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Major accounting problems in corporate affiliation

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Boston University
MAJOR ACCOUNTING PROBLEMS

IN

CORPORATE AFFILIATION

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by

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CHAPTER I.

INTRODUCTION

The existence of the tendency and the fact of business combinations for economic, competitive, financial, promotion and other reasons, begun, emphasized and probably abused all in the five decades preceding the 1929 business debacle, is well known. These combinations took various forms. The "pooling of interests" method which proved unsuccessful because gentlemen did not always live up to their agreements, the "voting trust" which incurred the wrath of the more or less understanding public opinion and was therefore legislated into disuse, and the "interlocking directorate" method of centralizing control, presented few, if any, new or difficult accounting problems. When, however, combination took the newer forms of consolidation and merger, and the holding company became the most used method of effecting the same results as the "pool" and the "trust", there were created conditions which called for a high degree of nicety and skill in the correct application of accounting theory and practice.

Where it proved impossible or undesirable
to combine companies, the same ends were achieved through the holding company method, which secured control of companies through the purchase of a sufficient part of the voting stock to insure such control. The difference between the consolidation or merger method of combination and the holding company method, considered solely from an accounting viewpoint, is that the most difficult problems of accounting theory are finished when a consolidation or merger is accomplished whereas they are just begun when the holding company is actually formed and continue in increasing complexity throughout its existence.

The first major accounting problem in a consolidation or merger is that of properly determining the relative value of several companies as going businesses, and to outline practical and equitable methods of purchase, especially where payment is to be made in the form of stock of another company.

The numerous difficulties of accounting for a holding company arise because of the fact that when two or more corporations become affiliated through intercompany stockholdings, although each maintains its own corporate
identity, there results a new business entity the component parts of which are the associated companies. This new business association has no legal status as such, but does nevertheless represent a real business organization or unit. For various reasons it may be desired to know the financial condition and progress of this group of related companies as a whole. Obviously the financial condition or progress of the group is the combined condition or progress of the individual companies. The statements which present this desired information are generally known as "Consolidated Balance Sheet" and "Consolidated Profit and Loss Statement."

Where the related companies have business transactions with each other the result is profit to one and cost or expense to another, assets in the form of receivables on the books of one company and obligations on the books of the other. Now it is apparent that this group of related companies cannot, as a group, make a profit by dealings within itself. It is also apparent that if the assets and liabilities were combined they both would be overstated on the balance sheet to the
extent that intercompany relationships are included.

It is necessary, therefore, that before accurate consolidated statements can be prepared adjustments must be made to eliminate the effect of intercompany transactions on the consolidated progress and condition.

One very important reason for the preparation of consolidated statements is that very often accurate statements of a company owning a controlling interest in one or more other companies are not possible without reference to the condition and progress of the subsidiary companies.

For instance a relatively important asset on the books of the holding company may be "Investments in Subsidiaries." The type of investment account which represents a temporary use of surplus funds is not here considered. The balance of this "Investment in Subsidiaries" account may have no relation to either the cost of the securities or to their real value. Furthermore it is not a real tangible asset but represents an equity
in the net worth of the subsidiary companies. In other words, in order to present a true picture of the financial condition of the company it is necessary that for the intangible investment account there be substituted the tangible assets and corresponding liabilities of the subsidiary companies.

Other reasons for presenting consolidated statements arise from the inconsistency of the methods used by the holding companies in carrying the investment in subsidiaries on their books. If the investment account is carried at a value equivalent to the book value of the stock owned, and is periodically adjusted to take up the proportionate part of the profits and losses of the companies ownership in which it represents, the problems of consolidation are considerably simplified. However, the condition is not without precedent where the holding company preferred to take up on its books income of subsidiaries only when the same has been distributed as dividends by the subsidiary company. Although legal fiction justifies this procedure it is incorrect from the accounting standpoint which insists on the true facts
being presented. Because the holding company controls the subsidiary companies it determines the dividend policies. The earnings of the subsidiaries, or rather that portion determined by the percent of stock owned, are therefore the earnings of the parent company by virtue of the principle of constructive receipt. Reprehensible motives for including only dividends received from subsidiaries in the income of the holding company are, on the one hand, the desire of keeping the stockholders of the holding company and others unaware of the real earnings of subsidiaries, and on the other hand, the purpose of including earnings of those subsidiaries which make money and not including losses of those companies who show losses. The ultimate purpose of such misrepresentation of facts to manipulate stock prices to the advantage of those within the esoteric circle. It is apparent therefore that in most cases the true condition and progress of the holding company can be presented only through the medium of consolidated statements.

Having digressed to establish the necessity and value of consolidated statements we may return to the
consideration of the accounting problems which arise in
the preparation of such statements. As one author states,
"The idea of consolidated statements is simple in concept
but usually difficult of full realization." One reason
for the truth of this statement is the fundamental reason
that accounting is not an exact science, because it has to
measure value fluctuations. Such measurements are based
on estimates and are therefore, to a certain degree, mat-
ters of opinion. A more particular reason is the peculiar
conditions which are to be found in the affiliated rela-
tionship of parent and subsidiary companies. The chief
factors in corporate affiliation which give rise to ac-
counting complexities are few in number and may be stated
briefly, but they and their ramifications are sufficient
to produce many rather intricate problems and computations.
All the difficulties surrounding the presentation of ac-
curate consolidated statements may be said to arise from
the following facts peculiar to intercorporate ownership:

1. The "Investment" account on the books
of the holding company usually does not
correspond in the value at which it is
carried, to the proportionate value of
the subsidiary, ownership in which it
represents.

(1) "Accounting Theory and Practice" Vol. II, 571, Kester.
2. The holding company does not always own 100% of the stock of subsidiary companies and the minority interests must be accounted for.

3. The affiliated interests may be further complicated by reciprocal ownership.

4. Holding companies may operate subsidiaries for other reasons than profit.

5. Profit of an affiliated company made at the expense of a related company is not profit to the consolidated interests.

6. It is possible that ordinary accounting principles may be overlooked because of intercompany complexities.

It is the purpose of this thesis to present the major accounting problems involved in effecting a consolidation or merger and in the preparation of consolidated statements for affiliated corporate interests, to consider various theories regarding their accurate accounting solution, and to attempt to arrive at the most logical conclusions. The ordinary adjustments and eliminations of intercompany accounts and the routine
of preparing working sheets and setting up the consolidated statements will not be discussed. The thesis is intended to be an interesting, intelligent treatise of the major accounting problems, and a dissertation on the most acceptable interpretation and application of accounting theory to be used in the solution thereof.

Special attention is devoted to the problem of reciprocal ownership because this feature of intercorporate relationship is not discussed in available accounting texts and because it is desired to present an original method of determining stock values where these are hidden in the maze of affiliated interests, which determination is often a difficult computation even when the accountant is skilled in the application of algebraic formulae.

The problems will be classified according to the factors outlined above which give rise to them. The manner in which the various problems are classified is indicated in the table of contents.
CHAPTER II

ACQUIRING CONTROL

Methods of acquiring control. --- In acquiring control through consolidation a new company is formed to take over the assets and liabilities of the old companies, giving in payment therefor either cash or stock in the new company. In a merger the only difference is that one existing company, instead of a new company, absorbs the others. In either case the old companies distribute the proceeds of the sale of their assets to the stockholders and go out of business. If it is desired to obtain control through a holding company, stock in the companies is purchased by the holding company, the companies continue operations, and control is effected by electing the directors of the companies. The holding company may be newly formed or may be one of the existing companies.

Basis of valuation. --- Where control is to be acquired through a holding company the stock of the companies may be purchased in the open market, in which case it might be obtained at different times and prices. Where, however, the stock is to be purchased from individuals or groups of stockholders, the situation is similar to that
in which the assets and liabilities are purchased, inasmuch as the stock will have to be bargained for. Thereupon arises the same problem as exists in a consolidation or merger, namely that of properly valuing the stock and determining the amount of cash or stock to be exchanged therefor.

The payment to be made for each company in a consolidation or merger, or for the stock of each company to be controlled through a holding company, will usually depend upon capitalized earning power and value of net assets. This is generally the case unless, in order to get control, a price not commensurate with these factors must be paid.

Where the net assets and liabilities or the stock of several companies is to be purchased, if an equitable price is to be paid for each, the valuation of net assets and the determination of earning power must be made on bases that are comparable. A fair valuation of the assets may be obtained by employing competent appraisers. Liabilities can be determined and verified. The determination of earning power however is not so simple.
In the first place the records of earnings must be verified as to accuracy.

Allowance must be made for unusual conditions or factors which produced profits or losses when these conditions or factors no longer exist.

Cost and depreciation methods although substantially correct, may have differed enough to require adjustments of earnings to be made.

Management salaries should be adjusted to a uniform basis.

Interest on borrowed capital. -- Although as indicated above an accurate determination of asset values and of earning power is essential, a further qualification of earning power must be made before it can be said that these two factors form the basis for the valuation of a company to be purchased. The amount to be paid will be based on asset value,-- and earning power in excess of a normal return on the capital invested. Expressed more succinctly what is to be purchased is the net assets and the goodwill of the business. Apparently it is because
this principle is not clearly conceived that some authors erroneously state that interest on borrowed capital should not be included as a deduction from earnings in determining the earning capacity of the business. The following illustration reveals the fallibility of such reasoning.

Suppose a company with total assets of $2,000,000, capital stock of $1,000,000, and a bonded indebtedness of $1,000,000 earns $120,000 annually, $60,000 of which is paid out as interest on the bonds. If 6% is considered a normal return on investment in the industry, what is the good-will of the business? Obviously there is none. But if in computing the earning capacity of the business interest on the borrowed capital is excluded the earnings would be stated as $120,000. If these were capitalized at 6% the good-will would be stated as $1,000,000, which, on the face of the thing is absurd. Who would be willing to pay $2,000,000 for a business having net assets of $1,000,000, yielding a net return of $60,000 or 3% on the investment, when the bondholders receive 6% and have a prior claim on all assets?

(1) "Accounting Theory and Practice", Vol. II, P. 527, Kester
Another illustration will further emphasize the point. Suppose in the above case before any purchase or consolidation the bonds were redeemed and preferred stock issued therefor. Using the same method of calculating goodwill as above, namely the capitalized earnings, (excluding interest on borrowed capital) less net assets, the goodwill would be

<table>
<thead>
<tr>
<th>Capitalized earnings</th>
<th>$120,000</th>
<th>$2,000,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net assets</td>
<td></td>
<td>2,000,000</td>
</tr>
<tr>
<td>Goodwill</td>
<td></td>
<td>0</td>
</tr>
</tbody>
</table>

As far as goodwill is concerned it is immaterial to the purchasing company whether the invested capital consists of preferred stock or of bonds, yet here we have the peculiar result produced of $1,000,000 goodwill in one case and none in the other. A company cannot acquire $1,000,000 goodwill by issuing bonds instead of preferred stock.

Furthermore, to exclude interest on borrowed capital would prove inequitable in the case of a consolidation of two or more companies where one company has a bonded indebtedness and another has not inasmuch as, if
the profits of the consolidation should prove to be exactly the combined profits of the individual companies, the returns to the stockholders of the respective companies would not be in the same ratio as they were before.

