In the following translation, made in 1923 but not hitherto published, I have used Halley's original text and have tried to follow it closely.

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TO
THIS MATHEMATICO-PHYSICAL WORK
OF THE ILLUSTRIOUS
MR. ISAAC NEWTON,
AN ACHIEVEMENT WHICH IS
THE GREATEST GLORY OF OUR AGE AND NATION

Lo! the laws that govern matter and the motions of the skies,
The Creator's computations are revealed before our eyes.
Laws that God refused to violate at creation, when his hand
Fixed them as the world's foundations, that for eons it might stand.
Now the vault of heaven discloses what its inmost mysteries are,
What the far-flung force that rotates even the most distant star.

Throned amid celestial orbs, the Sun commands them all to swerve
Toward himself, and every planet swings around him in a curve.
Every rectilinear motion is deflected by his force.
Now at last we know the secret of the Comet's curving course,
And no longer will the bearded star inspire our hearts with fear.
Now the wanderings of the silver Moon at last are rendered clear:
Why her paces are unequal, why she never would submit
To be bridled by the numbers, to be guided by the bit
That astronomers have wrought for her; we gather at a glance
Why the nodes are retrograding, why the apsides advance.
We can gauge the force with which the Moon pulls on the ebbing sea
When the broken waves, recoiling, leave the kelps and sedges free
And disclose, to watchful sailors, sands and shallows; till once more
Turning back, the heaving ocean beats and breaks upon the shore.

Cryptic questions that perplexed the mind of many an ancient sage,
Riddles over whose solution fruitless controversies rage,
We can read their answers plainly. Mathematics puts to rout
All the error that oppressed us, and the darkness and the doubt;
For the wisdom of a genius has enabled us to rise
To the mansions of the mighty gods, to scale the lofty skies.

Leave your earthly cares, O mortals; here are wider views to scan.
See how far above brute cattle is the wondrous mind of man—
Sprung from heaven, it can compass cosmic truths. And even he
Who, by written tablets, outlawed murder, theft, adultery,
And the bearing of false witness—though he guided men aright,
Did not elevate the human race to such a lofty height.
Nor did he who first prevailed on wandering tribes to settle down
And to build them habitations in a wall-encircled town.
No, nor he who blessed mankind by teaching it to till the soil;
Or who pressed from juicy grapes the antidote to care and toil;
Or who used the reeds along the Nile for writing, having found
How to make a pictured symbol represent a spoken sound.
Those discoveries brought some solace to the race of men who bow
Underneath the heavy burden of life's miseries. But now—
Now at last we are admitted to the great gods' banquet hall;
Now we traverse all the heavens, and we probe this earthly ball
For the secrets locked within it; now we contemplate the vast
Changeless order of the universe unknown in ages past.

You who take delight in nectar and in heaven's ambrosial fare,
Sing with me the praise of him who laid the scheme of Nature bare—
Newton, who unlocked the treasury where Truth lay hid from sight;
Newton, loved of all the Muses; Newton, whom the god of light,
Phoebus, fires with inspiration. No unworthy thought can win,
No base passion stir his bosom. There the god has entered in,
And his holy presence fills the mind that sees the cosmos plain.
Nearer to immortal godhead mortal man may not attain.

SCIENTIFIC BOOKS

QUALITATIVE ANALYSIS

Semi-micro Qualitative Analysis. By PAUL ARTHUR and OTTO M. SMITH. xi + 322 pp. 28 figs. 15.2 × 22.7 cm. New York and London: McGraw-Hill Book Company. 1942. $2.75.

Semi-micro Qualitative Analysis. (The Barber Pres-

sure Bulb Method.) By HERVEY H. BARBER and T. IVAN TAYLOR. xvi + 446 pp. 2 plates. 54 figs. 15.4 × 23.5 cm. New York and London: Harper and Bros. 1942. $3.50.

Introduction to Semimicro Qualitative Analysis. LOUIS J. CURTMAN. x + 377 pp. 2 plates, 39 figs. 14.2× 21.3 cm. New York: The Macmillan Company. 1942. $2.75.

IT is the trend of the times for text-books of qualitative analysis to include more and more of the material which, not so many years ago, was an important part of the subject-matter of courses in physical chemistry. No one will question the desirability of introducing the student at the earliest possible moment to the concepts of chemical equilibrium and the theory of solutions, and it is evident that the study of qualitative analysis provides an excellent opportunity to illustrate these principles, as well as many others. But the result of this trend, as exemplified by the volumes under consideration, seems to this reviewer to have reached the point where theory has begun to encroach upon the fair claims to attention of the analysis itself.

