

## Robert G. Payton Papers

### Collection Summary

<b>Repository:</b>	Adelphi University
<b>Creator:</b>	Robert G. Payton
<b>Title:</b>	Robert G. Payton Papers
<b>Inclusive Dates:</b>	1957 – 2007, undated
<b>Quantity:</b>	1.5 linear feet (3 manuscript boxes)
<b>Abstract:</b>	Professor Robert G. Payton (1929-2007) was a distinguished scholar and academic. This collection contains Prof. Payton's extensive handwritten notes, authored journal articles, numerous co-authored articles with Professor Kazumi Watanabe of Yamagata, University, Japan, as well as many journal articles by other scholars in the field of mathematics. Class notes, a few correspondence and forty four books with extensive marginalia all in RGP's handwriting, are included in the collection.
<b>Language:</b>	Collection materials are in English

### Biographical History

Robert G. Payton, born in 1929 in Louisville, Kentucky, attended the Speed School of Engineering at the University of Louisville. Upon completing his Master's degree in electrical engineering at Yale, he served two years in the U.S. Army. Payton earned his Ph.D. in applied mathematics from Harvard in 1959, and embarked on a career with Avco Corporation working in the Research and Advanced Development Division. In 1964, he accepted an associate professorship at Adelphi University, in Garden City and settled in the Greenwich Village neighborhood of New York City. He married the former Marlene Hanson, a fashion designer from Boston, in 1971, and that same year became a full professor at Adelphi.

Payton was widely published and is best known for his work on anisotropic elastic wave propagation. He collaborated on numerous journal articles with Prof. Kazumi Watanabe, of Yamagata University in Japan. Payton was an active member of the Metropolitan New York Section of the Mathematical Association of America where he served as president for many years. In 1999, he retired from Adelphi but continued to write and publish while conducting research relating to stress intensity factors.

Prof. Payton's final published paper was co-authored with his frequent collaborator, Prof. Watanabe, appearing in the Quarterly Journal of Mechanics and Applied Mathematics in March, 2007. Prof. Payton died shortly thereafter in August, 2007.

### Scope and Content of the Collection

The Payton Papers is comprised of notes, journal articles, and correspondence documenting Payton's work in the field of mathematical physics, with a concentration of the materials covering elastic wave propagation theory. Payton's personal collection of forty-four books covers a variety of topics including

seismology, elastodynamics, and mathematical physics. Of particular interest is the proliferation of marginalia in these books, deemed exclusive to Payton, and displaying his thought process during his reading. The collection also contains extensive notes in Payton's distinctive, meticulous handwriting, as well as class notes which have been contained in the "Examination Book" folder, 1996-2004. The collection includes academic journal articles written solely by Payton, 1967-2006, as well as a small collection of articles coauthored with Prof. Watanabe, 1997-2007. Payton also collected many journal articles by other authors on various mathematical topics; these are grouped chronologically in two folders, 1902-1969, and 1970-2004. Journal articles, 1959-2006, covering specific topics of particular interest or relating to Payton's research have been foldered by subject terms pre-determined by him. One folder labeled "Miscellaneous 1993-2004," contains a few handwritten notes by Payton, printed class notes with accompanying graphics, articles about partial differential equations of the first order, and second order equations, and several non-specific Xerox copies from what appear to be text books or journal articles. The Robert G. Payton Papers were donated to Adelphi University by his widow, Marlene Hanson Payton.

**References:** Amateau, A. *The Villager*. V. 77, No. 14. September 5 – 11, 2007. Community Media, LLC. New York. *New York Times* August 15, 2007. Obituary

## **Administrative Information**

### **Provenance**

Material purchased by UASC in January 2015.

### **Preferred Citation**

Preferred citation for this material is as follows:

Identification of specific items; Date (if known); Robert G. Payton Papers; Box and folder number; Adelphi University Archives and Special Collections, Garden City, NY.

### **Processing Information**

The Robert G. Payton Papers was processed by Jazmin Mooney in Spring 2015.

## **Restrictions**

### **Access Restrictions**

The Robert G. Payton Papers is open to research. Photocopies of fragile materials are provided for researchers in lieu of the originals.

### **Use Restrictions**

Single photocopies may be made for research purposes. Permission to publish materials from the collection must be requested from Adelphi University Archives and Special Collections. Researchers are responsible for copyright compliance.

