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JUEDAN TUN-SHOU ZHEN

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Juedan Tun-shou Zhen

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Ernest B. Newman

Maurice H. Robinson Instructor in Charge

APPROVED:

HEAD OF DEPARTMENT OF Econ
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RAILWAY CAPITALIZATION

in the

UNITED STATES.

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Chapter I.
Introduction.

An enterprise like railway transportation is impossible to be carried out either by a private person or by partners. It is not only because a large amount of capital is needed but the nature of the enterprise also renders it unfit either for a private person or partners. An enormous sum of money is necessary to start the work, a gigantic and systematic organization is required, and, above all, it has a public nature by reason of its position as a common carrier. In order to bring about its establishment the most efficient way is to appeal to the public for a general contribution of money and other things as well. So railways are always built by corporations either private or public unless the length is insignificant and the use is totally private. In the United States they are built entirely by private corporations. The railway company is not the only kind of corporation - there are many others either commercial or industrial - but the railway corporation usually stands alone, for its nature is not like that of the two classes named. In its relation to the government, it also forms an entirely distinct class. It receives special privileges on the one hand and is subject to special regulations on the other, and consequently its deviation from the general character of a corporation exercises a great influence upon the manner in which the company is organized, maintained, and administered and its capital collected.

Commercial and industrial concerns may be in the form of a personal undertaking, or of a partnership, or of a corpora-
tion. If they are organized as a corporation, their capital is usually in stocks and bonds which may be offered to the public for subscription while their business is quite private. Their trading policy and manufacturing secrets by which they are enabled to compete with their rivals, are essential and important for their efficiency and success. When we speak of the railway corporation a new feature presents itself. There is nothing like the secrecy which is common to almost all trading and manufacturing companies. Its business, the sudden stoppage of which almost entirely devitalizes the national organism, is quite monopolistic and, moreover, it touches society in its daily life. All these attributes peculiar to the railway tend to influence its methods of capitalization and its relation to the public.

Like any industrial or commercial concern railway capitalization is generally raised two ways; (1) subscription, (2) borrowing, that is, by the sale of (1) stock (2) bonds. Railway capitalization has developed the highest efficiency among all other corporations, because it commands a greater portion of national wealth, its failure or success affects the whole field of finance and the public attention is attracted to it to a greater extent. We need not emphasize the truth that any business requires a capital. Of the total capital, some portion must belong to the owner of the business. Those owners run the whole risk of the business with an unlimited liability in case of a partnership, and with a limited liability in case of corporations. In the railway, like any other corporation, the shareholders are the real owners. From among them a board of directors is sel-
ected, and a president and other important officers chosen from
the latter, so the importance of the position occupied by the
shareholders of a railway company is just the same as in any other
business although its nature is more public and the subscription
of stock is opened to all. Besides the money contributed by the
owners, another portion must be borrowed ordinarily. A business
man must borrow money, so, likewise, the railway corporation.
With a few exceptions where the owners command an unlimited sum
of their own, business success is practicable only with the aid
of borrowed money; and this is essentially true of the railway
business, for it has been proved by experiences and verified by
economic theory that so long as the capacity of railway service
is not absolutely exhausted, the earnings of railway always fol-
lows the law of increasing returns. If more money is put into
the improvement of any part of the service, the return is in-
creased in a greater ratio than the new capital invested. Let
us take a hypothetical case for illustration. 1 A firm has the
command of $1,000,000 in its business, one half of which is bor-
rowed at five per cent interest. Assuming that the business is
able to secure a net earning of $100,000 annually, the resulting
profit amounting to ten per cent upon the capital employed. As
we have assumed that the firm should pay five per cent on the
borrowed money, in other words, $25,000 a year, it shows that the
actual earning of the firm is $75,000, that is, fifteen per cent
on its own capital with a higher profit and consequently a high
dividend on stock, the owners are encouraged, the name of the
firm is established, and, of course, the credit is firmly founded.

