



April Meeting of the Rocky Mountain Section

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As the Iowa Section meets jointly with the Iowa Academy of Science, the papers presented at this meeting are eligible to compete for the prize. The committee selected the paper by Professor E. W. Anderson on *Elastic deflection of a split ring* as the entry from Mathematics.

FRED ROBERTSON, *Secretary*

APRIL MEETING OF THE ROCKY MOUNTAIN SECTION

The thirty-third annual meeting of the Rocky Mountain Section of the Mathematical Association of America was held at the University of Denver, Denver, Colorado, April 28 and 29, 1950. There were three sessions with Professor A. J. Lewis presiding at each.

The meeting was attended by approximately one hundred persons including the following fifty-three members of the Association: R. V. Anderson, C. F. Barr, D. L. Barrick, W. G. Brady, W. E. Briggs, J. R. Britton, R. L. Calvert, R. C. Campbell, F. M. Carpenter, F. L. Celauro, Nancy V. H. Cheney, A. G. Clark, G. S. Cook, G. A. Culpepper, L. C. Dawson, David DeVol, J. R. Everett, O. J. Falkenstern, A. B. Farnell, F. N. Fisch, Katherine C. Garland, H. T. Guard, R. R. Gutzman, Leota C. Hayward, I. L. Hebel, LeRoy Holubar, Burrowes Hunt, C. A. Hutchinson, B. W. Jones, Claribel Kendall, A. J. Lewis, C. C. MacDuffee, J. C. McKenzie, W. K. Nelson, Greta Neubauer, K. L. Noble, D. O. Patterson, H. C. Peterson, A. W. Recht, L. W. Rutland, Jr., Nathan Schwid, S. R. Smith, W. N. Smith, L. C. Snively, M. E. Sperline, K. H. Stahl, J. M. Staley, P. O. Steen, J. F. Stockman, E. P. Tovani, V. J. Varineau, W. W. Varner, Lillie C. Walters.

At the business meeting, the following officers were elected for the coming year: Chairman, Professor D. O. Patterson, Colorado State College of Education; Vice-Chairman, Professor F. L. Celauro; Secretary-Treasurer, Professor J. R. Britton, University of Colorado.

The following program of papers was presented:

1. *A note on operators*, by Mr. H. C. Peterson, University of Denver.
2. *A nonlinear differential equation of heat conduction type*, by Professor Nathan Schwid, University of Wyoming.

The solution of the differential equation for the flow of heat in one direction, when the thermal conductivity K and the specific heat C each is of the form $\alpha + \beta u$, where u is the temperature and the ratio β/α is small, was considered for a semi-infinite and for a finite bar. With suitable boundary conditions a solution can be obtained if the ratio K/C depends upon the temperature.

3. *Some properties of Fibonacci sequences*, by Mr. David DeVol, University of Colorado.

Defining Fibonacci sequences by the property $u_{n+1} = u_n + u_{n-1}$, several relations between the terms are easily obtained by the manipulation of two-by-two matrices whose elements are terms of the sequence. The speaker concluded by pointing out a geometric connection between the Fibonacci sequences and the sequences of polygonal numbers.

4. *Determination of a class of solvable biquartic equations*, by Professor L. C. Dawson, Colorado A and M College.

Solvable biquartic equations of the form

$$x^8 + ax^6 + bx^5 + cx^4 + dx^3 + ex^2 + fx + g = 0$$

may be formed by assigning certain real values to the coefficients. We impose the condition that the general biquartic be expressed as a difference of two squares, thus reducing the given biquartic to two quartics each solvable by known methods. This procedure yields two necessary conditions: $a^2 - 4c = 0$ and $(a+b)^2 - 4(c+d+e+f+g) = 0$, whereby the coefficients may be chosen so that the biquartic decomposes into a pair of quartics. A similar procedure is applicable to the determination of a class of solvable bicubics.

5. *A problem in the theory of runs*, by Professor A. G. Clark, Colorado A and M College.

In a set of independent trials of an event where the probability of a specified outcome is constant, an asymptotic expression was obtained for P_n , the probability that a run of given length will result for the first time with the n th trial. With this definition of n , $E(n) = \sum_{i=1}^n P_i = 1/2$. Furthermore, $E[n - E(n)]^2$ was determined as a measure of the lack of stability of n . Attention was focussed on the extent to which the solution by elementary methods of this problem in the classical theory of probability makes use of subject matter pertinent to nearly every course offered in the usual undergraduate curriculum in mathematics.

6. *A note on the calculation of residues*, by Professor C. A. Hutchinson, University of Colorado.