## **Subject and Genre Headings**

## People:

Payton, Robert G. (1929-2007)  
Watanabe, Kazumi

## Organizations:

Metropolitan New York Section of Mathematical Association of America  
Avco Corporation

## Topics:

Anisotropic Elastic Wave Propagation

## Arrangement of the Collection

The Robert G. Payton Papers are arranged into three series: Series I: Articles, 1902-2007; Series II: Notes, 1975–2004; Series III: Correspondence, 1998-2005.

## Detailed Description of the Collection

### Series I: Articles, 1902-2007

The first group in this series contains articles written exclusively by Payton. Numerous articles written in collaboration with Prof. Watanabe are included. Journal articles collected by Payton and arranged chronologically are also included in this group.

The second group in the series contains articles collected by Payton on specific topics and identified by him.

Box	Folder	Title
1	1	Published Articles by Payton, 1967-1985
	2	Published Articles by Payton, 1987-2006
	3	K. Watanabe and RGP Published Articles, 1997-2005
	4	Final Manuscript by RGP and Watanabe, 2007
	5	Journal Articles by Various Authors, 1902, 1957-1969
	6	Journal Articles by Various Authors, 1970-2004
2	1	B=1 Final Figures, 2001-2004
	2	Dynamic Stress Intensity Factor, 2005, 2006
	3	Matrix Ray Problem, 2001-2002
	4	Crack Wave Front, 1992, 2003
	5	Ray Method for SH Wave, 2000-2002
	6	Anti-Plane Wave Motion, 2003-2005
	7	Computer Crack, ca. 2003)
	8	Martin and Berger Approach 2000-2006
	9	Dynamic Stress Intensity Factor 2005
	10	M.J. Lighthill Article 1959
3	1	Wood Crack 2002-2004
	2	Miscellaneous

### Series II: Notes, 1975-2004

Papers include handwritten notes by Payton. One folder is exclusively dedicated to handwritten notes with journal reprints, class assignments, and class notes, 1979 – 2003. The folder labeled “Examination Book” contains handwritten notes, class notes, and reprints of journal articles. This folder was established by Payton and retained in the original order

3	3	Payton Hand Written Notes
	4	Payton Notes: Journal Reprints, Assignments (?) 1979-2003
	5	Examination Book
	6	Cylindrical Anisotropic Elastic Solid 2000

### Series III: Correspondence 1998-2005

3	7	Correspondence with Prof. Watanabe 2001-2003
	8	Correspondence, Published Articles C.H. Daros 1998-2004
	9	RGP Review of Journal Articles 2000, 2005

### Series IV: Books

1. Abramowitz, M. & Stegun, I. (Eds). (1964). Handbook of mathematical functions with formulas, graphs and mathematical tables. Washington, D.C. U.S. Government Printing Office, National Bureau of Standards, Applied Mathematics Series 55. Note: This book contains Prof. Payton’s Copy of handwritten syllabus for course “Mathematics 141 Calculus & Analytic Geometry I.
2. Aki, K. & Richards, P. G. (1980). Quantitative seismology theory and methods, V. I. San Francisco. W.H. Freeman & Co.
3. Aki, K. & Richards, P.G. (1980) Quantitative seismology theory and methods, V. II. (1980) San Francisco. W.H. Freeman & Co.
4. Bargman, V. (1961). Communications on pure and applied mathematics, V. XIV, 2. New York. Interscience Publishers, Inc.
5. Bashmakova, I.G. (1972) Diophantus & diophantine equations. Washington, D.C. The Mathematical Association of America.
6. Bateman, H. (1953). Higher transcendental functions. Volume 2. New York. McGraw Hill.
7. Bateman, H. (1954). Tables of integral transforms. V. I. New York. McGraw Hill. (“Books to be Mended”)
8. Birkhoff, G.& Rota, G. (1962) Ordinary differential equations. Boston. Ginn and Company.
9. Burridge, R. (1976) Some mathematical topics in seismology. Courant Institute of Mathematical Topics in Seismology. New York. New York University Press.
10. Byrd, Paul F. & Friedman, Morris D. (1954). Handbook of elliptic integrals for engineers and physicists. Berlin. Springer-Verlag
11. Carrier, G.F., Krook, M., & Pearson, C.E. (1966). Functions of a complex variable theory and technique. New York. McGraw-Hill, Inc. Note: Contains margin notes by Prof. Payton, notes and clippings.
12. Chadwick, P. (1988) Wave propagation in transversely isotropic elastic media. Great Britain. School of Mathematics University of East Anglia.
13. Courant, R. & Hilbert, D. (1962). Methods of mathematical physics. V. II. New York. Interscience Publishers.

