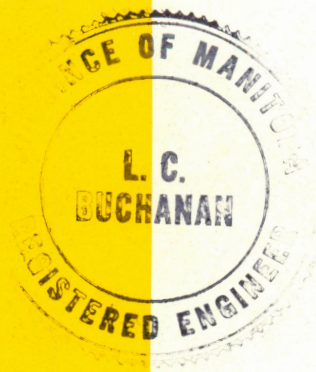


CANADIAN AGRICULTURAL ENGINEERING



The Journal of the Canadian Society of Agricultural Engineering

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CANADIAN AGRICULTURAL ENGINEERING

THE UNEXPECTED

NOVEMBER, 1969
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by
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Member CSAE

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"As a general rule, the world of science is most interested in surprising new discoveries," So states Robert L. Causey, when presenting a paper, "The importance of being surprised in scientific research," published in *Agricultural Science Review*, 6: No. 3, 27-31, 1968. Dr. Causey further points out that it is much more important for a scientist to make new discoveries than to measure the size of some known object with a little greater accuracy than is presently available. He states that surprising discoveries are those which most scientists do not expect on the basis of our present knowledge and understanding, but have a double value in adding to knowledge and revealing gaps in our understanding.

This article is written in a somewhat light and humorous vein, but throughout the text the author develops some rules, with appropriate corollaries, which the scientist could consider. His First Rule of Research is: "Always try to maximize your chances of being surprised." This may be done by using the corollaries, the first of which is, "The principle of beginner's luck." This, stated simply, means that the scientist should always look for new techniques and inventions. The second corollary is, "Principle of limited sloppiness," which infers that when doing an experiment one must be sloppy enough that unexpected things will be discovered, but not so sloppy that the procedure cannot be repeated. The Second Rule of Research is: "Always try to explain what you understand the least." This does not mean the development of wild theories, but the researcher should work on the ones he has some chance of solving. This emphasizes the importance of surprising discoveries. The first corollary under this rule is "The law of diminishing surprises," which indicates that science progresses in part by a theoretical explanation of surprising discoveries. A second corollary is the "Rule of Unity," which says that scientists should work towards the unity of science, and the reduction of the theories of one branch of science to the theories of a more general science. The Third Rule of Research states that *only the fittest of theories should survive*, any theory should be severely tested, and should explain not only what motivated it but permit the prediction from it of other phenomena.

The approach to scientific research is philosophical, and the question may arise as to its application to Agricultural Engineering, which is applied and developmental in nature. The rules of basic research still apply however, to cause or formulate any plan of an experimental project. Dr. Causey concludes by saying that rules alone will not guarantee success; *there must also be the motivation of curiosity and the inventiveness of imagination.*

It is then, this latter stimulation that produces results in the engineering fields, guided by certain basic rules, which results in the attain-

continued on page 91

Canadian Agricultural Engineering publishes papers covering the general field of Agricultural Engineering that fit into one of the following classifications: 1) a scientific paper based on original research; 2) a technical paper based on design, development, testing, or analysis of machines, equipment, structures, processes, or practice; 3) a general paper on education relative to curricula and philosophy or trends in science, on a survey or investigation of some phase of research or research methods, or on extension or extension methods. The Editorial Board may also publish abstracts of papers published elsewhere and interesting news items of members or developments in Agricultural Engineering.

Manuscripts for publication should be submitted to the Chairman of the Editorial Board. The papers must be originals and must not have been published elsewhere or copyrighted. The author, not the CSAE, is responsible for opinions expressed. Information published in Canadian Agricultural Engineering may be quoted in whole or in part provided that credit is given to the author and to the journal. Information on page, reprint, and other charges may be obtained from members of the Board.