Even in the least ambitious of the texts under review (so much so that the problem of anion interference with cation group tests is not considered at all) the theoretical section comprises three fifths of the book and includes, in addition to the usual topics, such matters as mathematical treatment of buffer solutions, coprecipitation phenomena, etc. The student who absorbs all the material in the most ambitious of these books will have mastered the equations of Stokes and of Poiseuille, the experimental arrangements for measuring specific conductance and much more. The utility of all this information is beyond question, but its inclusion in the qualitative analysis course is a question which must be decided by each teacher on the basis of what his students have already learned, and what they expect to learn in subsequent courses.

"Semi-micro Qualitative Analysis," by Arthur and Smith, is concise, with few novel features. The theoretical section is extensive in comparison with the somewhat abbreviated scope of the analytical scheme which is followed, but is understandable and amply provided with excellent review questions and problems at the end of each section. The Debye-Hückel theory and the Brønsted system are briefly described but are not actively employed in the text. A conventional semi-micro scheme of analysis is followed, employing only the two or three customary organic reagents. The space devoted to discussion of the anions is very limited, although more than two dozen are nominally included. The consistent use of the plural "equilibriums" and the misspelling of Brønsted everywhere except in the Preface, are minor flaws together with which some may reckon the choice of the highly glazed paper on which the book is printed.

"Semi-micro Qualitative Analysis," by Barber and Taylor, is by far the most attractive of the three texts under discussion, as well as the one with the most original and distinctive features. Of the novelties the most significant is the adoption of the pressure bulb method of Barber (*Ind. Eng. Chem., Anal. Ed.,* 12: 58, 1940) for separating precipitates and filtrates without use of the centrifuge. The practicability of this method is no less evident than is its versatility—the pressure bulb is also employed in suction filtration and in drawing gases through reagents, etc.—but its general desirability can be determined only after lengthy experience in the undergraduate laboratory.

To match this promising innovation the authors have introduced the use of no less than 35 organic reagents, mostly as the basis of confirmatory tests, but with a substantial number contributing to group or other separations, such as the use of butyl cellosolve to dissolve the more ionic strontium nitrate, leaving calcium nitrate. Wherever possible the authors have sought to emphasize the principles involved, as well as the results obtained, in the use of these organic reagents. However, such extensive use of reactions with which the second-year chemistry student can not possibly be familiar seems to this reviewer to be of doubtful pedagogic value. On the other hand, the indicator control of pH in the various precipitations is a highly commendable feature.

The extent of the very modern theoretical sections has been indicated above. They are clearly presented and readable. The treatment of pH, as well as of oxidation-reduction equations, is especially noteworthy. Good review questions are provided.

The last section of the book consists of 27 pages of reference tables of the reactions of ions and their compounds, arranged in the most informative manner this reviewer has yet seen. Praise is also due the exhaustive index and the fine typography. Granted a course in qualitative analysis of the scope envisaged by the authors, it should be a pleasure to use this book.

"Introduction to Semi-micro Qualitative Chemical Analysis," by Curtman, possesses many of the features introduced in earlier texts by this author, and now adapted to the semi-micro scale. The use of potassium hydroxide to separate the subdivisions of the copper-tin group is retained, as well as the separate precipitation of quinquevalent arsenic subsequent to the copper group procedure. Only the most

indispensable organic reagents are employed. Another highly creditable feature is the emphasis on the qualitative chemistry of the anions, which are all too frequently neglected.

The purely theoretical section comprising slightly more than one third of the book while generally adequate does not seem either attractive or particularly thorough. Amphoterism is scantily treated, though not to the extreme degree that its omission from the index would indicate (three rather random references are given under Ampholytes, but this term is not used consistently throughout the book). One of the virtues of the theoretical section is the abundant selection of good numerical problems.

Numerous photographs and line drawings of apparatus and manipulative procedure are a decided asset, but the rather crowded analytical instructions and unattractive format are not.

