

INTERNATIONAL CONFERENCE ON ENVIRONMENTAL ERGONOMICS - IV

Austin, Texas
October 1 - 5, 1990

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Meeting Content and Format

Environmental Ergonomics addresses problems of maintaining human activity under physiologically stressful conditions. This includes two general areas — human physiological responses to exercise and stress, and the properties of clothing and protective equipment. The conference has been designed to provide a congenial environment for discussion among scientists working in both areas.

Each session begins with a presentation by an invited speaker uniquely qualified to summarize current knowledge, speculate on directions for future research, and guide discussion. Contributed papers are divided between oral and poster presentations to obtain sessions that are as coherent as possible. The schedule contains ample time for viewing posters and discussion with their authors.

Notes

Meeting Arrangements

Reception

The reception on Tuesday evening **will** be held at the Zilker Park Club House which provides a pleasant view of downtown **Austin**. Transportation **between** the Four Seasons Hotel and the Club House **will** be provided by Armadillo. The first group **will** leave the hotel at 1730 with **additional departures** every **20 minutes**. A selection of Texas beer and Wine, **soft drinks**, and **hors D'Oeuvres** **will** be provided during the conversation horn which precedes a typical Texan **barbecue dinner** **at** approximately **1900** hours. After dinner, Ruth Alpert, a very accomplished **performer** from Albuquerque, **will** present a demonstration of clog dancing accompanied by **several local folk** musicians. The Armadillo **will begin** return trips to the Four Seasons **at 2100** horn.

Banquet

The banquet on Thursday evening **will be** preceded by a conversation hour with a cash bar **beginning** at 1830 horn. Dinner **will be** served at 1900 hours. Registrants have a choice of two **entrees --** Beef medallion and **campfire** shrimp with Jack Daniel **sauce** and lime butter, **or** Sauteed Pacific salmon and **masted** tomatillo sauce. Please make your **selection** at the Registration **Desk** before noon on Tuesday, **October 2, 1990**.

After **dinner** Dr. Ethan R. Nadel, **Director** of the John B. Pierce **Foundation** at Yale University, **will** present a **program** on the Ergonomics **of** Human Powered **Flight** **The April 23, 1988** flight of the Daedalus across the Agean **sea** Following his **presentation**, we **will** adjourn to the foyer where a glass of "Chateau La **Fleurie** Peyrquey" and assorted chocolates **will be** served.

Around Austin

Several cultural and historic **sites are** worth visiting in **Austin**. The concierge at the Four Seasons has informative brochures describing most of them, and she can **also** tell you how best **to** get there. A **few** possibilities are listed below.

Texas Capitol Area:	State Capitol and Governor's Mansion, Old Bakery and Emporium
The University of Texas Area:	Harry Ransom Museum Lyndon B. Johnson Presidential Library
Shopping:	Barton Creek Mall Highland Mall
Browsing:	A variety of interesting small shops and restaurants may be found along Congress Avenue and Sixth Street in the central city area

Program for Spouses

Information **about** the program **for spouses** **will** be available at the Registration **Desk**. Please **sign up for** these **activities** on Sunday **or** Monday.

Acknowledgements

The U. S. Air Force Office of Scientific Research provided a significant grant which made **this** conference possible.

W. L. **Gore** and Associates, Inc. of **Elkton**, Maryland donated the attractive bags which **were** given to registrants and are becoming a traditional part **of** the Environmental Ergonomics Conferences.

Notes

Schedule of Sessions

	<u>0830 - 1200</u>	<u>1200 -1330</u>	<u>1330 - 1700</u>	<u>1900 - 2000</u>
Sunday	—	—	Registration Session 2	Cash Bar
Monday	Session 1	Lunch		—
Tuesday	Session 3	Lunch	Session 4 Discussion	Reception
Wednesday	Session 5	Lunch		—
Thursday	Session 6	Lunch	session 7	Banquet
Friday	Session 8	Finis	—	—

Each session consists of a 40 - minute invited lecture followed by five 30 - minute contributed papers, with a break midway through the session. Authors of poster presentations will be available to discuss their papers during the afternoon breaks on Monday, Tuesday, and Thursday.

