



DEPARTMENT OF THE ARMY
U. S. ARMY RESEARCH OFFICE
P. O. BOX 12211
RESEARCH TRIANGLE PARK, NORTH CAROLINA 27709

REPLY TO ATTENTION OF:

DRXRO-MA

6 August 1981

Dr. Douglas B. Tang
Chief, Department of Biostatistics
Division of Biometrics
Walter Reed Army Institute of
Research
Washington, DC 20012

Dear Dr. Tang:

This package contains (proposed) ground rules and guidelines for the selection committee for the new Army Wilks award, the official list of nominees for the 1981 award and some background material for the nominees.

The ground rules are not proposed as a perfect, finished product. I would appreciate any suggestions for improving the rules, especially the part about breaking ties on the vote. After incorporating your ideas, I'll submit a finished product to the AMSC for approval for future use.

There are 10 nominees for the first annual award. Please choose a first place winner, a second choice for winner, and a third choice for winner. In other words, your second choice should reflect what your first place vote would have been if your first place choice were not in the list, etc. In the interest of time and efficiency, either call your votes in to me or Mrs. Duke of the Math Division, (919) 549-0641, or write the names on a piece of paper and put them in the inclosed addressed envelope. Let me know if you feel that the voting record should not be circulated among the committee members. I would prefer to make the vote known to at least one other person in case there is ever a question about vote counting, etc.

The basis for the award (bottom of pg. 1 of the "Ground Rules") is a little vague. Mr. Rust intended that the new Army Wilks award should primarily recognize contributions to statical methodologies which are used regularly in Army labs or which have contributed to the solution of a particularly important statistical problem in an Army lab. The accumulation of other cooperative scientific matters such as consulting, tutorials, committee work, etc., can also establish relevance to the Army or the DoD.

The background material is something which I put together with Francis Dressel's help except for the bio of Marion Bryson. This was sent in by the person who nominated him. If any of you have other pertinent information on these nominees, please circulate it or send it to me for circulation.

DRXRO-MA
Dr. Douglas B. Tang

6 August 1981

Please attempt to send your votes by 1 September 1981. With 10 nominees and 5 voters on the committee, we might have problems with a tie vote, even with the chairman of the AMSC voting! If that happens, I'll contact you by telephone.

Thanks for your patience and participation.

Sincerely,



Inclosures
As stated

ROBERT L. LAUNER
Mathematics Division

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NEW WILKS AWARD NOMINEES

✓ Prof. Robert Bechhofer, Cornell University

Dr. Marion Bryson, Scientific Advisor, Combat Experimental Command,
Ft. Ord, CA

Prof. A. C. Cohen, University of Georgia

Prof. John Gurland, University of Wisconsin

Prof. Bernard Harris, University of Wisconsin

Prof. Boyd Harshbarger, VPI&SU (Retired)

Prof. J. Stuart Hunter, Princeton University

✓ Prof. Badrig M. Kurkjian, University of Alabama

Dr. Clifford J. Maloney, Consultant, Bethesda, MD

Prof. Frank Proschan, Florida State University

DRXRO-MA

6 August 1981

Commander
HQ DARCOM
ATTN: DRCDE-P (Dr. Gerald Andersen)
5001 Eisenhower Avenue
Alexandria, VA 22333

Dear Jerry:

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DRXR0-MA
Dr. Gerald Andersen

6 August 1981

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ROBERT L. LAUNER
Mathematics Division

DRXRO-MA

6 August 1981

Professor Herbert A. David
Head, Statistics Department
Iowa State University
Ames, IA 50011

Dear Herb:

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Professor Herbert A. David

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As stated

ROBERT L. LAUNER
Mathematics Division

DRXRO-MA

6 August 1981

Professor John W. Tukey
Department of Statistics
P. O. Box 37
Princeton University
Princeton, NJ 08540

Dear John:

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Professor John W. Tukey

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As stated

ROBERT L. LAUNER
Mathematics Division

DRXRO-MA

3 August 1981

Mr. Philip G. Rust
Winnstead Plantation
Route 3
Thomasville, GA 31792

Dear Mr. Rust:

Just a short note to keep you up to date. We have twelve nominations for the award - all are excellent. I plan to distribute the list to the committee members today.

The enclosed brochure is the "ground-rules and guidelines" pamphlet for the committee. If you find anything in this document which is contrary to your wishes, please let me know at your earliest convenience. If I don't hear from you, I will assume that everything in the pamphlet is satisfactory.