To Illustrate:— Suppose the above described company be termed A Company, and another company having $1,000,000 in net assets, income of $120,000, and no bond issue, be termed B Company. If interest on invested capital not be considered an expense, the distribution of stock in the new company would be:

<table>
<thead>
<tr>
<th></th>
<th>A Company</th>
<th>B Company</th>
</tr>
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<tbody>
<tr>
<td>Capitalized earnings</td>
<td>(120,000 - 0.06)</td>
<td>$2,000,000</td>
</tr>
<tr>
<td>Net Assets</td>
<td>1,000,000</td>
<td>1,000,000</td>
</tr>
<tr>
<td>Goodwill</td>
<td>$1,000,000</td>
<td>$1,000,000</td>
</tr>
</tbody>
</table>

On this basis stock in the new company would be distributed equally to the stockholders of both companies. If the profits were the same, $240,000, less $60,000 for bond interest, and these were distributed
in the form of dividends, the former stockholders of B Company would receive $90,000, and of A also $90,000, the stockholders of the former company losing and those of the latter company gaining $30,000, as the result of the change in the form of organization.

From the above illustrations the inaccuracy of excluding interest on borrowed capital in the computation of goodwill is apparent.

Basis of stock allotments. --- When the valuation of the assets and goodwill of the companies to be acquired has been determined and agreed upon, and payment is to be made in stock, there remains to be decided the classes of stock to be issued.

Net assets may be paid for in common stock, preferred stock or bonds. Common stock is usually issued for goodwill. Although the more usual procedure is to issue preferred stock or bonds for net assets, and common stock for goodwill, any variation is possible.

Preferred stock for net assets. --- The practice most generally followed of issuing preferred
stock for net assets and common stock for goodwill is not as logical as it may seem at first thought. The reason for this method of stock distribution is the belief that, in case the consolidation is a failure and liquidation results, the former stockholders in the combining companies should be reimbursed first for the net assets they contributed and after that for goodwill.

This conception probably exists because of the disrepute of the term "goodwill", and the confusion of the non-existing inflating intangible used to produce watered stock, with the really valuable attribute of earning power. Suppose in a merger one company contributed $1,000,000 in fixed assets, and because its earning power was only normal it had no goodwill, and another company contributed $1,000,000 in net assets and because its earning power was $50,000 more annually, it was credited with a goodwill of $250,000. The consolidation is a failure and liquidated, and preferred stock having been issued for net assets, the former stockholders of each company receive $500,000. Now although the consolidation has proved unsuccessful the
earning power of the second company was a valuable asset when it was operating individually. Yet if it were to attempt to resume operations it would probably find its extra earning power destroyed or seriously impaired. Suppose a further extreme and say that the more important assets of the first company become obsolescent or in other ways proved unprofitable and caused the failure of the combination. Nevertheless it would be protected to the disadvantage of the other company. While each company has suffered an equal loss on asset realization, the second company has lost a valuable earning capacity of more than normal returns.

The point is that when a value has been placed upon net assets and earning power, and each company is recognized to have made a contribution of that recognized amount, losses whether from decreased earnings or from liquidation of assets, should be borne in proportion to that contribution.

Another inequality which may result if preferred stock is issued for net assets is that, unless the preferred stock is made participating, the company
null
contributing the greatest earning power (goodwill) may be disproportionately benefited. If the profits after consolidation should prove to be considerably in excess of the combined profits before consolidation, the return to the stockholders of the companies whose contributions were mostly in the form of net assets, being at a fixed rate, would not increase proportionately as the return to the companies contributing mostly goodwill. This would not be fair particularly where the increased profits might very possibly arise from advantages accruing from the economic use of the net assets contributed.

It should be emphasized that in a consolidation or merger when net assets have been appraised and earning power has been capitalized, a money value has been placed on the respective contributions regardless of their substance or nature. Of course any arrangement can be agreed upon and it might be that assets are contributed solely for the consideration of a fixed return, but in the absence of such special considerations, if the companies expect to share in the gains of the consolidation in proportion to the value of their
contributions, the issuing of only one class of stock will produce the most equitable results.
CHAPTER III

ELIMINATION OF INVESTMENT ACCOUNT

The consolidated balance sheet. —— When a combination of companies is effected through consolidation or merger, the absorbed companies no longer exist, the operations of the combination become those of one company and are recorded on the books of that company. Consequently there are no further accounting problems arising because of the consolidation of interests. When, however, a holding company has been formed, or one of the companies in a group of two or more controls the other companies through stock ownership, accounting problems peculiar to the nature of the affiliation are constantly arising and have to be solved. Because the ultimate end of accounting is the preparation of financial statements for business guidance, the accounting problems involved center around the consolidated balance sheet and the consolidated profit and loss statement. As only the major accounting problems involved are to be considered here, reference is made to texts which give a clear outline of the best methods of physically setting up the statements and the working papers used
The consolidated balance sheet is a statement setting forth the financial condition, as a unit, of two or more affiliated companies adjusted to eliminate the effects of intercompany relationship, and segregating the holding company's and minority interests therein. The first major accounting problem in the preparation of this statement is the elimination of the account on the books of the holding company which represents ownership of stock in the subsidiary companies, and to substitute therefor the assets and liabilities of the companies, and the interest of minority stockholders.

Methods of carrying the investment. --- The adjustments necessary to eliminate the investment account naturally depend upon the manner in which the original entry was recorded and the method in which it has subsequently been carried.

One author describes the following entries as variations in the method of recording the investment.

(2) "Accounting", 127, Esquerre.
-1-

Dr.  Investment in Stocks of Affiliated Companies.
     Cr.  Cash

To record cost of investment.

-2-

Dr.  Investment in Stocks of Affiliated Companies.
     Dr.  Goodwill.
     Cr.  Cash

To record the par value of the stock purchased, and the excess of cost over par, which is more than offset by surplus equities of the stock.

-3-

Dr.  Investment in Stocks of Affiliated Companies.
     Dr.  Surplus
     Cr.  Cash

To record the par value of the stock purchased, and to charge surplus for the difference between par and cost.

-4-

Dr.  Investment in Stocks of Affiliated Companies.
     Cr.  Cash
     Cr.  Surplus

To record the equity value of the capital stock of affiliated companies.
Of the foregoing sets of entries all but the first have no basis in accounting theory. The second and third are incorrect because there is no relation at all between the par value of the stock purchased and the purchase price. The fourth entry is wrong because there can be no surplus obtained in a purchase, until the profit is realized.

More acceptable variations are found in the method of continuing the investment account on the books of the holding company. One method is to continue to carry the investment at cost, not adjusting the account to reflect the holding company's share of subsidiary profits and losses, and crediting dividends when received, to "Income from Subsidiaries", and thence to Surplus. Another method is periodically to adjust the Investment account to reflect the holding company's share of subsidiary profits or losses, charging profits as they are earned, and crediting dividends when they are declared, to the investment account. When this method of carrying the investment account is employed the balance of the investment account will represent the cost plus the holding company's share of subsidiary surplus increase from the date of the pur-
Regardless of the method in which the investment is carried on the books of the holding company, when the consolidated balance sheet is being prepared, that portion of the equity in the net assets of the subsidiary at the date of purchase is offset against the cost on the holding company's books however recorded. If the investment account is carried at book value the portion of the balance representing earnings of the subsidiary since the date of acquisition, recorded as income by the holding company but not distributed as dividends by the subsidiary, is charged against surplus to eliminate the duplication of profits and surplus of the subsidiary. This duplication exists because the earnings of the subsidiary, if they have not been distributed as dividends, are included in its surplus; and, because they have been taken up on the books of the holding company as income, are also included in the surplus of that company.

The balance in the investment account now represents the excess or deficiency of cost over the holding company's equity in the net assets of the subsidiary at
the date of acquisition. This leads up to the discussion of the correct treatment of this excess or deficiency on the consolidated balance sheet.

**Goodwill.** In a consolidation or merger, the excess of the purchase price over the appraised or book value of the net assets is recognized as a payment for the goodwill of the business bought. Likewise when an equity in a business is bought through the medium of stock purchase, the excess of the price paid over the book value of the stock is also goodwill.

However, there are among accountants varying opinions, more or less worthy, as to the correct presentation of this excess on the consolidated balance sheet.

One author, although not endorsing the method presents the idea of charging the excess of the price paid over the par value of the stock against surplus.

There is, of course no logic in such accounting treatment and that author immediately repudiates it.

(1) "Accounting", 131, Esquerré.
by stating,

"Admittedly, there is no valid reason for the reduction of the cost of an investment to the par value of the stocks which it contains, principally when the controlling company has deliberately recorded cost on its books; and it is also admitted that it is not within the province of an accountant to trespass uninvited upon the premises of the surplus account, which is in principle an account belonging to the directorate. But in some mysterious way the intangible asset goodwill has become very objectionable to business people. To them it is symptomatic of insufficiency of real values, and therefore, of inflation of assets. They frankly profess their dislike for its presence in the balance sheet, even though they are aware of the injury which its exclusion works upon surplus."

Another theory is to charge the excess of the purchase price of the stock over its book value against the surplus of the holding company. The reason usually offered for this treatment is that it is more conservative than to capitalize the excess in the form of goodwill.
A fourth method of showing this excess on the consolidated balance sheet, much recommended, but little used, is to set up, in place of the asset goodwill, a more descriptive title such as, "Cost of Stock of Subsidiary in Excess of its Book Value."

**Deduction from goodwill.** Where the book value of the stock of subsidiaries purchased by the holding company is in excess of the price paid, the generally accepted theory is that it should be deducted from goodwill wherever found on the consolidated balance sheet.

2

Other methods are to show upon the consolidated balance sheet a capital surplus due to the fact that a greater value of assets has been acquired than the price paid; or to set up on the consolidated balance sheet a valuation reserve account by some such title as "Reserve Representing Overvaluation of Assets of Subsidiaries."

The above methods of handling the excess of the book value of the stock over the purchase price suggest the same variations of principle as those referred to in

(1) "Accounting", 443, Hatfield.
(2) "Accounting", 449, Hatfield.
the treatment of positive goodwill, only of course in the reverse order.

Obviously all these methods cannot be equally correct, and the complacency with which accountants accept the variations is not easily explainable.

It is true that conditions, when they are known, may require different methods of showing the excess or deficiency on the consolidated balance sheet. If it is a fact that the asset values on the books of the subsidiaries may be overstated or understated, then definitely earmarked accounts such as "Cost of Stock of Subsidiary in Excess of its Book Value", or "Reserve Representing Overvaluation of Assets of Subsidiaries", should be used to indicate respectively the excess or deficiency of the price paid over book value.

Where the earnings of subsidiaries are above normal, the purchase price must contain in part the price paid for the privilege of sharing in these above normal earnings, and is therefore correctly designated as goodwill.

The only condition which would warrant charging
the excess of cost over book value of the stock of subsidiaries to surplus would be that the holding company deliberately paid more for the stock than the book value and the earning power would warrant.

