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Financial Mathematics. By A. W. Richeson. New York, Prentice-Hall, Inc., 1935. xiv+361 pages. \$2.50.

This text is intended for students majoring in business administration and commerce. It is "not to prepare actuaries," as one can readily see; and the reviewer would be better pleased to see included a treatment of amortized and partly amortized mortgages, and serial bonds. But we find only the standard elementary material of such a course, presented with all the formulas required for the topics treated. Many a student is deterred by complicated formulas, and would prefer a direct analysis and a solution by simple and easy logical steps. Thus he is better prepared to treat a strange type of problem. Many practical, but more complicated problems, might have been treated in a way quite within the grasp of students with only the amount of preparation demanded by the author.

Professor Maximilian Philip has shown how this can be done in Part II of his text published, in 1932, by the same company. Someone in reviewing the latter text said of it, "So clear it reads like a novel." The present reviewer wonders why the publishers offer three years later a text with far less claim to originality in material, treatment or procedures presented.

The text has a good number of exercises, many of which have novelty and interest beyond the formal type.

By permission, five of the tables of *Tables of Applied Mathematics* by Professor James W. Glover are included for values of n up to 100, which makes the text more attractive as a reference book for practical work in finance.

C. C. Grove

MATHEMATICS CLUBS

EDITED BY F. W. OWENS and HELEN B. OWENS, State College, Pa.

All reports of club activities, suggestions, topics with references, and other material of interest to clubs should be sent to F. W. Owens, 463 East Foster Ave., State College, Pa.

HISTORY OF MATHEMATICS CLUBS

Attention of all mathematics clubs is again called to the effort being made to compile a list of all such organizations at present active in the United States and Canada. The dead line for entry in this year's record is June 1, 1936.

In April a letter to Mathematics Clubs was mailed from this office to all organizations listed in our files. If that letter has failed to reach your club please communicate with this department at once. If it has been received and not answered the reply is much needed.

CLUB PAPERS FOR PUBLICATION

In February the suggestion was made that each club submit its best paper for the year 1935-6 for consideration by this department. Such papers will be MATHEMATICS CLUBS

considered if received before August 1, 1936 but every student knows the joys of summer interfere with scheduled dates. Why not mail those papers before the final examinations absorb all other interests?

CLUB TOPICS

Space is gladly given to the play which was so successfully presented last year by the Mathematics Club of Wellesley College. It gives promise of proving popular as a greeting to new members or as a joyous close of the season's activities.

MODERN MATHEMATICS LOOKS UP ITS ANCESTORS

By MARION E. STARK

(If there is not time to memorize the parts, the entire play, excepting the Greek Chorus, may be read behind the scenes while the actors follow their parts by gesture and expression. Each member of the Greek Chorus carries a pasteboard placard with a Greek letter on the side toward the audience. On the reverse of this placard may be written the words of the three songs which are to be chanted or sung by the chorus. A cademic gowns may furnish costumes for all, Father Time being furnished with traditional scythe and white beard, though more elaborate costumes add to the interest of the play.)

Scene I

(MODERN MATHEMATICS seated at a table in center of stage, earnestly reading the Boston Evening Transcript. A vacant chair is near. He looks up and speaks to audience.)

M.M.: You see before you Modern Mathematics seated here, While in the evening paper he attempts to find good cheer. Now listen well to what comes next! Attention, everyone, And then you will see everything that's going to be done!

(Reads paper, throws it down and speaks again)

This thing called Evolution's in the papers every day, And I certainly believe that it has come to us to stay. The notion to mankind that he was once a hairy ape Is really quite distressing, but it seems there's no escape. If man has come from monkeys, it appalls me to concede I may have awful ancestors, preposterous indeed. Yet as a truthful science I must seek them out I fear, For doubt is worse than certainty. On that point I am clear. I see my lawyer, Logic, coming up the garden walk Just at the moment when I need with him a bit of talk. If *he* says "Look up ancestors!" I shall be quite content, Though harrowed still by fear and hope and horror, strangely blent.

(LOGIC enters with brief case, is shown paper, and, laying case on table, carefully studies paper)

- LOGIC: You think you should know an ancestor or two. You're about to inquire what I'd tell you to do; And how would I deal with the case. were I you?
 M.M.: Every word you say is correct.
 L.: You would like me to say that its nonsense untold, Is this business of hunting progenitors old.
 - You would welcome discouragement, stubborn and cold.