Sincerely,

Encl
As stated

ROBERT L. LAUNER
Mathematics Division

Name for Wilks Award.

From. DOUG. TANG.

MARION BRYSON

STU HUNTER

BERNIE HARRIS

BOB BECHHOFER

JEFF KURKJIAN

~~John GURLAND~~

From. WALLY FOSSEY

BOYD HARSH BARGER

JOHN GURLAND

H.A. DAVID.

F. DRESEL

A.C. COHEN

CLIFF. MALONEY

PRANK PROSCHAN

NEW WILKS AWARD NOMINEES

Prof. Robert Bechhofer, Cornell University

Dr. Marion Bryson, Scientific Advisor, Combat Experimental Command,
Ft. Ord, CA

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Prof. John Gurland, University of Wisconsin

Prof. Bernard Harris, University of Wisconsin

Prof. Boyd Harshbarger, VPI&SU (Retired)

Prof. J. Stuart Hunter, Princeton University

Prof. Badrig M. Kurkjian, University of Alabama

Dr. Clifford J. Maloney, Consultant, Bethesda, MD

Prof. Frank Proschan, Florida State University

Background of Some of the Wilks Nominees

BECHHOFER

Methodology: Initiated the area of statistical methodology called Selection and Ranking with his 1945 paper on the indifference zone approach. Recently, solved a long-standing important problem at BRL involving the testing of kinetic energy penetrators. In doing so, he provided the optimal solution to the sequential binomial selection problem.

Interactions: Invited speaker at the 11th and the 20th Design of Experiments Conferences. Invited panelist at numerous DOE Conferences. Served as advisor to the Probability and Statistics subcommittee of the AMSC. Presented a 2-day short course at BRL in June 1978 on Selection and Ranking and a 3-day course at ARRADCOM in September 1978. Presented two seminars at BRL (1980, 81) on recent developments in S&R.

BRYSON

Interactions: Please see enclosed Biography.

COHEN

Methodology: Extensive work in life testing, especially in parametric estimation using censored samples.

Interactions: Invited speaker at 4th and 16th DOE. Also clinical panelist at many DOE conferences and advisor to P&S subcommittee. COORDINATOR FOR S&R DOE.

GURLAND

HARRIS

Methodology: Extensive work in statistical reliability. Author of text in probability. Recently developed new methodologies and optimality results for the long unsolved problem of confidence bounds for system reliability.

Interactions: Member of the MRC, University of Wisconsin, for approximately 15 years. Clinical panelist at numerous DOEs. Served as advisor to P&S subcommittee and advisor to the DoD Nuclear Systems Reliability committee. Invited speaker at ARO workshop in 1981.

HARSHBARGER

Interactions: Invited speaker at 6th DOE and invited panel chairman at 14th DOE. Invited panelist at other DOEs and advisor to P&S subcommittee.

HUNTER

Interactions: Invited speaker at 11th, 18th, and 22nd DOE and invited panelist at 6th DOE. Several years as advisor to the P&S subcommittee.

KURKJIAN

Interactions: Chief Mathematician of the Army for approximately 10 years. Coordinated many consulting and research activities in Army Labs. Clinical panelist at several DOEs and member of the P&S subcommittee.

MALONEY

Interactions: Chief of the Statistics Branch at Fort Detrick for many years. Invited speaker at the 15th DOE. Chairman of local arrangements for the 5th DOE. Member of the P&S subcommittee for very many years and clinical panelist for several DOEs. PRESENTED PAPER AT 1st D.O.E. AND MANY OTHERS.

PROSCHAN

Methodology: Very active in research in reliability and life testing. Joint author with Barlow of two texts on Probabilistic and Statistical Aspects of Reliability. A third is to appear in 1981-82 on Data Analytic Methods in Life Testing. Spent two days on consulting trip at Watervliet Arsenal, which resulted in a fundamental contribution to gun tube life analysis. Paper published in Naval Research Logistics Quarterly on the subject.

Interactions: Invited speaker at 9th, 13th, and 19th DOEs. Invited speaker at ARO workshop in 1977 on reliability. See also consulting above.

