cooperation with DFVLR Braunschweig, contributed to the performance of several modern sailplanes.

Dr. Terry L. CLARK received the OSTIV-DIPLOMA for the Meteorological paper with the following citation:
"The OSTIV DIPLOMA is awarded to Dr. Terry L. Clark for his paper at the XVIIIth Congress in Hobbs, New Mexico, USA: 'An Interactive Grid Nesting Model for Flow Simulation in Two and Three Spatial Dimensions of Mountain Forced Waves'.

Dr. Terry Clark

By ingenious and carefully selective simplification of the complexities of such modelling Dr. Clark was able to simulate significant features of turbulence, convective instability, wave breaking and periodicity in mountain waves in a realistic way. The results of such simulation enables us to get a better understanding of these features and will pave the way for further extension of our knowledge of the subject."

Dr. Terry Clark was born in 1943, studied first Electrical Engineering at the University of British Columbia, Canada, then Meteorology at the University of Toronto, Canada, were he finished his Master of Science and his 'Philosophical Doctorship' with a Thesis on convective clouds and numerical cloud modeling.

A Post Doctoral Fellowship of nearly two years at the Geophysical Fluid Dynamics Laboratory in Princeton, New Jersey, followed with work on numerical modeling of convective clouds.

Very consequently-regarding his engagement in modeling and cloud physics – he spent approximately four years at the Atmospheric Environment Service in Downsview, Ontario, where he was involved with developing a general three-dimensional small scale convection model.

Then he changed 1977 to the National Center for Atmospheric Research, (NCAR), Convective Storm Division, at Boulder, Colorado, where he was appointed as Senior Scientist, supervising a modeling group mainly working in numerical simulation of convective storms.

Together with Dr. Joachim Kuettner, Honorable Member of OSTIV and also working with NCAR, Dr. Clark's interest is directed also on the theoretical treatment of the 'thermal waves', observed and wellknown to most of the glider pilots. Hopefully they will report in future congresses about good simulations and explanations of that phenomena.

KEYNOTE ADDRESS

by

Dr. Joachim Kuettner
National Center for Atmospheric Research
Boulder, Colorado
U.S.A

50 Years of Wave Soaring
Adventure, Research, and Challenge

"Ladies and Gentlemen,
50 years ago, on the 3rd of March 1933, the great soaring pioneer, Wolf Hirth, made the first wave soaring flight in Grunau, Germany. This flight brought a new type of adventure of the sport of soaring, namely the very high altitude flights. It also presented a remarkable scientific discovery that stimulated a new type of research resulting in a still continuing stream of scientific papers. Finally it presented a challenge which is as strong today as it was 50 years ago because the potential of wave soaring has in no way been fully exploited. It is on these three aspects of wave flight – adventure, research, and challenge – that I wish to talk about today with a view towards the second half century of wave soaring.

Adventure

Let us take a look at the mountain profile where Hirth's first flight was made (Fig. 1). All that was surprising about this flight was that the sailplane kept climbing over

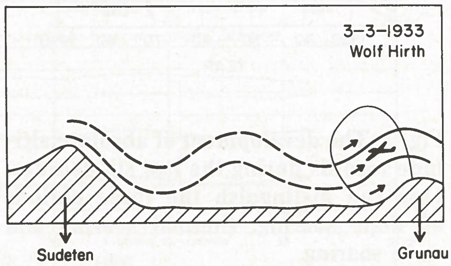

Fig. 1: First wave soaring flight over Grunau (Germany) by Wolf Hirth and his interpretation of airflow induced by upstream mountain range of Sudeten.

the slope, very slowly in smooth air, to about 4,000 ft. and the updraft area extended far upstream from the slope. More surprising was that Hirth immediately suspected the higher mountain range of the Sudeten, 25 km further upwind as the source of a wave lift and that he saw a connection with a stationary high cloud which hovered over this mountain range. This was the celebrated "Moazagotl" cloud, known locally as an indicator of bad weather, but made famous among glider pilots as a symbol of high altitude soaring by Hirth's later sailplane designs "Moazagotl" and "Minimoa", the beautiful gull-winged craft. Soon the heights reached at the gliding school in Grunau increased to world record altitudes first achieved by the school's exploration minded instructor, Paul Steinig. I remember myself a record flight to 23,000 ft. without oxygen in an open sailplane. With blue face I landed somewhere in Poland, not eager to repeat this adventure. A few years later the stratosphere was reached by Klöckner in the wave-lift of the Alps.

Fig. 2 shows an interesting curve of altitude records vs. time. We notice 3 regimes: slope soaring, thermal soaring, and wave soaring. Each starts steeply then flattens out temporarily. We recognize the limitations by the need for oxygen, then pressure oxygen, and finally, pressurization. This last barrier will soon be overcome and another climb to 55,000 ft. can be expected; but not much higher, because at these levels the wind velocity usually decreases – except in the circumpolar jetstream of the arctic winter, where we find the "mother of pearl clouds" near 80 to 100,000 ft over mountains. Notice