The expression for the residue of an analytic function at a pole of order n is obtained as a determinant of order $n-1$. In an illustrative example, the determinant is evaluated by means of a second-order linear difference equation.

7. *Linear equations without determinants*, by Professor C. C. MacDuffee, University of Wisconsin.

8. *Cross-purposes in education*, by Professor C. C. MacDuffee.

This was an evening address at which Professor MacDuffee was the guest speaker.

9. *Progress in mathematics by the U.S.S.R. since World War II*, by Mr. R. J. Howerton, Regis College.

Since January 1948, all Russian scientific journals have been published in the languages of Russia only. A survey was made of the titles and authors of the papers appearing in the six leading mathematical journals of the U.S.S.R. for 1948-49. Four of these were carried back through 1947 and one, *Akademiya Nauk, S.S.S.R., Doklady*, was carried back through 1946 since it carried the greatest number of papers for 1947-48. A classification was then made of the papers into six general categories of mathematics. The following conclusions were drawn: (1) There was a general increase of activity in 1949 over 1948, the greatest increase being shown by topology and group theory; (2) The most profitable journal for an American (Russian reading) would be *Akademiya Nauk, S.S.S.R., Doklady*, unless he were in the field of applied mathematics, in which case *Prikladnaya Matematika i Mehanika* would be the most fruitful; (3) Due to the difficulty caused by transliteration from the Latin alphabet to the Russian and back again, no conclusive evidence was obtained to show an increase in the number of Germanic names among the authors of papers; (4) The work of the Russians seems to be of the highest quality and would do credit to any American Journal. (The same results were obtained by Mr. Paul W. Howerton in the field of organic chemistry. See *Russian literature in the field of organic chemistry*, Journal of Chemical Education, April, 1949); (5) Several writers have turned out a large volume of work, the most prolific being N. G. Chebotarev, with ten papers in two years; (6) There is no evidence of any political slant to any of the papers read.

10. *Problems in the training of teachers of mathematics*, Professor A. W. Recht, University of Denver.

After the program of papers, a joint meeting was held with the Mathematics Section, Eastern Division, Colorado Education Association. The discussion was concerned with the formation of the Colorado Council of Teachers of Mathematics.

J. R. BRITTON, *Secretary*

MAY MEETING OF THE INDIANA SECTION

The twenty-seventh annual meeting of the Indiana Section of the Mathematical Association of America was held at Wabash College, Crawfordsville, Indiana, on Saturday, May 6, 1950. Two sessions were held at which Professor Ralph Hull of Purdue University, Chairman of the Section, presided.

There were sixty-two in attendance including the following thirty-six members of the Association: Juna L. Beal, L. G. Black, Stanley Bolks, C. F. Brumfiel, G. E. Carscallen, W. W. Chambers, T. E. Cheatham, H. E. Crull, M. W. DeJonge, V. E. Dietrich, P. D. Edwards, W. R. Fuller, E. L. Godfrey, Michael Golomb, S. H. Gould, G. H. Graves, J. R. Hadley, N. R. Hughes, Ralph Hull, M. W. Keller, E. L. Klinger, R. A. Lufburrow, R. B. Merrill, P. T. Mielke, P. M. Nastocoff, C. C. Oursler, P. W. Overman, Philip Peak, J. C. Polley, Arthur Rosenthal, M. E. Shanks, Jane A. Uhrhan, R. O. Virts, J. L. Wilson, Florence A. Wirsching, W. D. Wood.

The following officers were elected: Chairman, H. E. Crull, Butler University; Vice-Chairman, M. W. Keller, Purdue University; Secretary, J. C. Polley, Wabash College.

On the matter of awarding Association medals as prizes in high school mathematics contests the chairman was authorized to appoint a committee with power to act. The committee was instructed to investigate the possibility of making such awards in connection with the Indiana State Mathematics Contest and the Indiana Science Talent Search.

The annual meeting of 1951 will be held on Saturday, May 5, the place of meeting to be announced later.

The following papers were presented:

1. *Mathematics for engineers*, by Professor M. E. Shanks, Purdue University.

Of two significant trends in mathematics for freshmen, terminal courses designed solely to fill the cultural gap, and a unified non-compartmentalized course in algebra, trigonometry, and analytic geometry, in part cultural but chiefly motivated by a need for bringing so called advanced ideas down into the undergraduate program, the latter was emphasized. In the author's opinion the need of the modern engineer for the advanced ideas, for pure mathematics, is essential, and once the engineer recognizes that the less traditional course could clearly increase his mathematical "power" he would welcome the change.

2. *A proof of the existence of a real zero for a polynomial of odd degree with real coefficients which is not dependent on continuity*, by Professor J. C. Polley, Wabash College.