VITA OF ROBERT BECHHOFER

Name: Robert E. Bechhofer

Born: March 11, 1919

Education: A.B. (Mathematics and Statistics), Columbia College, 1941
Ph.D. (Mathematical Statistics), Columbia University, 1951

Professional Experience:

- 1941-45 Statistician, Asst. Chief of Analytical Section, Arms & Ammunition Division, Aberdeen Proving Ground, Maryland
- 1951-52 Assistant Professor, Dept. of Industrial Engineering, Columbia Univ., New York
- 1953-57 Associate Professor, Dept. of Industrial Engineering, Cornell Univ., Ithaca, New York
- 1958-59 Visiting Professor and Research Associate, Stanford Medical School and Dept. of Statistics, respectively, Stanford University, Stanford, California
- 1963-64 Cornell Aeronautical Laboratories Professor, Cornell Aeronautical Laboratories, Buffalo, New York
- 1957-67 Professor, Department of Industrial Engineering and Operations Research, Cornell University
- 1966-67 Visiting Professor, Statistical Laboratory, University of Cambridge, England
- 1973-74 Visiting Professor, Dept. of Management Science and Dept. of Mathematics, Imperial College of Science and Technology, London, England
- 1967-75 Professor and Chairman, Dept. of Operations Research, Cornell University
- 1975-77 Professor and Director, School of Operations Research and Industrial Engineering, Cornell University
- 1977-present Professor, School of Operations Research and Industrial Engineering, Cornell University

Membership on Federal Government Public Advisory Committees:

1. Member (3-yr. term) on the Committee on Applied & Theoretical Statistics, National Research Council.
2. Member (3-yr. term) on Conference Board of Mathematical Sciences Regional Conferences Panel.

Additional Activities:

Co-organizer of and participant in (along with J.D. Gibbons, S.S. Gupta, and I. Olkin) the 1979 Annual Meeting Short Course on "Selecting and Ordering Populations" sponsored by the American Statistical Association in Washington, D.C., August 11-12, 1979. Video tapes of the course are to be available soon.

Honors:

Fellow of the American Association for the Advancement of Science (elected 1980)
 Fellow of the American Statistical Association
 Fellow of the Institute of Mathematical Statistics
 Ordinary Member of the International Statistical Institute (elected 1975)
 Fellow of the Royal Statistical Society
 National Science Foundation Science Faculty Fellow, 1962-63
 Phi Kappa Phi, Sigma Xi, Tau Beta Pi

Research areas:

Statistical ranking and selection procedures; design, analysis, and interpretation of experiments.

Publications and research in progress:

- [1] "A single sample multiple decision procedure for ranking means of normal populations with known variances" in Annals of Mathematical Statistics, Vol. 25 (1954), 16-39.
- [2] "A two-sample multiple decision procedure for ranking means of normal populations with a common unknown variance" with C.W. Dunnett and M. Sobel in Biometrika, Vol. 41 (1954), 170-176.
- [3] "A single-sample multiple decision procedure for ranking variances of normal populations" with M. Sobel in Annals of Mathematical Statistics, Vol. 25 (1954), 273-289.
- [4] "Multiple decision procedures for ranking means" in Transactions of the National Convention of the American Society for Quality Control, New York, NY, May 1955, 513-519.
- [5] "A sequential multiple decision procedure for selecting the best one of several normal populations with a common unknown variance, and its use with various experimental designs" in Biometrics, Vol. 14 (1958), 408-429.
- [6] "A single-sample multiple decision procedure for selecting the multinomial event which has the highest probability" with S. Elmaghriby and N. Morse in Annals of Mathematical Statistics, Vol. 30 (1959), 102-119.
- [7] "A multiplicative model for analyzing variances which are affected by several factors" in Journal of the American Statistical Association, Vol. 55 (1960), 245-264.
- [8] "A note on the limiting relative efficiency of the Wald sequential probability ratio test" in Journal of the American Statistical Association, Vol. 55 (1960), 660-663.