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NEWS HIGHLIGHTS

NECROLOGY

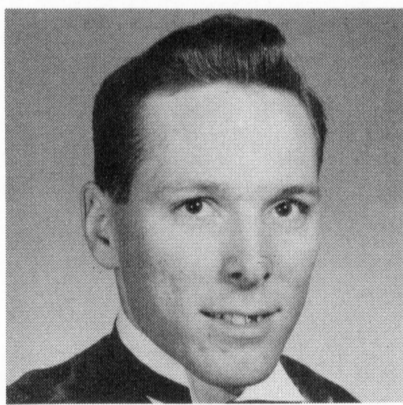


H. J. (SHORTY) KEMP

H. J. Kemp, an Honorary Life Member of the Canadian Society of Agricultural Engineering, passed away suddenly at Sidney, B.C. on September 21, 1969 at the age of 75 years. He was born in Hastings, England in 1894, and obtained his BSA from the University of Manitoba in 1923. As a student he worked at the Dominion Experimental Farms at Brandon and Indian Head, and came to Swift Current in 1921 where he broke the first sod on what is now the Research Station. He was Senior Assistant Superintendent there until 1946 when he moved to Saanichton Station.

A cerealist by profession, he was responsible for the development of the Prospect Barley, a smooth awned, early maturing variety, and for the basic research in the breeding program for the sawfly resistant varieties of spring wheat. He was better known for his work in Agricultural Engineering as a designer of plot machinery for cereals and special crops, and for equipment to aid research in many fields. After retirement in 1959, he pursued his hobby as a horticulturist at his home in Sidney where he developed many beautiful roses and soft fruits.

He is survived by his wife Eva and two sons, Jack and Frank.



DONALD G. MANNING

Donald G. Manning, Research Officer, Division of Hydrology, University of Saskatchewan, died in a helicopter crash at Ford Liard, Northwest Territories, on August 14, 1969 at the age of 24 years.

A native of Saskatoon, he received his undergraduate training at the University of Saskatchewan where he obtained a degree in Agricultural Engineering with Distinction. He served as President of the student branch of the American Society of Agricultural Engineering in 1966-67, a year in which the branch was named as "the most outstanding Student Branch" in the Pacific Northwest Section of A.S.A.E. In 1967 Mr. Manning was appointed as a Research Officer to the Division of Hydrology, attached to the Department of Civil Engineering, University of Saskatchewan, and with this appointment was in charge of development and operation of the Bad Lake Research Watershed which had been established under the Canadian program of the International Hydrologic Decade. He was a member of the Association of Professional Engineers of Saskatchewan, the Canadian Society of Agricultural Engineers and the American Society of Agricultural Engineers.

At the time of his death, Mr. Manning was on a special assignment related to experimental land management studies in the Yukon and Northwest Territories, at the request of the Canadian Department of Indian Affairs and Northern Development. He is survived by his wife Wanda,

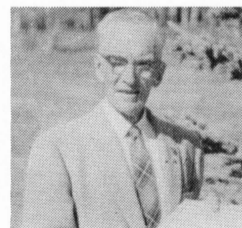
daughter Laura Joan, and his parents, Mr. and Mrs. W. G. Manning of Saskatoon.

ANNUAL MEETING

At their twelfth annual meeting, which was held on the campus of the University of Saskatchewan, August 24-28, 1969, the Canadian Society of Agricultural Engineering presented each member who had served as President a set of gold cuff links and a tie clasp. The set featured the maple leaf crest of the Society and the tie clasp was engraved with the member's name and the year of his presidency. The group included the charter Past President, who, as President of the Agricultural Engineering Section of the Agricultural Institute of Canada, was among those who helped form CSAE in 1958. The Past Presidents honored were: J. S. Parker (charter Past President) 1958-59; J. E. Beamish (charter President) 1958-1959; R. P. Frey 1959-1960; B. T. Stephanson 1960-1961; R. F. Ford 1961-1962; D. T. Anderson 1962-1963; J. A. Roberts 1963-1964; O. L. Symes 1964-1965; E. P. Hudek 1965-1966; R. P. Frey 1966-1967; C. G. E. Downing 1967-1968; and F. H. Theakston 1968-1969.