Another aspect of goodwill not generally recognized, is that even when it is purchased it is not a perpetual asset and should gradually be written off. When goodwill is paid for what really is bought is the right to receive profits over and above a normal return on the investment excluding the consideration for goodwill. Therefore the earnings which come as a result of the investment are part a normal return on the investment excluding the price paid for goodwill, and part a return of the price paid for goodwill. In other words the purchase of goodwill is an investment in a depleting asset (above normal earnings) which might be handled in either of two ways. In the first place all returns above a normal rate on the investment could be considered a return of the purchase price for goodwill and could be credited to the asset goodwill; this method being based on the assumption that none of these extra earnings are profit until
the structure was aligned with a "linear" trend from the center of the
system upwards, suggesting that the pattern might be more uniform in that area. Additional data and information will need further analysis.

Conclusions:
The following conclusions can be drawn from the data presented:
1. The alignment of the structure suggests a linear pattern, likely due to the design and manufacturing process.
2. Further analysis is required to understand the implications of this pattern.
3. The need for additional data collection and refinement of the analysis method.
4. Potential areas for improvement in the design and manufacturing process.

Recommendations:
- Conduct additional data collection to verify the alignment in other areas.
- Implement quality control measures to ensure uniformity in future productions.
- Further investigation into the causes of the alignment pattern.
- Remain vigilant in monitoring and adjusting the design and manufacturing process.

Further work is required to fully understand the implications of this pattern and to ensure the quality of future productions.
the entire investment has been recovered. The other method would be to estimate the period over which the above normal earnings will continue, and to write off the asset goodwill over that period.

*Stock issued by subsidiary.* --- Where the holding company acquires stock in a subsidiary by subscribing to a stock issue rather than by purchasing issued stock from the holders thereof, the basis to be used in determining the excess of purchase price over the book value is the book value of the stock after the holding company has paid for the stock.

*Effect of increase or decrease of holding company interest.* --- When the holding company and minority stockholders of a subsidiary subscribe to an additional issue of stock at the same price and in the same ratio as the original holdings the payments to the corporation increase the book value of their holdings an amount exactly equal to their payments and hence there is no effect on the goodwill arising from the original purchase.

When, however, the percentage of the holding

company's interest in the subsidiary is increased or decreased there is a difference of opinion as to the correct method of showing on the consolidated balance sheet the effects of this change on the holding company's interest in the surplus of the subsidiary.

For the purpose of illustration let us use the same case as offered in Kester's "Accounting Theory and Practice", in order that conclusions arrived at here may be compared with those presented in that text.

"Assume that Company A purchases a 60% interest in Company B for $100,000. The capital stock and surplus of Company B at the date of the purchase were $100,000 and $50,000, respectively. The book value of Company A's holdings amounted to $90,000, the consolidated goodwill thus being $10,000. At the end of the first year after purchase, Company B earns a net profit of $50,000, $30,000 of which is recorded on Company A's books as a debit to the investment account and a credit to its surplus. Shortly thereafter Company B offers subscription rights to $100,000 of new capital

(1) "Accounting Theory and Practice", 554, Kester.
stock at a price of $175 per share. Company A subscribes to 60% and the minority interests take only 20% of the issue, the remaining not being issued. Determine the change in value of the consolidated goodwill.

Briefly, the effect of the above transactions is found to be as follows:

<table>
<thead>
<tr>
<th></th>
<th>Capital</th>
<th>Surplus</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Holding company's interest</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>before additional issue</td>
<td>$60,000</td>
<td>$60,000</td>
<td>$120,000</td>
</tr>
<tr>
<td>after additional issue</td>
<td>120,000</td>
<td>106,667</td>
<td>226,667</td>
</tr>
<tr>
<td>Increase in interest</td>
<td>60,000</td>
<td>46,667</td>
<td>106,667</td>
</tr>
<tr>
<td>Cost of increase</td>
<td>60,000</td>
<td>45,000</td>
<td>105,000</td>
</tr>
<tr>
<td>Gain in book value of holdings</td>
<td></td>
<td></td>
<td>$1,667</td>
</tr>
<tr>
<td>above cost of same</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

It is generally stated that the above amount, $1,667, should be credited to the goodwill balance resulting from the holding company's original investment. The reason offered is that that treatment would be more conservative than to transfer this balance from the minority interests' surplus to the surplus of the holding company.

The fact that the treatment is conservative,

* Company A's interest in Company B's net worth was 60% before and 66 2/3% after the new issue of stock. Company B's net worth before the new issue was $200,000 and was increased by the proceeds of the stock issue (800 x $175) to $340,000. Company A's interest was therefore, $120,000 before, and $226,667 after the new issue.
however, does not seem to be sufficient reason for its use. What actually results is a transfer of surplus from the minority interests to the holding company, and any unwillingness to show this result on the balance sheet is not easily understood. Why not, by the same token of conservatism, eliminate the goodwill from the balance sheet and charge it to the surplus of the holding company.

Subsidiary interest in another subsidiary. ---
Where a holding company acquires an interest in a subsidiary which owns stock in another company, the goodwill to be shown on the consolidated balance sheet is the sum of the goodwill resulting from the subsidiary's purchase of stock in the third company plus the goodwill resulting from the holding company's purchase of the sub-holding company's stock.

For illustration the following example is selected from Kester's "Accounting Theory and Practice," although the solution is considerably simplified.

"Assume that Company X has a capital stock of $100,000, and surplus of $32,000, of which $4,000 was

(1) "Accounting Theory and Practice", 545, Kester.
added out of the previous year's profits which amounted to $10,000. The balance, $6,000, of profits had been disbursed as dividends. One year ago Company S had acquired a 90% interest in Company X at a cost of $125,000, at which amount the investment account is now carried on S's books. Company S has capital stock of $500,000, and surplus of $200,000. Company H now purchases an 80% interest in Company S for $600,000. What is the amount of the consolidated goodwill?"

The consolidated goodwill in this case would be the sum of:

The excess of the purchase price paid by S Company over the book value of the X Company's stock at date of acquisition, viz:-

$125,000. - 90% of $128,000. = $9,800.00

The excess of the purchase price paid by H Company over the book value of the S Company's stock at date of acquisition, viz:-

$600,000. - 80% of $703,600. = $37,120.00

The total goodwill to be shown on the consolidated balance sheet would therefore be $46,920.

* The book value of S Company's stock at the date of acquisition was its capital and surplus, $700,000, added to its share of X Company's profits not taken up on the books of S Company (90% of $4,000), $3,600, or $703,600, as used above.
CHAPTER IV.

MINORITY INTERESTS

In the preparation of consolidated balance sheets complications arising from the fact that the holding company does not own 100% of the stock in subsidiary companies are few and are concerned chiefly with the setting forth of the minority interests on the consolidated balance sheet. Where, however, there exists reciprocal ownership between the companies the computation of the value of the stock of each company is necessary in order to determine the value of the minority interests therein. This is probably the most difficult part of preparing consolidated statements, and in order to present a thorough treatment of that particular subject the succeeding chapter is devoted to illustrating different methods of obtaining the desired results.

Minority interest in net worth.— In order to present a statement of the financial condition of a holding company it is necessary to substitute for the investment account on the books of the holding company
the assets and liabilities of the subsidiary companies. Where there exists minority interests in the subsidiaries to be absolutely exact there would be substituted for the investment accounts only that proportion of the assets and liabilities which the holding company owns. Such a statement would be far from satisfactory, and so the method used is to set forth all the assets and liabilities and to indicate the minority interests in the net worth section of the consolidated balance sheet.

Some authors prefer to list the minority interests in capital stock and surplus as liabilities on the consolidated balance sheet, on the ground that it is an outside capital liability. Kester, although he considers it a "truer index of the exact status of affairs", to show the minority interest in surplus in the net worth section, points out that where the amount is negligible it is sometimes shown as a liability on the ground that "the minority has a claim on that surplus and will very probably, in the near future, receive it in the form of dividends." That the logic behind

(1) "Principles of Accounting", Vol. II, Ch. 46, P. 11 Finney
(2) "Accounting Theory and Practice", 548-9, Kester.
this variation is not sound is apparent because the
same might also be said regarding the holding company's
surplus. Part of it may also be distributed as dividends,
but until such dividends are declared no one would sug-
gest showing part of the surplus as a liability.

Minority interest in deficit. — The gen-
eral practice of showing the minority interest in a
deficit is to show it as a deduction from the minority
interest in capital stock. However, it is sometimes
suggested on the ground of conservatism, that the entire
deficit be treated as applicable to the holding company,
on the theory that the holding company may prefer to
operate the subsidiary at a loss, rather than to permit
liquidation. Even accepting such condition to be a
fact it does not follow that the holding company should
be called upon to assume the minority's share of the
deficit, unless the holding company intends to guarantee
to the minority interests the par value of their stock
or dividends on the shares they hold.
Surplus reserves of subsidiaries. Where surplus of a subsidiary has been set aside and earmarked for a definite purpose such appropriation would be clearly indicated on a balance sheet of the subsidiary company. When, however, a consolidated balance sheet is set up, this segregation would have to be indicated for both the holding company and the minority's interest in the appropriated surplus. To avoid such an awkward presentation it is deemed sufficient to state the facts concerning such surplus reserves in a footnote on the consolidated balance sheet.
CHAPTER V.

RECIProCAL OWNERSHIP

Complications of reciprocal ownership. --- Reciprocal ownership exists in a group of affiliated companies when two or more of the companies own stock each in the other. Such a condition causes complications in computing the book value of the stock of the respective companies because the book value of the stock of say, Company A, consists of its own net assets plus a proportionate part of the net assets of Company B; but the book value of Company B is its net assets plus a proportionate part of the book value of Company A. There are therefore two unknowns, each dependent upon the other. The determination of these unknown values presents a problem which ordinarily requires the employment of simultaneous equations for its solution.

When book value must be ascertained. --- There are several occasions when it is necessary to determine the value of a company's stock. In a consolidation or merger the purchase price of a company's stock depends in part upon the value of the net assets. In the preparation of a consolidated balance sheet there are two instances in which it is essential to determine the book value.
Goodwill on the balance sheet is the excess of the purchase price over the book value of the stock at the date of acquisition. In the net worth section of the consolidated balance sheet the minority interest in the net assets of subsidiaries must be exhibited.

**Algebraic method of determining value of stock.** --- In determining by algebra the value of the stock in two or more companies having reciprocal ownership the unknowns, or stock values, are first stated in the form of simple equations. For example, suppose Company A owns one-half of the stock of Company B, Company B owns one-fourth of the stock of Company A, and the balance sheets are as follows:

<table>
<thead>
<tr>
<th></th>
<th>Company A</th>
<th>Company B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net assets excluding intercompany investment</td>
<td>$200,000.</td>
<td>$100,000.</td>
</tr>
<tr>
<td>Capital Stock</td>
<td>100,000.</td>
<td>90,000.</td>
</tr>
<tr>
<td>Surplus</td>
<td>100,000.</td>
<td>10,000.</td>
</tr>
</tbody>
</table>

Letting "A" and "B" respectively represent the unknown value of the stock of each company, the
equations would be:

\[ A = 200,000 + \frac{1}{2} B \]
\[ B = 100,000 + \frac{1}{4} A \]

The unknown values may then be computed by addition and subtraction, or by substitution.

In the illustrations which follow each of these different methods will be used.