Sessions and Invited Speakers

<u>Session</u>	<u>Subject</u>	<u>Invited Speaker</u>
1	Fundamental Considerations	Dr. J. R. Allan Army Personnel Research Establishment Farnborough, England
2	Physiology	Dr. Loren Myhre USAF School of Aerospace Medicine San Antonio, Texas
3	Measurement Techniques - I	Dr. Elizabeth McCullough Institute for Environmental Research Kansas State University - Manhattan
4	Measurement Techniques - II	Dr. Wouter Lotens TNO Institute for Perception Soesterberg, The Netherlands
5	Breathing Apparatus and Ventilation	Dr. William P. Morgan Sport Psychology Laboratory The University of Wisconsin - Manhattan
6	International standards and Human Performance - I	Dr. Bjarne Olesen Technical University of Denmark Lyngby, Denmark
7	International Standards and Human Performance - II	Dr. Kenneth C. Parsons University of Technology Loughborough, England
8	Survival Following Accidental Immersion in Cold Water	Dr. Alan M. Steinman U. S. Public Health Service Rockville, Maryland

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Co-chairmen: Robert Weinberg and Eugene H. Wissler

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FOR WHOM DO WE RESEARCH?

Dr J R Allan,
Army Personnel Research Establishment,
Farnborough, GU14 6TD.

In his search for knowledge and understanding of the world around him, the pure research scientist has **no** need of other justification. But for those working in the broad field of ergonomics, possible applications of our results form an important part of the overall objective. The road from the research laboratory to **the** factory door is long and poorly signposted, and it is populated only thinly with those who are motivated to improve the route and facilitate the flow of traffic. Here is important territory for the ergonomist. Yet too **often** we **are** content to research **and** publish but to leave to others the crucial **task** of ensuring effective application of our results to the benefit of users. The literature is **full** of good ideas withering **on** the vine for want of effective marketing.

From the users' point of view it is **important** for us to seek a more precise elucidation of the consequences for human performance of environmental stresses of **all** kinds. We may establish physiological responses - high body temperature, low arterial oxygen saturation, **high** heart rates - but our customers need to know whether these matter in a practical sense, and **this requires** knowledge of effects **on** performance. This is too **important** a matter to be left to the psychologists alone and it is essential to encourage closer cooperation between physiologists and psychologists in advancing our knowledge in **this area**. The otherwise excellent and impressively supported Environmental Ergonomic Conferences would be much enriched by more contributions by psychologists.

In passing, **some** of you may be aware of the exciting advances being made in techniques for measuring brain function. The days of the simple three lead electroencephalogram are **numbered** and the possibility of physiological measurement of thought processes, emotion and even personality **are** on the horizon. This is all a long way ahead, but have a **look** at the excellent work of Muñoz and Guitton⁽¹⁾ at the Montreal Neurological Institute demonstrating, inter alia, the presence of retino-topic, tonic discharges in **the** superior **colliculus** excited during the mere planning of eye movements. **This** work provides a tentative mechanistic explanation (pre-excitation of relevant neural circuitry), for the facilitation of a series of actions by 'thinking them **through**' in advance. Perhaps in the long run psychology is **really only** a branch of physiology that has yet to discover what to measure.

An important aid to user friendliness **among** ergonomists is the growing use of predictive modelling, yet it attracts both advocates and detractors. **One** of its most important benefits has been the provision of a basis **on** which practical advice to **users** can be developed. A good example, which has found much practical application is the use of the Texas thermoregulatory model⁽²⁾ for predicting likely survival times **in** water. Another model, developed at the **Institute** of Aviation Medicine at Farnborough for predicting **the** performance effects of interactions between time on duty and circadian **rhythms**⁽³⁾, **has** proved useful in determining, for example, flight duty time limitations for aircrew. Thus the effort devoted to modelling is of some importance to the user population who, by and large, provide our funding.

Among the advantages **of** modelling are its ability to focus on important issues where further experimentation could usefully be undertaken to improve predictive accuracy. But the process must be one of evolution with a **continual** exchange of ideas between the modeller and the experimenter in the quest for improvements. Models should not be set in concrete or applied dogmatically; to do so is to limit the benefits and to risk superficial discrediting. One must frequently return to the data and question its precision and, if necessary, repeat experimentation using more modern techniques. It is easy to be dazzled by apparent precision in a model and one must always be aware of the data upon