HONORARY MEMBERSHIP

Honorary Membership in the Canadian Society of Agricultural Engineering was granted at the annual banquet of the Society on August 27, 1969, to:



J. K. MCKENZIE



J. C. WILCOX

NOTES TO CONTRIBUTORS

The Editorial Board will assess suitability and essential detail of papers submitted for publication in Canadian Agricultural Engineering. One or more reviewers will be used. Their comments and suggestions will be compiled and submitted to the author. The review will ensure that:

1. A research paper does represent a piece of research carried to a well-defined stage of advancement and that the conclusions are adequately supported by the experimental results.
2. A technical paper presents a clear, concise, and factual outline and interpretation of the development, design, test, or analysis under consideration and that it is a contribution in the field of agricultural engineering.
3. A general paper on education, research, or extension is pertinent to major changes in curricula, research, or extension or to forward-looking developments in these areas.

Manuscript

The manuscript should be typed double-spaced on paper $8\frac{1}{2} \times 11$ in. (21.6×27.9 cm), with margins not less than $1\frac{1}{4}$ in. (3.3 cm). The first page should contain only the title, author's name and address, and any necessary footnotes. Tables and captions for illustrations should be on separate pages placed after the text. Manuscript paper with numbered lines is preferred. The original and two copies are required.

The title of the paper should be capitalized and centred on the page. If there is only one author, centre the name and address under the title. If there are two or more authors, space names and addresses equally under the title. Use lower case except for the first letter of major words. Do not use abbreviations in the address. If the author is a member of the Society, designate as Member CSAE.

Organization

The paper should be organized to conform with present Journal practice. *Research* and *technical* papers must include a short Summary section of about 200 words.

Major headings – Centre on the page with all words in capital letters.

Subheadings – Start at left-hand margin, capitalize first letter of major words.

Sub-subheadings – Start at left-hand margin, in lower case except first letter of first word, and under line.

Technical and detailed information should be included in only one fashion—by description, table, graph, chart, or photograph.

References

List references alphabetically by authors at the end. Include year of publication, title in lower case except first letter of first word, and source, with volume and page numbers where applicable. Names of periodicals should be abbreviated in the form given in either the *List of Periodicals Abstracted by Chemical Abstracts* or the *American Standard for Periodical Title Abbreviations*. Material in press, with the name of the journal, may be used as a reference. Private communications and reports or numbered papers not yet accepted for publication should be referred to in parentheses in the text or in a footnote. References in the manuscript should be designated by arabic numerals in parentheses.

Tables

Designate tables at the top by table number (Roman numerals) and title, all in capital letters. All headings and other information in tables are to be in lower case except first letter of first word. Place the table across the page wherever possible. Do not use vertical lines.

Measurements

Use the metric system in the text where practical or list metric equivalents in parentheses after English units. Use only one system in tables, charts, or graphs. (Effective in 1970.)

Equations

Equations and formulas must be set up clearly. Use capitals for symbols as much as possible and lower case for superscripts and subscripts. Greek and other characters should be

identified clearly. Equations should be numbered on the right-hand margin in large numbers and in line with the centre of the equation.

Abbreviations

Typical phrases should be abbreviated (e.g., rpm, cps, hp, pto). They should be typed in lower case without periods. Abbreviate units of measures only when used with numerals. Do not use abbreviations in the title or the summary of a paper. Normally, numbers less than 10 should be spelled out, e.g., six.

Paragraphs

If paragraphs are to be numbered, designate by arabic numerals. Designate subparagraphs by lower case letters in parentheses.

Illustrations

An illustration or a group of them should be planned to fit, after reduction, into a space equal in width to that occupied on the journal page by one column (preferred) or two or three columns if necessary. The original should not be more than three times the size of the final reproduction. For identification the figure number, author's name, and paper title should be written lightly in the lower left corner of an illustration or on the back of a photograph. Use a soft lead pencil. Photographs should be printed on glossy paper with strong contrasts approximately 5×7 in. (12.7×17.8 cm) in size. *One set is required for each copy of the paper.*

Line drawings

Make line drawings with india ink on plain or blue-lined paper or other suitable material. Letters, numerals, labels, and axis captions should be made in capital size with a lettering guide (*not a typewriter*). They should be large enough that the smallest character will not be less than 1 mm high when reduced. Type the figure numbers and captions on a separate page. *One set of clear copies is required with each copy of the paper. The original drawings must be provided when the paper is accepted for printing.*



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