14. Courant, R. & John, F. (1965). Introduction to calculus and analysis. V. I. New York. Interscience Publishers. ("Books to be Mended")
15. Courant, R. & John, F. (1974) Introduction to Calculus & Analysis. V. II. New York. Wiley-Interscience Publication. ("Books to be Mended")
16. Courant, R. & Hilbert, D. (1953) Methods of mathematical physics. Volume I. New York. Interscience Publishers, Inc.
17. Egorov, Y.V., Komech, A.I. & Shubin, M.A. (1999) Elements of the modern theory of partial differential equations. Berlin. Springer-Verlag.
18. Eringen, A.C. & Suhubi, E.S. (1975) Elastodynamics, V. II linear theory. New York. Academic Press.
19. Eringen, A.C. & Suhubi, E. S. (1974) Elastodynamics, V.I, Finite Motions. New York. Academic Press. Note: Contains of colleague of Payton.
20. Fedorov, F.I. (1968) Theory of elastic waves in crystals. New York. Plenum Press.
21. Friedlander, F.G. (1958) Sound pulses. Cambridge. University Press.
22. Garding, L. (1980). Lecture notes in mathematics: singularities in linear wave propagation. Berlin. Springer-Verlag.
23. Gel'fand, I.M. & Shilov, G. E. (1964) Generalized functions. V. I. New York. Academic Press ("Books to be Mended")
24. Green, A.E. & Zerna, A. (1963). Theoretical elasticity. Oxford. University Press. Oxford. (bound with note, "Books to Be Mended")
25. Hobson, E.W.(1931). The theory of spherical & ellipsoidal harmonica. New York. Chelsea Publishing Co.
26. Ikawa, M. (1991). Translations of mathematical monographs, V. 189. hyperbolic partial differential equations and wave phenomena. American Mathematical Society. Providence. American Mathematical Society.
27. Kline, M. (1972). Mathematical thought from ancient to modern times. New York. Oxford University Press. Note: Contains clippings from N.Y. Times.
28. Knops, R.J. & Payne, L.E. (1971) Uniqueness theorems in linear elasticity. New York. Springer-Verlag
29. Lafitte, O. (2002) Memoires de la societe mathematique de France: The wave diffracted by a wedge with mixed boundary conditions. Paris. Societe Mathematique.
30. Lax, P.D. (1963). Courant 14 lecture notes: hyperbolic partial differential equations. Providence. American Mathematical Society. Note: book still in original wrapper with receipt.
31. MacRobert, T.M. (1948). spherical harmonics: an elementary treatise on harmonic functions with applications. New York. Dover Publications.
32. Miklowitz, J. (1978). The theory of elastic waves and waveguides. Amsterdam. North-Holland Publishing Company.

33. Miller, A.I. (2005) Empire of the stars: obsession, friendship and betrayal in the quest for black holes. New York. Houghton Mifflin.
34. Mura, Toshio. (1982) Micromechanics of defects in solids. The Hague. Martinus Nijhoff Publishers.
35. Oberhettinger, F., Magnus W. & Magnus, S. R.P. 1966. Formulas and theorems for the special functions of mathematical physics. New York. Springer-Verlag.
36. Payton, R.G. (2004). Twenty-five reprints of Prof. Payton's Article: Diffraction in a Cylindrically Orthotropic Elastic Solid Containing a Stress Free Crack
37. Pearson, C.E. (1959). Theoretical elasticity. Harvard monographs in applied science. Number 6. Cambridge. Harvard University Press.  
Note: Contains margin notes & notes.
38. Simmons, G.F. (1992) Calculus gems, brief lives and memorable mathematics. New York. McGraw Hill.
39. Stakgold, I. (1968). Milan series in advanced mathematics and theoretical physics: boundary value problems of mathematical physics, V. II. (1968). New York. The MacMillan Co.
40. Stoker, J.J. (1969). Differential geometry. New York. Wiley-Interscience.
41. Toeplitz, Otto. (1963). The calculus: a genetic approach. Chicago. University of Chicago Press.
42. V.I. Arnold. (1991). Topological invariants of plane curves and caustics. University Lecture Series, V. 5. Providence. American Mathematical Society.
43. Whitman, G.B. (1985) Linear and nonlinear waves. New York. Wiley-Interscience Publication.  
Note: Contains clipping from The New Yorker magazine and Bulletin from American Mathematical Society, V. 12. 2. 1985.
44. Wolfram, S. (1996) The mathematical book. Cambridge. Cambridge University Press.  
Note: contains clippings from N.Y. Times.