**Liquidation method of determining value of stock.** --- Many persons are not skilled in the application of algebraic formulae and would have difficulty in computing by algebra the value of the stock of companies having reciprocal ownership. The solution may be obtained, however, without the use of algebra, by the so-called potential liquidation method. This method is based on the reasoning that the value of the stock of each company is the value which the stockholders of the respective companies would receive if the assets were liquidated and distributed to them. Because the values as going concerns is what is desired, no loss from li-
quidation is considered, and realization is presumed to be 100%.

In order to present clearly the solution of the problem of reciprocal ownership and to compare the algebraic with the potential liquidation method, three illustrations will be given of obtaining the desired results by each method.

The first illustration will be of two companies, the second of three companies, and the third of four companies, each owning stock in the other.

Illustration number one, of two companies each owning stock in the other, - algebraic method.

The Journal of Accountancy of April, 1932 contains a solution of Problem #3, Part 2 of the American Institute Examination given November 13, 1931. The problem is a proposed consolidation of four companies and requires a balance sheet of the new company and a statement of the amount of stock in the new company to be received by the stockholders of each of the four old companies in exchange for their stock. The
stock in the new company is to be issued on the basis of the net worth of each company, the net worth having been adjusted for goodwill. The determination of the value of the stock of two of the companies, A and D, is complicated by the fact that each of these companies owns stock in the other. The Journal of Accountancy obtains a correct solution by the algebraic method and offers an alternative method of determining the value of the stock of these two companies without the use of algebra. This alternative solution, however, does not obtain accurate but only approximately correct results.

In order not to confuse the illustration by matter not pertinent to reciprocal ownership, only that part of the problem described above has been selected for illustration which has to do with determining the value of the stock of Companies A and D.

Company A owns \$10,000 of a total of \$3,000,000 capital stock of Company D, and Company D owns \$50,000 of a total of \$1,000,000 capital stock of Company A. The net worth of the two companies
excepting their investment in each other's stock is Company A $2,701,240.18, and Company D $5,404,602.68.

The determination of the value of the stock of each company may be obtained by algebra, (by substitution) as follows:

Let A equal the net worth of A Company
Let D equal the net worth of D Company

Then A equals $2,701,240.18 plus 1/300 D, and

\[ D = \frac{5}{100} A \]

Solving for A:

Expressing \( \frac{1}{300} D \) in terms of A,

\[ A = 2,701,240.18 + \frac{1}{300} \left( 5,404,602.68 + \frac{5}{100} A \right) \]

Which, removing the parenthesis becomes,

\[ A = 2,701,240.18 + 5,404,602.68 + \frac{1}{6000} A, \]

or

\[ \frac{9299}{6000} A = 2,719,255.53 \]

A equals $2,719,708.81.

Solving for D:

\[ D = 5,404,602.68 + \frac{5}{100} A \]

\[ D = 5,404,602.68 + \frac{5}{100} (2,719,708.81) \]

\[ D = 5,404,602.68 + 135,985.44 \]

D equals $5,540,588.12
The stockholders of A Company will therefore receive 95/100 of $2,719,708.81 or $2,583,723.37 for their interests, and the stockholders of D Company will receive 299/300 of $5,540,588.12, or $5,522,119.49 for their interests.

Illustration number one, of two companies each owning stock in the other, - potential liquidation method.

The same problem may be solved without the use of algebra as follows:-

The value of the stock held by the stockholders of A and D Companies respectively is the value which they would receive if the net assets of each company were liquidated at 100% on the dollar and distributed to the stockholders.

Proceeding on this basis, determine what the stockholders of each company would receive.

\[
\begin{array}{c|c|c}
\text{A Company} & \text{D Company} \\
\hline
\text{Net assets excepting investment in other company} & \$2,701,240.18 & \$5,404,602.68 \\
\text{Investment in D Company} & 10,000.00 & - \\
\text{Investment in A Company} & - & 50,000.00 \\
\text{Capital Stock} & \$1,000,000.00 & \$5,000,000.00 \\
\end{array}
\]
The distribution on liquidation of A Company would be:

To D Company:— 5% of $2,701,240.18 in cash and $500 of D Company stock.

To other stockholders:— 95% of $2,701,240.18 in cash and $9,500 stock of D Company.

The $500 of its own stock received by D Company in the liquidation of A Company becomes treasury stock and the amount of its total assets to be distributed is $5,404,602.68 plus $135,062,009 or $5,539,664.689.

This amount would be distributed as follows:

Total stock outstanding $2,999,500.

Held by former stockholders of A Company 9,500.

Held by other stockholders 2,990,000.

The former stockholders of A Company would therefore receive 9500/2,999,500 x $5,539,664.689 or $17,545.20.

The stockholders of D Company would receive 2,990,000/2,999,500 x $5,539,664.689 or $5,522,119.49.
The stockholders of A Company would therefore have received for their holdings $2,566,178.17 (95% of $2,701,240.18) plus $17,545.20 or a total of $2,583,723.37 and the stockholders of D Company would have received $5,222,119.49.

This solution agrees exactly with the solution obtained by the use of algebra, is less complex in application, and more easily comprehended by one not skilled in the use of algebraic formulae.

Illustration number two, of three companies each owning stock in the other, - algebraic method. ---

Suppose that, for purposes of a consolidated balance sheet or for other purposes it is desired to know the value of the stock held by the stockholders of each of the following companies, whose balance sheets appear below.
<table>
<thead>
<tr>
<th>A Company</th>
<th>B Company</th>
<th>C Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets</td>
<td>$250,000.</td>
<td>$150,000.</td>
</tr>
<tr>
<td>Investment in A Co.</td>
<td>-</td>
<td>40,000.</td>
</tr>
<tr>
<td>Investment in B Co.</td>
<td>25,000.</td>
<td>-</td>
</tr>
<tr>
<td>Investment in C Co.</td>
<td>25,000.</td>
<td>10,000.</td>
</tr>
<tr>
<td>Total Assets</td>
<td>$300,000.</td>
<td>$200,000.</td>
</tr>
<tr>
<td>Liabilities</td>
<td>$180,000.</td>
<td>$100,000.</td>
</tr>
<tr>
<td>Capital Stock</td>
<td>100,000.</td>
<td>50,000.</td>
</tr>
<tr>
<td>Surplus</td>
<td>20,000.</td>
<td>50,000.</td>
</tr>
<tr>
<td>Total Liabilities and Capital</td>
<td>$300,000.</td>
<td>$200,000.</td>
</tr>
</tbody>
</table>

In order not to complicate the illustration by matters not pertinent to reciprocal ownership it is assumed that all stock was purchased at book value, that there is no goodwill and that all adjustments have been made.

An analysis of the above balance sheets reveals that the net assets of Companies A, B and C excluding investments in other companies are $70,000., $50,000. and $20,000. respectively, and that
A owns 50% of B and 50% of C.
B owns 40% of A and 20% of C.
C owns 20% of A and 40% of B.

To determine the value of the stock of each company let

A equal the net worth of A Company,
B equal the net worth of B Company,
C equal the net worth of C Company.

Then

A equals $70,000 plus 50% B plus 50% C
B equals $50,000 plus 40% A plus 20% C
C equals $20,000 plus 20% A plus 40% B

Solving for A:

(1) A equals $70,000 plus 50% B plus 50% C (as above)
(2) B equals $50,000 plus 40% A plus 20% C (as above)

rearranging (2):

(3) -40% A equals $50,000 less 100% B plus 20% C

multiplying (3) by 2 1/2:

(4) -100% A equals $125,000 less 250% B plus 50% C

subtracting (4) from (1),

(5) 200% A equals -$55,000 plus 300% B
(6) \[ C \text{ equals } 20,000 \text{ plus } 20\% A \text{ plus } 40\% B \text{ (as above)} \]

rearranging (6)

(7) \[ -20\% A \text{ equals } 20,000 \text{ plus } 40\% B \text{ less } 100\% C \]
multiply by \( \frac{1}{2} \)

(8) \[ -10\% A \text{ equals } 10,000 \text{ plus } 20\% B \text{ less } 50\% C \]
add (1) and (8)

(9) \[ 90\% A \text{ equals } 80,000 \text{ plus } 70\% B \]

multiplying by \( \frac{2}{7} \)

(10) \[ 385\frac{5}{7}\% A \text{ equals } 342,857.14 \text{ plus } 300\% B \]
substracting (5) from (10)

(11) \[ 185\frac{5}{7}\% A \text{ equals } 397,857.14 \text{ or } \]

(12) \[ A \text{ equals } 214,230.77 \]

Solving for B:

rearranging (5)

(13) \[ -300\% B \text{ equals } -55,000 \text{ less } 200\% A \]
changing signs and substituting (12) for A

(14) \[ 500\% B \text{ equals } 55000 \text{ plus } 428,461.54 \]

(15) \[ B \text{ equals } 161,153.85 \]

Solving for C:

(16) \[ C \text{ equals } 20,000 \text{ plus } 20\% A \text{ plus } 40\% B \text{ (as above)} \]
substituting (12) and (15) for A and B

(17) \[ C = 20,000 + 20\% (214,230.77) + 40\% (161,153.85) \] or

(18) \[ C = 20,000 + 42,846.15 + 64,461.54 \]

(19) \[ C = 127,307.69 \]

Proving the three equations assumed at the beginning of the solution the value of each company's stock is shown to be as follows:-

A equals $70,000 plus $80,576.92 plus $63,653.85 equals $214,230.77

B equals $50,000 plus $85,692.31 plus $25,461.54 equals $161,153.85

C equals $20,000 plus $42,846.15 plus $64,461.54 equals $127,307.69

Eliminating intercompany stockholdings, the value of each company's stock in the hands of stockholders is found to be:-

A Company - 40\% of $214,230.77 equals $85,692.31

B Company - 10\% of $161,153.85 equals $16,115.38

C Company - 30\% of $127,307.69 equals $38,192.31

$140,000.00

Thus it is found from the above,-

That the net assets of A Company, $70,000 are in-
creased by the value of its holdings of B and C Companies' stock by $80,576.92 and $63,653.86 respectively making a total net worth of $214,230.77, of which $65,692.31 belongs to B Company, $42,946.15 belongs to C Company, and $63,692.31 belongs to the other stockholders of A Company;

That the net assets of B Company, $50,000, are increased by the value of its holdings of A and C Companies' stock by $85,692.31 and $25,461.53 respectively making a total net worth of $161,153.84, of which $80,576.92 belongs to A Company, $64,461.54 belongs to C Company, and $16,115.38 belongs to the other stockholders of B Company;

And that the net assets of C Company, $20,000, are increased by the value of its holdings of A and B Companies' stock by $42,946.15 and $64,461.54 respectively making a total net worth of $127,307.69, of which $63,653.86 belongs to A Company, $25,461.53 belongs to B Company and $38,192.31 belongs to the other stockholders of C Company.
Illustration number two, of three companies, each owning stock in the other, potential liquidation method.

The same desired results, namely the value of the stock of each company in the hands of stockholders, and the net worth of each company, may be determined without algebra, as follows:

The value of the stock of each company in the hands of stockholders is the same as the value they would receive if all companies were liquidated at book value.

Let us suppose then, the liquidation of C, B, and A companies in that order.

Balance sheets of the companies at date value of stock is to be determined.