- [9] "A sequential multiple-decision procedure for selecting the best one of several normal populations with a common unknown variance, II: Monte Carlo sampling results and new computing formulae" with S. Blumenthal in Biometrics, Vol. 18 (1962), 52-67.
- [10] "A fixed-sample size procedure for ranking means of finite populations with an application to bulk sampling problems" in Report on Seminar on Sampling of Bulk Materials, November 15-18, 1965, Tokyo, Japan sponsored by the National Science Foundation and the Japan Society for Promotion of Science, 39-49.
- [11] "A two-stage subsampling procedure for ranking means of finite populations with an application to bulk sampling problems" in Technometrics, Vol. 9 (1967), 355-364.
- [12] "Designing factorial experiments to rank variances" in Transactions of the Twenty-Second Annual Technical Conference of the American Society for Quality Control, Philadelphia, PA, May 1968, 69-73.
- [13] Sequential Identification and Ranking Procedures, with J. Kiefer and M. Sobel, The University of Chicago Press, 1968.
- [14] "Single-stage procedures for ranking multiply-classified variances of normal populations" in Technometrics, Vol. 10 (1968), 693-714.
- [15] "Multiple comparisons with a control for multiply-classified variances of normal populations" in Technometrics, Vol. 10 (1968), 715-718.
- [16] "Optimal allocation of observations when comparing several treatments with a control" in Multivariate Analysis, II (ed. by P.R. Krishnaiah), Academic Press, 1969, 463-473.
- [17] "An undesirable feature of a sequential multiple-decision procedure for selecting the best one of several normal populations with a common unknown variance." Correction Note in Biometrics, Vol. 26 (1970), 347-349.
- [18] "On ranking the players in a 3-player tournament" in Nonparametric Techniques in Statistical Inference (ed. by M.L. Puri), Cambridge University Press, 1970, 545-549.
- [19] "Optimal allocation of observations when comparing several treatments with a control (II): 2-sided comparisons" with D.J. -M. Nocturne in Technometrics, Vol. 14 (1972), 423-436.
- [20] "Optimal allocation of observations when comparing several treatments with a control (III): globally best one-sided intervals for unequal variances" with B. Turnbull in Statistical Decision Theory and Related Topics (ed. by S.S. Gupta and J. Yakel), Academic Press, 1971, 41-78.
- [21] "An iterated integral representation for a multivariate normal integral having block covariance structure" with A.C. Tamhane in Biometrika, Vol. 61 (1974), 615-619.
- [22] "A two-sample procedure for selecting the population with the largest mean from several normal populations with unknown variances: some comments on Ofosu's paper." Department of Operations Research Technical Report 233 (October 1974), Cornell University.

- [23] "Chebyshev type lower bounds for the probability of correct selection, I: the location problem with one observation from each of two populations" with B.W. Turnbull. (Preliminary Report) Department of Operations Research Technical Report 236 (December 1974), Cornell University.
- [24] "Ranking and selection procedures" in Proceedings of the Twentieth Conference on the Design of Experiments in Army Research Development and Testing, ARO Report 75-2, Part 2, 1975, 929-949.
- [25] "Selecting the largest interaction in a two-factor experiment" with T.J. Santner and B.W. Turnbull in Statistical Decision Theory and Related Topics II (ed. by S.S. Gupta and D.S. Moore), Academic Press, 1977, 1-18.
- [26] "A two-stage minimax procedure with screening for selecting the largest normal mean" with A.C. Tamhane in Communications in Statistics - Theory and Methods, Vol. A6 (11), 1977, 1003-1033
- [27] "On selecting the process with the highest fraction of conforming product" with B.W. Turnbull in Proceedings of the 31st Technical Conference of the American Society for Quality Control, Philadelphia, Pa., May 1977, 568-573.
- [28] "Selection in factorial experiments" in Proceedings of 1977 Winter Simulation Conference, Gaithersburg, Md., December 1977, Vol. I, 65-70.
- [29] "Two $(k+1)$ -decision selection procedures for comparing k normal means with a fixed known standard" with B.W. Turnbull in Journal of the American Statistical Association, Theory and Methods Section, Vol. 73 (1978), 385-392.
- [30] "A two-stage minimax procedure with screening for selecting the largest normal mean (II): an improved PCS lower bound and associated tables" with A.C. Tamhane in Communications in Statistics - Theory and Methods, Vol. A8 (4), 1979, 337-358.
- [31] "Sampling plans for testing combination drugs." Abstract of paper read at the Eastern and Western North American Regions of the Biometric Society, Chicago, Ill., August 1977 in Biometrics, Vol. 34 (1978), 153-154. (In preparation.)
- [32] "A note on the lower bound for the $P\{CS\}$ of Gupta's subset selection procedure" with T.J. Santner, School of Operations Research and Industrial Engineering Technical Report 401 (1979), Cornell University.
- [33] "Incomplete block designs for comparing treatments with a control: general theory" with A.C. Tamhane in Technometrics, Vol. 23 (1981), 45-57.
- [34] "Incomplete block designs for comparing treatments with a control (II): optimal designs for $p = 2(1)6$, $k = 2$ and $p = 3$, $k = 3$ " with A.C. Tamhane. Accepted for publication in Sankhya, subject to minor revision.
- [35] "Incomplete block designs for comparing treatments with a control (III): optimal designs for $p = 4$, $k = 3$ and $p = 5$, $k = 3$ " with A.C. Tamhane, School of Operations Research and Industrial Engineering Technical Report 436 (October 1979).