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M.M.:	Oh, my innermost thought you detect!
	I dread to look up in my family tree,
	For fear I shall find there (I'm sure you'll agree)
	An ancestor who will make a monkey of me.
L.:	It is not an ennobling thought,
	Yet I am perfectly sure that you ought. (M.M. buries face.)
M.M.:	Yes, alas, I've a feeling it ought to be done.
	I should turn to the action I'm trying to shun.
	I should now look those ancestors up, one by one.
	(Enter Greek Chorus chanting.)
Chorus:	Oh, Evolu! Oh, Evolu! Whatever in this world is he to do? What did you start with in the long forgotten past?
	Oh, tell him true.
	And, if it be disgraceful, we'll help him bear the blow.
	Mankind has come from monkeys, he knows that this is so.
	The thought may help him cheerfully his fate to undergo,
	On, great and mighty force of evolution.
	(Curtain)
	Scene II

(Same as Scene I, except paper gone. LOGIC, at table rummaging in brief case, fussing with papers. M.M. in deep depression, sunk in chair, sighing and gloomily shaking head. LOGIC still searches papers.)

pupers.)	
L.:	Bear up, my friend! I'm here, you know,
	To aid you in your dread and woe.
	There may be nought at all to fear;
	But if there is, Why, I am here.
M.M.:	What is it you are seeking there,
	With papers flying everywhere?
	How can you hope to help me so?
	I'd really rather like to know.
L.:	I know I've got a paper here
	To make the right procedure clear. (triumphantly shows one)
	Aha! I have it in my hand.
	The case of "Science vs. —" and
	'Twas argued pro and con so well.
	This was the verdict, "Time will tell."
	Now we will summon Father Time,
	By Radio and proper rhyme.
	This Radio you've met, in fine?
M.M.:	Oh, yes, a relative of mine.
L.:	What ho, without there, Radio,
	A message here in haste to go.
	(Brief static off stage. RADIO rushes in)
RADIO:	I race the wind, I span the sea.
	I come when you have need of me.
L.:	I send you on the air today
	For Father Time without delay.
	Your relative desires to know (Indicates M.M.)
	An ancient ancestor or so.

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	I pray you speed upon the road That leads to Time's austere abode.	
	(RADIO dashes off)	
M.M.: L.:	(tearing hair) Oh woe is me! What shall I do? I'm thankful now at least for you. But call my two dear sons to me, In them will surely comfort be. (goes to the door and calls) Analysis. Geometry.	
	Your father needs you mightily.	
	(ANALYSIS and GEOMETRY enter hand in hand. ANALYSIS bears cardboard shield decora with Σ and δ . GEOMETRY carries a large cone. After displaying these proudly to audience they place them on the stage and go to stand one on either side of M.M.)	ted the
ANALYSIS:	What is the trouble, Father? Speak! What drains the color from your cheek?	
Geometry:	We'll be at hand whate'er betide. We're in our places at your side.	
M.M.:	What we must do, you soon will find out:	
L.:	Only a word I'm sure will suffice.	
	Once you have heard, you'll need no advice.	
	Ancestors old, we're planning to see.	
M.M.:	What shall we find? By this I'm distressed.	
	Deep in my mind there dwelleth unrest.	
	(Sons pat his shoulder, comforting him as Greek Chorus enters chanting)	
Chorus:	Oh Time will tell, yes, Time will tell. We have heard it said and know it very well. Will he bring comfort to this parent st eeped in woe And gloom dispel? Or, will the news be dreadful, and worse than he expects? Does Logic know it's coming? What is it he suspects? Lo, how the love of both the sons the downcast one protects. Oh, hasten Time and bring the right solution.	

(Curtain)

Scene III

(Same as Scene I save all papers removed, chairs and table pushed to back of stage. L., An., GEO., standing as at end of Scene II, M.M. gloomily seated and voice of TIME is heard off stage. He is speaking as he enters.)

Тіме:	Is this the place where Time was asked to be? Is this the house for which I bring a tree?
	(Time enters carrying a very small evergreen tree, on the tips of which are tied many rolls of paper. The five lowest are each labeled plainly, numbered 1–5. Time comes toward M.M. who rises to meet him, flanked by the others.)

Тіме: Approach me friend. I bring you what you seek. (M.M. shudders) Nay, courage then. You should be bold, not meek. Fear not to see your ever gallant past. (All but M.M. indicate pleasure) Fear not to read these names from first to last. (points to tree) The lower branches of this verdant tree, Contain the names you rightly wish to see. Advance, stout hearted; find out one by one. What in the past your ancestors have done.

(Time offers tree to M.M. who takes roll 1. As he opens the rolls M.M. reads the name, listens to replies and gradually cheers up.)

M.M.: Egyptian Mathematics is the name. What are his face, his fortune and his fame?

(EGYPTIAN MATHEMATICS enters carrying very large roll marked Rhind Papyrus and a very small pyramid. He, and each ancestor as he appears, exhibits his trophies to the audience before approaching M.M.)

E.M.: Oh, not like Hamlet's father do I rise To urge to acts of rashness, most unwise, But since you seek to see me, it is clear, That for your happiness I must appear, Though what I've done, to you the ages tell. Far in the past, when all my deeds befell, Rose mighty pyramids as you may see. And works like this appeared momentously. (holds up papyrus)

> (As E.M. finishes speaking he deposits trophies at the feet of M.M. and retires to the back of the stage. Each ancester in turn does the same so that at the close the ancestors form the background of the grouping.)