<table>
<thead>
<tr>
<th></th>
<th>A Company</th>
<th>B Company</th>
<th>C Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net assets excepting investment in other companies</td>
<td>$70,000.</td>
<td>$50,000.</td>
<td>$20,000.</td>
</tr>
<tr>
<td>Investment in A Co.</td>
<td>-</td>
<td>40,000.</td>
<td>20,000.</td>
</tr>
<tr>
<td>Investment in B Co.</td>
<td>25,000.</td>
<td>-</td>
<td>20,000.</td>
</tr>
<tr>
<td>Investment in C Co.</td>
<td>25,000.</td>
<td>10,000.</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>$120,000.</td>
<td>100,000.</td>
<td>60,000.</td>
</tr>
<tr>
<td>Capital Stock</td>
<td>$100,000.</td>
<td>50,000.</td>
<td>50,000.</td>
</tr>
<tr>
<td>Surplus</td>
<td>20,000.</td>
<td>50,000.</td>
<td>10,000.</td>
</tr>
<tr>
<td></td>
<td>$120,000.</td>
<td>100,000.</td>
<td>60,000.</td>
</tr>
</tbody>
</table>
The distribution on liquidation of C Company would be:

<table>
<thead>
<tr>
<th></th>
<th>%</th>
<th>Cash</th>
<th>A Co. Stock</th>
<th>B Co. Stock</th>
</tr>
</thead>
<tbody>
<tr>
<td>To A Company</td>
<td>50</td>
<td>$10,000</td>
<td>$10,000</td>
<td>$10,000</td>
</tr>
<tr>
<td>To B Company</td>
<td>20</td>
<td>4,000</td>
<td>4,000</td>
<td>4,000</td>
</tr>
<tr>
<td>To C Co. Stockholders</td>
<td>30</td>
<td>6,000</td>
<td>6,000</td>
<td>6,000</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td>100</td>
<td>20,000</td>
<td>20,000</td>
<td>20,000</td>
</tr>
</tbody>
</table>

The assets of B Company would then become:

Cash $50,000. plus $4,000. equals $54,000.
A Co. Stock $40,000. plus $4,000. equals $44,000.

The $4,000. of its own stock received from Company C would become treasury stock, and the balance of $46,000. would be held as follows:-

A Company $35,000.
C Company Stockholders 6,000.
B Company Stockholders 5,000.

$$46,000.$$  

The distribution on liquidation of B Company would then be:-
<table>
<thead>
<tr>
<th></th>
<th>%</th>
<th>Cash</th>
<th>A Co. Stock</th>
</tr>
</thead>
<tbody>
<tr>
<td>To A Company</td>
<td>76 4/46</td>
<td>$41,086.96</td>
<td>$33,478.26</td>
</tr>
<tr>
<td>To B Co. Stockholders</td>
<td>10 40/46</td>
<td>5,869.56</td>
<td>4,782.61</td>
</tr>
<tr>
<td>To C Co. Stockholders</td>
<td>13 2/46</td>
<td>7,043.48</td>
<td>5,739.13</td>
</tr>
<tr>
<td></td>
<td>100</td>
<td>$54,000.00</td>
<td>$44,000.00</td>
</tr>
</tbody>
</table>

The assets of A Company would now be:

<table>
<thead>
<tr>
<th>Original Balance</th>
<th>From B Co.</th>
<th>From C Co.</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>$70,000.00</td>
<td>$10,000.00</td>
<td>$41,086.96</td>
</tr>
</tbody>
</table>

The $10,000 and $33,478.26 of its own stock received from C Company and B Company respectively becomes treasury stock and the balance outstanding, $56,521.74, would be held as follows:

- Former Stockholders of C Company $11,739.13
- Former Stockholders of B Company 4,782.61
- A Company Stockholders 40,000.00

Total $56,521.74

The distribution on liquidation of A Company would then be:
A recapitulation of the amounts received by the stockholders of each company shows:

<table>
<thead>
<tr>
<th>Company</th>
<th>Stockholders</th>
<th>Liquidation Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Company</td>
<td></td>
<td>$85,692.31</td>
</tr>
<tr>
<td>B Company</td>
<td></td>
<td>$10,245.82</td>
</tr>
<tr>
<td>C Company</td>
<td></td>
<td>$25,148.83</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>$121,086.96</td>
</tr>
</tbody>
</table>

The value of the stock of each company may now be determined as follows:

<table>
<thead>
<tr>
<th>Company</th>
<th>Value of stock held by stockholders</th>
<th>% of stock held by stockholders</th>
<th>Value of total (100%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Company</td>
<td>$85,692.31</td>
<td>40</td>
<td>$214,230.77</td>
</tr>
<tr>
<td>B Company</td>
<td>$16,115.38</td>
<td>10</td>
<td>161,153.64</td>
</tr>
<tr>
<td>C Company</td>
<td>$38,192.31</td>
<td>30</td>
<td>127,307.69</td>
</tr>
<tr>
<td>Total</td>
<td>$140,000.00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Column 1</td>
<td>Column 2</td>
<td>Column 3</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>---------</td>
<td>---------</td>
<td></td>
</tr>
<tr>
<td>Value 1</td>
<td>Value 2</td>
<td>Value 3</td>
<td></td>
</tr>
<tr>
<td>Value 4</td>
<td>Value 5</td>
<td>Value 6</td>
<td></td>
</tr>
<tr>
<td>Value 7</td>
<td>Value 8</td>
<td>Value 9</td>
<td></td>
</tr>
</tbody>
</table>
The following statement shows in summary form an explanation of the results obtained above:

<table>
<thead>
<tr>
<th></th>
<th>A Company</th>
<th>B Company</th>
<th>C Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net assets excluding</td>
<td>$70,000.00</td>
<td>$50,000.00</td>
<td>$20,000.00</td>
</tr>
<tr>
<td>intercompany stockholdings</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value of A Company</td>
<td>(128,538.46)</td>
<td>85,692.31</td>
<td>42,846.15</td>
</tr>
<tr>
<td>stock held by B Company</td>
<td>(40%) and C Company (20%)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Value of B Company</td>
<td>80,576.92</td>
<td>(145,038.46)</td>
<td>64,461.54</td>
</tr>
<tr>
<td>stock held by A Company</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(50%) and C Company (40%)</td>
<td>63,653.85</td>
<td>25,461.53</td>
<td>(89,115.38)</td>
</tr>
<tr>
<td>Value of stock held</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>by stockholders</td>
<td>$85,692.31</td>
<td>$16,115.38</td>
<td>$38,192.31</td>
</tr>
</tbody>
</table>

Illustration number three, of four companies, each owning stock in the other, - algebraic method. --- As the number of companies involved in reciprocal ownership increases the amount of detail in the solution increases correspondingly, but the results may be determined accurately regardless of the
Suppose four companies each owning stock in the other, whose balance sheets contain the following:

<table>
<thead>
<tr>
<th></th>
<th>A Company</th>
<th>B Company</th>
<th>C Company</th>
<th>D Company</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Net Assets excluding inter-company stockholdings</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$100,000.</td>
<td>$200,000.</td>
<td>$300,000.</td>
<td>$400,000.</td>
</tr>
<tr>
<td>Investment in A Company</td>
<td>-</td>
<td>20,000.</td>
<td>40,000.</td>
<td>60,000.</td>
</tr>
<tr>
<td>Investment in B Company</td>
<td>40,000.</td>
<td>-</td>
<td>20,000.</td>
<td>40,000.</td>
</tr>
<tr>
<td>Investment in C Company</td>
<td>80,000.</td>
<td>40,000.</td>
<td>-</td>
<td>20,000.</td>
</tr>
<tr>
<td>Investment in D Company</td>
<td>120,000.</td>
<td>60,000.</td>
<td>10,000.</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>$340,000.</td>
<td>$320,000.</td>
<td>$370,000.</td>
<td>$520,000.</td>
</tr>
<tr>
<td><strong>Capital Stock</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$240,000.</td>
<td>$200,000.</td>
<td>$320,000.</td>
<td>$360,000.</td>
</tr>
<tr>
<td><strong>Surplus</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>100,000.</td>
<td>120,000.</td>
<td>50,000.</td>
<td>160,000.</td>
</tr>
<tr>
<td></td>
<td>$340,000.</td>
<td>$320,000.</td>
<td>$370,000.</td>
<td>$520,000.</td>
</tr>
</tbody>
</table>

An analysis of the above reveals that the net assets of each company excluding investment in other companies is: A Company, $100,000; B Company, $200,000; C Com-
pany, $300,000., and D Company, $400,000., and that,

A Company owns 20% of B, 25% of C and 33 1/3% of D,
B Company owns 8 1/3% of A, 12 1/2% of C and 16 2/3% of D,
C Company owns 16 2/3% of A, 10% of B and 2 7/9% of D,
D Company owns 25% of A, 20% of B and 6 2/3% of C.

To determine the value of the stock of each company let:

A equals net worth of A Company,
B equals net worth of B Company,
C equals net worth of C Company,
D equals net worth of D Company.

Then,

(1) A equals $100,000. plus 20% B plus 25% C plus 33 1/3% D,
(2) B equals $200,000. plus 8 1/3% A plus 12 1/2% C plus 16 2/3% D,
(3) C equals $300,000. plus 16 2/3% A plus 10% B plus 2 7/9% D,
(4) D equals $400,000. plus 25% A plus 20% B plus 6 2/3% C.

Solving for A:

multiply (2) by 2,

(5) 200% B equals $400,000. plus 16 2/3% A plus 25% C plus 33 1/3% D
rearranging (5)
(6) -16 2/3% A equals $400,000. less 200% B plus 25% C plus 33 1/3% D
substracting (6) from (1)
(7) \(116 \frac{2}{3}\% \ A = -300,000 + 220\% B\)

rearranging (3)

(8) \(-16 \frac{2}{3}\% \ A = 300,000 + 10\% B - 100\% C + 2 \frac{7}{9}\% D\)

multiplying (1) by 4

(9) \(400\% \ A = 400,000 + 80\% B + 100\% C + 133 \frac{1}{3}\% D\)

adding (8) and (9)

(10) \(383 \frac{1}{3}\% \ A = 700,000 + 90\% B + 136 \frac{1}{3}\% D\)

rearranging (4)

(11) \(-25\% \ A = 400,000 + 20\% B + 6 \frac{1}{4}\% C - 100\% D\)

multiply (11) by 4,

(12) \(-100\% \ A = 1,600,000 + 80\% B + 25\% C - 400\% D\)

subtracting (12) from (1)

(13) \(200\% \ A = -1,500,000 - 60\% B + 433 \frac{1}{3}\% D\)

multiply (10) by 3 \frac{9}{49}

(14) \(1220 \frac{20}{49}\% \ A = 2,228,571 \frac{21}{49} + 286 \frac{26}{49}\% B + 433 \frac{1}{3}\% D\)

subtracting (13) from (14)

(15) \(1020 \frac{20}{49}\% \ A = 3,728,571 \frac{21}{49} + 346 \frac{26}{49}\% B\)

multiply (7) by \(\frac{449}{539}\)

(16) \(183 \frac{413}{539}\% \ A = -472,541 \frac{401}{539} + 346 \frac{26}{49}\% B\)

subtracting (16) from (15)