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PRINCETON UNIVERSITY

THE AMERICAN ASSOCIATION FOR THE ADVANCEMENT OF SCIENCE

FINANCIAL REPORTS

TREASURER'S REPORT

Balance Sheet—Assets at September 30, 1942

Securities and mortgages	$193,371.67
Cash awaiting investment	64,892.46
Cash for current needs	14,769.24
Total assets	$273,033.37

Balance Sheet—Liabilities at September 30, 1942

Endowment—for research (1)	$118,811.45
Endowment—for general purposes (2)	92,097.88
Endowment—dues for emeritus life members (3)	5,000.00
Endowment—dues for emeritus annual members (4)	500.00
Reserve fund	41,854.80
Prize fund	2,000.00
Unpaid grants to affiliated academies	1,027.00
Accumulated income available for appropriation	11,742.24
Total liabilities	$273,033.37

(1) Richard T. Colburn fund, $87,186.45; fees of deceased sustaining members, $7,000; fees of deceased life members, $21,100; A. G. Stillhamer fund, $3,525.
(2) W. Hudson Stephens fund, $4,381.21; Michael P. Rich fund, $10,000; Hector E. Maiben fund, $27,357.67; Friends of the Association, $3,559; Jennie M. Arms-Sheldon, $1,000; fees of living life members, $45,800.
(3) Jane M. Smith fund, $5,000.
(4) Luella A. Owen fund, $500.

CASH STATEMENT

Receipts

Balance, September 30, 1942	$136,019.22
Life membership fees	1,700.00
Grant returned, gift of grant, miscellaneous	135.00
Contribution to Prize Fund	1,000.00
Sale and redemption of securities	45,488.46
Accumulated interest during fiscal year	4,984.27
Total receipts	$189,326.95

Disbursements

Securities purchased	$ 89,023.25
Grants-in-aid of research	1,791.89
Grants to affiliated academies	1,858.50
For new emeritus life members	600.00
For emeritus annual members	24.00
Life members' journal subscriptions	1,617.00
Fifty-year members' journal subscriptions	75.00
Thousand Dollar annual prize	1,000.00
Miscellaneous expenses	90.38
Transfer of Permanent Secretary's Reserve to Permanent Secretary's account	13,585.23
Total disbursements	$109,665.25
Cash on hand, September 30, 1942	79,661.70
	$189,326.95

PERMANENT SECRETARY'S REPORT

Balance Sheet—Assets at September 30, 1942

Cash in banks	$ 37,711.29
Accounts receivable	113.78
Supplies and postage	2,001.11
Deferred charges	1,124.32
Total assets	$ 40,950.50

Balance Sheet—Liabilities at September 30, 1942

Advance payments of dues, etc.	$ 1,008.60
Permanent Secretary's reserves	37,711.29
Balancing account	2,230.61
Total liabilities	$ 40,950.50

INCOME STATEMENT

for the Fiscal Year Ended September 30, 1942

Income

Annual dues and fees	$108,442.75
Interest on bank accounts	440.38
Miscellaneous receipts	1,721.73
Registration fees—Dallas meeting	1,849.00
Receipts from Dallas Exhibition	3,287.00
Total income	$115,740.86

Expenses

Subscriptions to journals, including foreign postage	$ 66,709.36
Expenses of Washington office	24,723.50
Expenses of General Secretary	391.45
A.A.A.S. Bulletin (7 issues)	2,140.09
Allowances to Pacific and Southwestern Divisions	2,840.00
Circularizing for new members	7,550.54
Miscellaneous expenses	1,011.18
Expenses—Durham meeting (late charges)	31.25
Expenses—Chicago meeting (late charges)	279.80
General and travel expenses—Dallas meeting	5,044.05
Expenses of Dallas Exhibition	2,626.63
Total expenses	$113,347.85
Balance	2,393.01
	$115,740.86

STATUS OF MEMBERSHIP

September 30, 1942, and September 30, 1941

	September 30, 1942	September 30, 1941
Sustaining members	0	0
Life members	534	539
Fifty-year members	24	25
Annual members, paid-up	21,366	19,692
Total in good standing	21,924	20,256
Members in arrears, 1 year	1,087	993
Members in arrears, 2 years	660	549
Total enrolment	23,671	21,798
Gains		
Reinstatements	26	27
New members	3,252	1,883
	3,278	1,910
Losses		
Resignations	637	518
Deaths	219	177
Dropped for nonpayment of dues	549	484
	1,405	1,179
Net gain in enrolment	1,873	731