M.M.: His words are cheering and my heart is glad.
I would see other ancestors I had. (takes roll 2 and reads)
Mesopotamian Mathematics. Here
His name I find and let him now appear.

(MESOPOTAMIAN MATHEMATICS enters with roll marked Omar Khayam Algebra)

- MES. M.: A book of wisdom brought before you now, My other books and works would show you how Beside my brothers of antiquity In mighty learning's services I bow. (looks anxiously back)
- M.M.: Why do you look afar so searchingly? If there's a reason, tell it now to me.
- MES. M.: I seek a brother. Will you summon him? We stood together in the ages dim, We worked together then to serve mankind. (M.M. takes roll 3)
- M.M.: 'Tis Hindu Mathematics that I find.

(HINDU MATHEMATICS enters with large placard, on side visible to audience are the Hindu Arabic numerals: 1, 2, · · · 9, 0. He offers one edge to MES. M. together they display the numerals and then speak in alternate lines:)

- H.M.: This is what we built together, he and I, in bygone days.
- MES. M.: Think of all the good it's done you in so many different ways.
- H.M.: What were all the worth of numbers, if you had to multiply
- MES. M.: X and L as Romans did by C and X and L and I?

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	(These two seem to converse as they shake hands, then H.M. reverses the plot the formula $(-b \pm \sqrt{b^2 - 4ac})/2a$. Addresses M.M.)	acard, displaying
H.M.:	This besides, and many other bits of learning, great and small. Only knowing that you wish it makes me mention them at all. Still it does no harm to tell what each has wrought.	
M.M.:	As you summon us this evening to reveal the thing you sought. (opens roll 4) Across the seas, beyond the regions far Of time and space stands his appointed star Whom next I summon to this meeting here. Will Chinese Mathematics now appear?	
	(CHINESE MATHEMATICS enters carrying Chinese abacus and great M played on placard. See D. E. Smith, History of Mathematics, vol. 1, p. 2	agic Square dis- 287).
C.M.:	I come from the far distant spaces; I come from antiquity's shore, To join other races, to see other places, I have never looked on before. I bring from the Orient hoary These gifts which I lay at your feet, And names full of glory, to add to my story, Until you shall see it complete.	
M.M.:	 Almost convinced, once more I'll make a test: And gladly turn unworried to my rest. If this last friend be like the other four, Then I shall trouble Father Time no more. (opens roll 5) Greek Mathematics, may I hope to see What in the far off years you gave to me? (GREEK MATHEMATICS enters with large triangle labeled Pythagorus a Elements of Euclid.) 	nd a roll labeled
G.M.:	I greet thee my descendant, And gladly now perceive That we, thy old ancestors, May thankfully believe The tales of this, thy prowess, We frequently receive. I offer these two symbols Of much that I could tell Of mighty names and problems, And theory as well, That helped to build thy greatness E'er Grecian glory fell.	
M.M.:	(beaming joyfully on all, turns to audience) What have I found on my family tree? Surely my friends, you are happy with me. All of my worries are past, Save that I'll struggle more worthy to stand As a great descendant of their noble band, Worthy to grasp them, each one by the hand. Duty be mine to the last.	

(Greek Chorus enters singing or chanting)

CHORUS: Oh, Evolu! Oh, Evolu! He had naught at all to fear from you. He had no monkeys perching in the family tree. We see 'tis true. As great as was his wrong, so great his joy shall be. His eye is on the future, a challenge doth he see. To make himself more worthy ever of his ancestry Is his undying, fervent resolution.

(Curtain.)

PROBLEMS AND SOLUTIONS

Edited by Otto Dunkel, H. L. Olson, and W. F. Cheney, Jr.

ELEMENTARY PROBLEMS

Send all communications concerning Elementary Problems and Solutions to W. F. Cheney, Jr., Dept. Box 35, Connecticut State College, Storrs, Connecticut.

The Department of Elementary Problems welcomes problems believed to be new, and demanding no tools beyond those ordinarily furnished in the first two years of college mathematics. To facilitate their consideration, solutions should be submitted on separate, signed sheets, within three months after publication of problems.

PROBLEMS FOR SOLUTION

E 211. Proposed by V. Thébault, Le Mans, France.

One liter of wine is drawn from a full cask, and replaced by water. Then one liter of the mixture is drawn and replaced by water. This is repeated until thirty-five liters have been drawn off and replaced, when an analysis determines that the cask contains equal parts of water and wine. What is the capacity of the cask?

E 212. Proposed by C. W. Trigg, Cumnock College, Los Angeles.

Any point P on the minor circle of an ellipse is connected to the foci of the ellipse. Show that the sum of the areas of the circles constructed on these connectors as diameters, is equal to one-half the area of the major circle of the ellipse.

E 213. Proposed by Franz Denk, Erlangen, Germany.



Redistribute the six digits in the same areas in the accompanying diagram