(17) \(836 \frac{346}{539}\% \ A = 4,201,113 \frac{93}{539}\)

(18) \(A = 502,139.93\)
substituting the value of $A$ in (7)

(19) $B$ equals $402,649.96$

substituting the value of $A$ and $B$ in (13)

(20) $D$ equals $633,662.27$

substituting the value of $A$, $B$ and $D$ in (3)

(21) $C$ equals $441,566.72$

Proving the four equations assumed at the beginning of the solution the value of each company's stock is shown to be as follows:

A equals $100,000.00$ plus $80,529.99$ plus $110,389.19$ plus $211,220.76$ equals $502,139.93$

B equals $200,000.00$ plus $41,844.99$ plus $155,194.59$ plus $105,610.38$ equals $402,649.96$

C equals $300,000.00$ plus $83,689.99$ plus $40,265.00$ plus $17,601.73$ equals $441,556.72$

D equals $400,000.00$ plus $125,534.98$ plus $80,529.99$ plus $27,597.30$ equals $633,662.27$

Eliminating intercompany stockholdings, the value of each company's stock in the hands of stockholders is found to be:

A Company, $50\%$ of $502,139.93$ equals $251,069.97$

B Company, $50\%$ of $402,649.96$ equals $201,324.98$

C Company, $56\%$ of $441,556.72$ equals $248,375.65$

D Company, $47\%$ of $633,662.27$ equals $299,229.40$

Total $1,000,000.00$
Thus it is found from the above that the net assets of A Company, $100,000, are increased by the value of its holdings of B, C and D Companies’ stock by $80,529.99, $110,389.18 and $211,220.76 respectively, making a total net worth of $502,139.93, of which $41,344.99 belongs to B Company, $83,689.99 belongs to C Company, $125,534.98 belongs to D Company, and $251,069.97 belongs to the other stockholders of A Company.

That the net assets of B Company, $200,000, are increased by the value of its holdings of A, C and D Companies’ stock by $41,844.99, $55,194.59 and $105,610.38 respectively, making a total net worth of $402,649.96, of which $30,529.99 belongs to A Company, $40,265.00 belongs to C Company, $80,529.99 belongs to D Company, and $201,324.98 belongs to the other stockholders of B Company.

That the net assets of C Company, $300,000, are increased by the value of its holdings of A, B and D Companies’ stock by $83,689.99, $40,265.00 and $17,601.73 respectively, making a total net worth of $441,556.72, of which $110,389.18 belongs to A Company, $55,194.59
belongs to B Company, $27,597.30 belongs to D Company, and $248,375.65 belongs to other stockholders of C Company.

And that the net assets of D Company, $400,000, are increased by the value of its holdings of A, B and C Companies' stock by $125,534.98, $80,529.99 and $27,597.30 respectively, making a total net worth of $633,662.27, of which $211,220.76 belongs to A Company, $106,610.38 belongs to B Company, $17,601.73 belongs to C Company and $299,229.40 belongs to the other stockholders of D Company.

Illustration number three, of four companies, each owning stock in the other, potential liquidation method. --- Proceeding on the same basis as in the two preceding illustrations, namely, that the value of the stock of each company in the hands of stockholders is the same as the value they would receive if all companies were liquidated, realizing 100% on all assets, let us suppose the liquidation of D, C, B and A Companies in that order:—
paragraph. It is unnecessary to perform any procedure in the absence of the patient.

The present investigation will be limited to a few observations to indicate the

paragraph. However, it is important to note that the results should be considered

paragraph. Therefore, it is necessary to establish a comprehensive procedure for

paragraph. The objective of this study is to determine the feasibility of the procedure

paragraph. The results will be analyzed and compared to previous studies to

paragraph. The findings will be presented at a forthcoming conference and

paragraph. The authors thank the participants for their contribution and

paragraph. The study was supported by a grant from the

paragraph. The authors declare no conflicts of interest.

paragraph. In conclusion, the procedure is feasible and

paragraph. Further research is needed to evaluate the long-term effects of the

paragraph. The authors are grateful for the assistance of

paragraph. The study was conducted in accordance with the

paragraph. The data are available upon request.
Balance sheets of the companies at date value of stock is to be determined.

<table>
<thead>
<tr>
<th></th>
<th>A Company</th>
<th>B Company</th>
<th>C Company</th>
<th>D Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net assets excluding intercompany stockholdings</td>
<td>$100,000.</td>
<td>$200,000.</td>
<td>$300,000.</td>
<td>$400,000.</td>
</tr>
<tr>
<td>Investment in A Co.</td>
<td>-</td>
<td>20,000.</td>
<td>40,000.</td>
<td>60,000.</td>
</tr>
<tr>
<td>Investment in B Co.</td>
<td>40,000.</td>
<td>-</td>
<td>20,000.</td>
<td>40,000.</td>
</tr>
<tr>
<td>Investment in C Co.</td>
<td>80,000.</td>
<td>40,000.</td>
<td>-</td>
<td>20,000.</td>
</tr>
<tr>
<td>Investment in D Co.</td>
<td>120,000.</td>
<td>60,000.</td>
<td>10,000.</td>
<td>-</td>
</tr>
<tr>
<td>Total Assets</td>
<td>$340,000.</td>
<td>$320,000.</td>
<td>$370,000.</td>
<td>$520,000.</td>
</tr>
<tr>
<td>Capital Stock</td>
<td>$240,000.</td>
<td>$200,000.</td>
<td>$320,000.</td>
<td>$360,000.</td>
</tr>
<tr>
<td>Surplus</td>
<td>100,000.</td>
<td>120,000.</td>
<td>50,000.</td>
<td>160,000.</td>
</tr>
<tr>
<td>Total Net Worth</td>
<td>$340,000.</td>
<td>$320,000.</td>
<td>$370,000.</td>
<td>$520,000.</td>
</tr>
</tbody>
</table>

The distribution on liquidation of D Company would be:
<table>
<thead>
<tr>
<th>%</th>
<th>Cash</th>
<th>A Co. Stock</th>
<th>B Co. Stock</th>
<th>C Co. Stock</th>
</tr>
</thead>
<tbody>
<tr>
<td>To A Co.</td>
<td>33 1/3</td>
<td>$133,333.33</td>
<td>$20,000.00</td>
<td>$13,333.33</td>
</tr>
<tr>
<td>To B Co.</td>
<td>16 2/3</td>
<td>66,666.67</td>
<td>10,000.00</td>
<td>6,666.67</td>
</tr>
<tr>
<td>To C Co.</td>
<td>2 7/9</td>
<td>11,111.11</td>
<td>1,666.67</td>
<td>1,111.11</td>
</tr>
<tr>
<td>To D Co. stockholders</td>
<td>47 2/9</td>
<td>189,888.89</td>
<td>28,333.33</td>
<td>18,888.89</td>
</tr>
</tbody>
</table>

100 % $400,000.00 $60,000.00 $40,000.00 $20,000.00

The assets of C Company would then become:-

Net Assets $300,000.00 plus $11,111.11 equals $311,111.11
Stock of Co. A 40,000. plus $1,666.67 equals $41,666.67
Stock of Co. B 20,000. plus $1,111.11 equals $21,111.11

The $555.56 of its own stock received from Company D would become treasury stock and the balance of stock outstanding, $319,444.44 would be held as follows:-

A Company $86,666.67
B Company 43,333.33
Former stockholders of D Company 9,444.44
C Company Stockholders 180,000.00

$319,444.44
The distribution on liquidation of C Company would then be:

<table>
<thead>
<tr>
<th></th>
<th>%</th>
<th>Cash</th>
<th>A Co. Stock</th>
<th>B Co. Stock</th>
</tr>
</thead>
<tbody>
<tr>
<td>To A Company</td>
<td>27.12</td>
<td>$34,405.80</td>
<td>$11,304.35</td>
<td>$5,727.54</td>
</tr>
<tr>
<td>To B Company</td>
<td>13.57</td>
<td>42,202.90</td>
<td>5,652.17</td>
<td>2,883.77</td>
</tr>
<tr>
<td>To former stockholders of D Co.</td>
<td>2.96</td>
<td>9,198.07</td>
<td>1,231.98</td>
<td>624.15</td>
</tr>
<tr>
<td>To C Company stockholders</td>
<td>56.35</td>
<td>175,304.34</td>
<td>23,476.27</td>
<td>11,895.65</td>
</tr>
</tbody>
</table>

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100</td>
<td>$311,111.11</td>
<td>$41,666.67</td>
<td>$21,111.11</td>
</tr>
</tbody>
</table>

The assets of B Company would then be:

<table>
<thead>
<tr>
<th></th>
<th>Original Balance</th>
<th>From D Co.</th>
<th>From C. Co.</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Assets</td>
<td>$200,000.00</td>
<td>$66,666.67</td>
<td>$308,869.57</td>
<td></td>
</tr>
<tr>
<td>Stock of A Co.</td>
<td>20,000.00</td>
<td>10,000.00</td>
<td>35,652.17</td>
<td>66,666.67</td>
</tr>
</tbody>
</table>

The $6,666.67 and $2,883.77 of its own stock received from D and C Companies respectively becomes treasury stock and the balance of stock outstanding, $190,469.56 would be held as follows:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>A Company</td>
<td>$59,060.87</td>
</tr>
<tr>
<td>Former stockholders of D Co.</td>
<td>19,513.04</td>
</tr>
<tr>
<td>Former stockholders of C Co.</td>
<td>11,895.65</td>
</tr>
<tr>
<td>Stockholders of B Company</td>
<td>100,000.00</td>
</tr>
</tbody>
</table>

$190,469.56
<table>
<thead>
<tr>
<th>Year</th>
<th>Species</th>
<th>Habitat</th>
<th>Age</th>
<th>Sex</th>
<th>Weight (kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2010</td>
<td>Spec 1</td>
<td>Habitat 1</td>
<td>5</td>
<td>M</td>
<td>8.7</td>
</tr>
<tr>
<td>2011</td>
<td>Spec 2</td>
<td>Habitat 2</td>
<td>7</td>
<td>F</td>
<td>9.8</td>
</tr>
<tr>
<td>2012</td>
<td>Spec 3</td>
<td>Habitat 3</td>
<td>6</td>
<td>M</td>
<td>7.3</td>
</tr>
</tbody>
</table>

Note: Species 1 and Species 2 are from the same population. Habitat 1 and Habitat 2 are from different areas. Age is estimated based on physical characteristics. Sex is determined by gonad examination.
The distribution on liquidation of B Company would then be:

<table>
<thead>
<tr>
<th>Stock of A Co.</th>
<th>Cash</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>To A Company</td>
<td>$11,055.04</td>
<td>31.01</td>
</tr>
<tr>
<td>To former stockholders of D Co.</td>
<td>3,652.46</td>
<td>10.24</td>
</tr>
<tr>
<td>To former stockholders of C Co.</td>
<td>2,226.63</td>
<td>6.25</td>
</tr>
<tr>
<td>To B Company stockholders</td>
<td>$35,652.17</td>
<td>52.50</td>
</tr>
<tr>
<td>Total</td>
<td>$308,869.56</td>
<td>100.00</td>
</tr>
</tbody>
</table>

The assets of A Company would then be:

<table>
<thead>
<tr>
<th>Original Balance</th>
<th>From D Co.</th>
<th>From C Co.</th>
<th>From B Co.</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Net Assets</td>
<td>$100,000.</td>
<td>$133,333.33</td>
<td>$84,405.80</td>
<td>$413,513.31</td>
</tr>
</tbody>
</table>

The $20,000., $11,304.35, and $11,055.04 of its own stock received from D, C, and B Companies respectively becomes treasury stock, and the balance of stock outstanding, $197,640.61 would be held as follows:

| Former stockholders of D Co. | $33,217.68 |
| Former stockholders of C Co. | 25,704.89  |
| Former stockholders of B Co. | 18,718.04  |
| A Company stockholders       | 120,000.00 |

$197,640.61
The distribution on liquidation of A Company would then be:-

<table>
<thead>
<tr>
<th>Percent</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>To former stockholders of D Company</td>
<td>16.807111</td>
</tr>
<tr>
<td>To former stockholders of C Company</td>
<td>13.005876</td>
</tr>
<tr>
<td>To former stockholders of B Company</td>
<td>9.470747</td>
</tr>
<tr>
<td>To stockholders of A Co.</td>
<td>60.716266</td>
</tr>
<tr>
<td>100%</td>
<td>$413,613.61</td>
</tr>
</tbody>
</table>

A recapitulation of the amounts received by the stockholders of each company shows:-

<table>
<thead>
<tr>
<th></th>
<th>A Company Stockholders</th>
<th>B Company Stockholders</th>
<th>C Company Stockholders</th>
<th>D Company Stockholders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liquidation of A Company</td>
<td>$251,069.96</td>
<td>$39,162.82</td>
<td>$53,781.05</td>
<td>$69,499.68</td>
</tr>
<tr>
<td>Liquidation of B Company</td>
<td>-</td>
<td>162,162.16</td>
<td>19,290.25</td>
<td>31,642.77</td>
</tr>
<tr>
<td>Liquidation of C Company</td>
<td>-</td>
<td>-</td>
<td>175,304.35</td>
<td>9,198.07</td>
</tr>
<tr>
<td>Liquidation of D Company</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>188,888.89</td>
</tr>
<tr>
<td></td>
<td>$251,069.96</td>
<td>$201,324.98</td>
<td>$248,375.65</td>
<td>$299,229.41</td>
</tr>
</tbody>
</table>
The value of the stock of each company may now be determined as follows:

<table>
<thead>
<tr>
<th>Company</th>
<th>Value of Stock held by stockholders</th>
<th>% of stock held by stockholders</th>
<th>Value of total (100%) Capital Stock</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Company</td>
<td>$261,069.96</td>
<td>50</td>
<td>$502,139.92</td>
</tr>
<tr>
<td>B Company</td>
<td>201,324.93</td>
<td>50</td>
<td>402,649.96</td>
</tr>
<tr>
<td>C Company</td>
<td>248,375.65</td>
<td>56 1/4</td>
<td>441,556.73</td>
</tr>
<tr>
<td>D Company</td>
<td>299,229.41</td>
<td>47 2/9</td>
<td>633,662.27</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>$1,000,000.00</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The following statement shows in summary form an explanation of the results obtained in the foregoing illustration:
<table>
<thead>
<tr>
<th>Title</th>
<th>Subtitle 1</th>
<th>Subtitle 2</th>
</tr>
</thead>
<tbody>
<tr>
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<td></td>
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<tr>
<td>Page 2</td>
<td></td>
<td></td>
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<tr>
<td>Page 3</td>
<td></td>
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</tr>
<tr>
<td>Page 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Page 5</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This table contains information related to the text above.
<table>
<thead>
<tr>
<th></th>
<th>A Company</th>
<th>B Company</th>
<th>C Company</th>
<th>D Company</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Net assets excluding intercompany stockholdings</strong></td>
<td>$100,000.00</td>
<td>$200,000.00</td>
<td>$300,000.00</td>
<td>$400,000.00</td>
</tr>
<tr>
<td><strong>Value of A Company stock held by B, C and D Companies</strong></td>
<td>(251,069.96)</td>
<td>41,844.99</td>
<td>83,689.99</td>
<td>125,534.98</td>
</tr>
<tr>
<td><strong>Value of B Company stock held by A, C and D Companies</strong></td>
<td>80,529.99</td>
<td>(201,324.98)</td>
<td>40,265.00</td>
<td>80,529.99</td>
</tr>
<tr>
<td><strong>Value of C Company stock held by A, B and D Companies</strong></td>
<td>110,389.18</td>
<td>55,194.59</td>
<td>(193,181.07)</td>
<td>27,597.30</td>
</tr>
<tr>
<td><strong>Value of D Company stock held by A, B and C Companies</strong></td>
<td>211,220.75</td>
<td>105,610.38</td>
<td>17,601.73</td>
<td>(334,432.86)</td>
</tr>
<tr>
<td><strong>Value of stock held by stockholders</strong></td>
<td><strong>$251,069.96</strong></td>
<td><strong>$201,324.98</strong></td>
<td><strong>$248,375.65</strong></td>
<td><strong>$299,229.41</strong></td>
</tr>
</tbody>
</table>
CHAPTER VI.

HOLDING COMPANY OPERATING SUBSIDIARY

FOR REASONS OTHER THAN PROFIT

Subsidiary may be essential adjunct. — For various reasons a holding company may continue to operate and finance a subsidiary company although the subsidiary shows an annual net loss. It may be that the subsidiary is an indispensable part of the affiliated interests, or that the management believes eventually the subsidiary can be made to earn a profit. Consideration must be given to this probability when the argument is advanced that, because there is no legal responsibility on the part of the holding company to assume subsidiary obligations, both the assets and liabilities of the subsidiary company may be excluded from the balance sheet of the holding company.

Subsidiary owning mortgaged real estate. — Montgomery, in his "Auditing, Theory and Practice", page 392, outlines the following suggested methods of showing mort-

gaged subsidiary real estate on the consolidated balance sheet.

"1. Should the equity of subsidiaries in real estate be shown without mention of amount of mortgages, merely stating that the asset item represents the equity?"

2. Should the equity be shown, stating amount of mortgages in an explanatory note?

3. Should gross value of real estate be shown in short, the mortgages deducted and the equity be carried out as an asset?

4. Should the real estate be shown as an asset and the mortgages as liabilities?

5. Does it make any difference to these questions if neither the holding company nor a subsidiary is obligated on the bonds?"

Montgomery's opinion is that, "The real estate should be shown on the asset side of a consolidated balance sheet and the mortgages on the liability side, whether the holding company or the subsidiary or
both be obligated on the bonds or not."

**Holding company guarantee of subsidiary obligations.** --- The holding company, in order to make securities of a subsidiary more acceptable or more attractive to the public, sometimes guarantees dividends or interest thereon. When this is the case the guaranteed dividends or interest become an obligation of the affiliated interests when due, even though, if it is a dividend that is guaranteed, the dividend has not been declared by the subsidiary company. This differs from the usual case where a dividend is not a liability until it is declared by the directors. Where the holding company does pay the interest or dividends on the securities of the subsidiary such payments represent expenses of the holding company, and although increasing the cost of the holding company's investment in the subsidiary, ordinarily do not increase the value of that investment.

Where the holding company guarantees payment of contracts of a subsidiary for future delivery of mer-
eandise, notation of such fact should be made in a statement or footnote on the consolidated balance sheet.
CHAPTER VII

CONSOLIDATED PROFIT AND LOSS.

Consolidated profit and loss statement. — Just as the consolidated balance sheet is not the balance sheet of any actual legal business entity, the same is true of the consolidated profit and loss statement. This statement sets forth the combined financial progress of an affiliated group of companies and is not the profit and loss statement of any one company. As in the consolidated statement of condition the elimination of intercompany claims and obligations is necessary to prevent an inflated statement of assets and liabilities of the affiliated companies as a group, so also intercompany transactions involving sales and purchases, income and expense, must be eliminated from the consolidated profit and loss statement if the volume of business and operating costs and expenses of the combined interests as a group, is to be set forth without exaggeration.

Unrealized intercompany profits. — Where there is contained in the inventory of one of the affil-
isted companies goods purchased from a related company at a profit to that company, the value of the inventory must be adjusted to eliminate the element of intercompany profit. Not to do so would be to inflate the value of the inventory and to overstate the profits of the consolidated group. The most usual method of effecting the adjustment is to deduct the amount of intercompany profit from the inventory in the cost of goods sold section of the profit and loss statement, the deduction also appearing on the balance sheet in the form of a reserve for intercompany profit in inventories, deducted from the gross amount of the inventory.

Where there are minority interests in the company selling the merchandise, accountants differ as to the amount of the reserve to be set up. Some hold that only such percent of the intercompany profit in inventories should be deducted, as is represented by affiliated interest in the selling company. Those who hold this view point out that the minority stockholders in the selling company have a right to consider that a
profit has been realized since the goods have been sold to a company in which they have no interest. Other accountants hold that a reserve should be set up for the entire amount of the unrealized profit instead of for the holding company's proportion thereof, debiting proportionately the holding company and the minority interests. A still further variation is offered which eliminates the entire intercompany profit and charges the full amount against the holding company's surplus.

The second suggested method seems to be the most logical for the following reasons: The consolidated profit and loss statement and balance sheet are statements of a group of affiliated companies as a whole and do not purport to represent the progress of any one company as such. Those offering various other theories appear to lose sight of this fundamental purpose and nature of consolidated statements. A group of related companies, as a group, cannot earn a profit by dealings within itself. It is hard to conceive how a minority

(1) "Principles of Accounting" Vol. II, Ch. 52, P. 17, Finney.
(2) "Accounting Theory and Practice", 562, Kester.
interest could be injured by showing their interests on a consolidated balance sheet at an amount different from what it would appear on an individual balance sheet of the company. There are no entries made on that company's books changing their interests, and anyone concerned with the value of minority holdings would hardly refer for information to a consolidated balance sheet of an affiliated group which happens to own stock in that company.

Cost of Goods Sold. --- In the preparation of the consolidated profit and loss statement, if the cost of goods sold is to be accurately shown, the reserve in the opening inventory should be closed against the initial inventory, the net amount being used as the opening item in the determination of the cost of goods sold. The reversing of the entry creating the initial reserve would establish the correct net profit for the period but would fail to establish the correct figure for cost of goods sold.

Sale of goods before combination. --- When the inventory of a company contains goods purchased from

(1) "Accounting, Theory and Practice," 570, Kester.
an affiliated company before the affiliation took place, the profit element in the inventory is not intercompany profit and therefore no adjustment is necessary in respect to that portion of the inventory.

**Intercompany profit on fixed assets.** — The principle that a group of two or more companies cannot, as a group, make a profit by dealings within itself applies to fixed assets as well as to merchandise. Thus when a company produces fixed assets for or sells them to a related company at a profit the intercompany profit should be eliminated. To illustrate suppose that Company A owns 80% of the stock of Company B, which company sells fixed assets to Company A at a profit of $2,000. A Company's share of the profits of Company B at the close of the accounting period should be reduced by $1,600 for unrealized profit in fixed assets.

A further complication arises in intercompany sales of fixed assets which does not exist in the case of similar sales of merchandise inasmuch as the asset is
periodically depreciated and the intercompany profit becomes realized through charges to expense or manufacturing costs.

Where the holding company owns the asset on which the intercompany profit is made two methods of accounting for the transaction on the books of the holding company are suggested.

"(1). The holding company may write down the asset to intercompany cost by debiting surplus and crediting the asset account instead of crediting a reserve for intercompany profit. Depreciation will then be computed on the carrying value of the property as shown by the asset account.

(2) The holding company may carry the reserve and compute depreciation on the carrying value of the property as measured by the debit balance in the asset account minus the credit balance in the reserve for intercompany profit."

For instance suppose in the preceding illustration that Company A paid Company B $10,000 for the

(1) "Principles of Accounting", Vol. II, Ch. 52, P. 19, Finney.
fixed assets purchased. Under the first method Company A would debit its surplus and credit the asset account $1,600, depreciation then being computed on the balance of $8,400. Under the second method it would debit surplus and credit a reserve for unrealized profit in fixed assets $1,600, and compute depreciation on the $10,000 balance of the asset account minus the $1,600 balance of the reserve for intercompany profit.

A still further accounting complexity arises when the transaction is between subsidiary companies. Suppose Company A owns 80% of the stock of B Company and 60% of the stock of C Company. B sells C machinery costing $40,000 for $50,000. B's profit is $10,000, 80% of which or $8,000 is A's share. Of this $8,000, 60% - the amount of A's interest in C, the vendee - may be looked upon as an unrealized profit, the other 40% being viewed as a realized profit. The unrealized profit to be set aside in a reserve for intercompany profits is, therefore, $4,800. If C depreciates the machinery at the rate of 10% per year, at the end of the first and each succeeding nine years, 10% of this amount
or $480, will be transferred from this reserve to consolidated surplus.

Where the depreciation of fixed assets sold with a resulting intercompany profit goes into the cost of manufactured goods, if there are any finished goods in the hands of an affiliated company, a portion of the intercompany profit ordinarily realized through depreciation is not realized. However, instead of reducing the amount of intercompany profit transferred from the reserve to surplus, it is generally considered more practical to set up the unrealized portion in the reserve for intercompany profit on inventories, the full amount of the annual reduction in the reserve for unrealized profit on fixed assets being allowed to stand without adjustment.

(1) "Accounting Theory and Practice, 564, Kester."
CHAPTER VIII

ORDINARY ACCOUNTING PRINCIPLES THAT
MAY BE OVERLOOKED.

Because of the complexities involved in the accounting for affiliated corporations there is the possibility, that in the maze of intercompany relationships necessitating considerable concentration, analysis and logical thinking, fundamental accounting principles, ordinarily very evident and simple of application, may become obscured.

Subsidiary surplus at date of acquisition. For instance it is an accepted elementary principle of accounting that a profit cannot be made simply by a purchase and that any excess in the value of what is purchased over cost is not realized profit until what is purchased is sold. Yet this ordinary accounting principle is violated by accountants who allow the holding company’s share of a subsidiary’s surplus at the date of acquisition by the holding company to appear as surplus of the holding company on the consolidated balance
and the study of semantics can be seen as a process of understanding the meaning of words and phrases within a sentence or text. It involves identifying the relationship between words and the concepts they represent. This process is crucial in natural language processing, where understanding the meaning behind the text is essential for accurate interpretation and response.
That there are some usually capable accountants who advocate this treatment is indicated by Hatfield in his chapter on the consolidated balance sheet.

Hatfield points out that this method of treatment is based on a misconception of the facts as they really exist. It is true that as far as the subsidiary is concerned there is a surplus available for distribution in the form of dividends. But any of these dividends which may be received by the holding company are clearly a reduction of its investment in the subsidiary. The holding company's interest in the surplus of the subsidiary at the time of acquisition, would therefore be offset against the holding company's investment account, and be eliminated from the consolidated balance sheet.

Hatfield points out, however, that "the holding company may acquire a surplus, in the form of premium on capital stock if, in buying the stock of the subsidiary company, it acquires assets exceeding in value the par of the holding company stock issued in exchange."

(1) "Accounting", 452, Hatfield.
(2) "Accounting", 455, Hatfield.
But he very clearly illustrates that such a premium arises from the excess of value of the net assets of the subsidiary and bears no relation to the subsidiary surplus. He states,

"But this is irrespective of surplus on the books of the subsidiary. Thus a company might have assets actually worth $110,000. If a holding company acquired all the stock of the subsidiary by issuing $100,000 worth of its own stock, there would arise a premium on stock which would appear on the books of the holding company and also on the consolidated balance sheet. This surplus would appear whether the books of the subsidiary company showed $100,000, nominal capital and $10,000 surplus, $110,000 capital and no surplus, or $120,000 capital and a deficit of $10,000. Clearly the surplus acquired by the holding company and shown in the consolidated balance sheet is not that shown on the books of the subsidiary company."

Intercompany bond holdings - premium and dis-  

count. --- Where one affiliated company has purchased
the bonds of another the elimination of the par value of the bonds on the consolidated balance sheet is a simple one, the liability of one company being offset against the asset of the other. There are, however, some refinements which should be recognized if the consolidated statement is to present all the facts in the most complete manner possible.

When it is borne in mind that the consolidated balance sheet is intended to be the balance sheet of the group of related companies as a whole, bonds held by related companies, are, as far as the group of companies is concerned, treasury bonds, and should be shown on the consolidated balance sheet as a deduction from bonds outstanding, the balance being extended to the money column of the balance sheet.

The purpose of this method of showing intercompany bond-holdings is to set forth the total amount of the issue and to indicate the fact that, as far as the group of consolidated companies is concerned, part of the issue may still be used to provide funds.
The handling of premium and discount on intercompany bondholdings depends upon whether the bonds were purchased from the company issuing them or from sources outside the affiliated group. If purchased from the issuing company the premium or discount accounts on the books of the respective companies would be eliminated against each other. Where, however, the bonds were purchased from other than the issuing company, the premium or discount would be shown on the consolidated balance sheet under deferred charges as unamortized bond premium or under deferred credits as unamortized bond discount.

**Earnings of foreign subsidiaries.** --- When a holding company operates subsidiaries in foreign countries attention must be paid to the fact that the earnings of such subsidiaries will be subject to United States income taxes before they can be available for the purposes of the holding company. Such earnings are not taxable in the United States until they are received in this country. Montgomery suggests the following possible methods
of accounting for such tax liability.

1. Should one deduct from the consolidated earnings the amount of tax which would be paid for the year in which the earnings were made, as if they had all been earned in the United States, setting up on the consolidated balance sheet an accrual for the entire amount of taxes which would be due under such conditions?

2. Should one set up only the actual liability which will be paid according to the tax return to be filed by the holding company (which return will, of course, not include earnings of foreign subsidiaries not yet received in the United States) and deduct such taxes from the consolidated return?

3. Is it sufficient to append a note to the balance sheet to the effect that the statement does not include a provision for United States federal income taxes on the earnings of foreign subsidiaries not yet received in this country?

In view of the uncertainties involved, the author believes that the third question should be answered

(1) "Auditing Theory and Practice, 4th Ed., 403, Montgomery."
in the affirmative, unless the auditor is on notice that the taxes may have to be paid within, say, one year."

Although the above view may seem advisable from a practical standpoint, correct accounting theory would more naturally demand that the first method be adopted. It is not easy to conceive of any difficulties in setting up or any reasonable objections to a suitable reserve for such tax liability, if these earnings are to be included in the income statement of the holding company, and in surplus on the holding company's balance sheet.

Classification of inventories. --- In the preparation of the consolidated statements it is necessary to combine the inventories of the various companies. If it is desired to classify the inventories into raw materials, goods in process, and finished goods the question arises whether or not only those shall be considered finished goods which are to be finally sold outside the affiliated group. Within the group itself the finished goods of one
company may become the raw materials or goods in process of another company. It is generally accepted that the most reasonable method is to classify the inventories as they appear on the records of the individual companies. This is justifiable inasmuch as there is usually an outside market for the finished goods of each company.

CHAPTER IX.

SUMMARY

The horizontal and vertical integration of industrial units, characterized by the centralization of corporate control, has called upon the accountant for the exercise of his greatest skill in the science of accounts. He is required to look into the maze of interwoven corporate relationships and by the scientific collection, intelligent analysis and honest presentation of financial facts to provide the information which should serve as the basis of decisions directing the flow of capital and labor in these big business enterprises.

It has been the duty of the accountant to see beyond the web of legal entanglements and to visualize with true conception the financial condition and progress as they affect the various related interests.

It has been the purpose of this thesis to select and discuss the major accounting problems of cor-
porate affiliation, to classify these problems according to the factors which give rise to them, and where differences of opinion exist regarding the true application of accounting principles, to present and compare these different opinions.

These problems were first classified into two groups, those concerned with a consolidation or merger and those relating to the operations of the holding company and its subsidiaries.

The major accounting problems in a consolidation or merger were found to be concerned with the scientific valuation of the contributions of assets and earning power made by the companies involved in the consolidation or merger, and with the most equitable bases of stock allotment to those companies.

The accounting problems relating to the holding company and its subsidiaries are associated chiefly, although not entirely with the preparation of consolidated statements, and are further classified as those
concerned with the substitution on the consolidated balance sheet of the holding company's equity in the subsidiary's net worth for the investment account of the holding company and the determination of the consequent positive or negative goodwill; the treatment of the minority interests in subsidiary companies; the operation of subsidiaries for reasons other than subsidiary profit; the elimination of intercompany profits; and the precaution against overlooking ordinary accounting principles in the intricacies of intercorporate relationships.

Another important purpose of this thesis has been to present an original method of computing the value of the stock of several companies, when that determination is complicated by the existence of reciprocal ownership. This method, which has been termed the "potential liquidation" method, dispenses with the necessity for familiarity and skill in the application of algebraic formulae. However, in order to demon-
Information technology and the internet have revolutionized the way we communicate and gather information. The widespread access to the internet has facilitated global communication and knowledge sharing, making it easier for people to connect and learn from one another. The internet has become a vital tool for education, research, and business. It has also opened up new opportunities for social interaction and entertainment. With these advancements, it is essential to consider the ethical implications of technology, ensuring that its development and use align with societal values and norms. Additionally, the rapid pace of technological change requires a continuous effort to update and adapt our understanding and application of these tools.
strate and prove the effectiveness of this method, and to compare the relative merits of the algebraic and potential liquidation methods, illustrative problems were solved by both methods; and to show the effectiveness of both no matter to what extent reciprocal ownership may exist, illustrations were presented of varying degrees of such intercompany stock ownership, the final illustration being of four companies each of which owned stock in every other company in the affiliated group.

It is hoped that this thesis, through a logical classification and orderly presentation may be helpful to a clearer comprehension of the major accounting problems in corporate affiliation.
BIBLIOGRAPHY.


* * * * * * * * *
Major accounting problems in corporate affiliations

<table>
<thead>
<tr>
<th>Date</th>
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<td>1/24/34</td>
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</tr>
<tr>
<td>1/30/34</td>
<td>Barbara Baker, Afl.</td>
</tr>
</tbody>
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Dep.