So an ample return, a high confidence among the public are rendered possible only through the borrowing of money which will be employed to enlarge the volume of traffic and consequently to earn a sum which will enable the company to reserve a surplus or to distribute a higher dividend. Borrowed money is as important for the success of a business as its own money.

There are various forms of stocks employed in order to induce the public to invest their savings as much as possible. We have said that the shareholders in a corporation are the partners; they take the risks of the business and are not only entitled to all profits earned by legitimate means but may enlarge the business in any manner so as to increase the profits: that is to say, the entire management is perfectly under their command. As the preference of capitalists varies to a great extent; some desiring a high interest upon the capital invested, others a safer investment; so the shares are subdivided into classes with a preference of one over the other. In railway corporations almost without exception, the share capital is generally subdivided into several kinds, each having its particular advantage or disadvantage. It is difficult to draw a line separating the better kinds from the rest, for this can only be determined by the investor himself. The corporation itself does not conservatively keep on issuing one kind of stock, for the company has to look after the financial condition of the money market and the public preference.
Chapter II.

Stocks.

The ordinary form of stock is common stock. During the course of organization the corporation for the first time generally issue this class of stock and the money thus secured, is the original capital with which the work is started. This portion of money collected forms the original capital for the construction, maintenance or operation or for all. In some conservative companies the stocks are issued at par. If the corporation is prosperous, more capital is needed in order to extend the business and more shares are issued, these, perhaps, being of different classes.

The shareholders of common stock are the real partners of the railway enterprise. Except that their liability is limited to the amount of stock owned, their relation to the corporation is almost the same as a partner to a partnership. So important is the common stock that no railway corporation can be formed with all kinds of capital except the common stock, for the shareholders of this stock are the real owners in the corporation, who take the whole responsibility and run the risk. In case of business depression, the dividend on common stock can be withheld before any other investor is deprived of the claim upon the income, so it is very common the shareholders of common stock in a poor road not to receive any interest on their investment for several years. This power to withhold dividends is very beneficial to the corporation in time of business depression, but it is certainly disadvantageous to the investor. Now why does
the capitalist consent to invest money in common stock? As a rule, people are optimistic in nature, so they are not unfrequently looking for success. If the entreprise has a greater risk they allow a high factor of safety, and, relying upon this assumption, calculate its future prosperity. Investment in bonds is without question the safest of all, but there is no expectation of a great future gain. Preferred stock is surely more favorable than common stock, but it must be borne in mind that although it has the preference in dividends, and in claims upon the assets, and the suspension of preference payment occurs only in time of extreme depression or of great trade loss; yet in return of those privileges, it is limited to a certain but comparatively small rate of interest and hence it makes no difference to the preference shareholders when the business becomes very prosperous, the advantages being enjoyed only by the holders of the common stock.

Besides the common stock, another form as already noted, is the preferred. It is generally issued by the railways for debts, the payment of which has been deferred; perhaps the stock is given to bondholders in exchange for their bonds to secure a reduction of the fixed charges, this frequently being the case when the company is unable to meet its obligation the bondholders are compelled by insolvency, to take the preferred as an evidence of their loss of interest as well as a part of the principal which the bondholders have to yield as concessions. The dividend on the preferred is limited to a certain but comparatively low rate and in compensation for this disadvantage, they are
privileged with a preference over the common stock both in dividends and in claims upon the assets. This stock is sometimes cumulative and sometimes non-cumulative. The cumulative has a special privilege in that a dividend unpaid at any time must be made up in future before any other shares junior to this class can receive a dividend. Sometimes the issue of preferred stock is more favorable than the issuing of bonds from the company's point of view, for, in time of extreme depression, suspension of dividends upon the former does not result in foreclosure and loss to the common stock. If the traffic is not yet well developed but rather dependent upon future prosperity, the better and sounder policy of financing the company is to keep the fixed charges at a minimum, and for this reason, the issue of preferred stocks instead of bonds is in great favor. So it is correct to say that preferred stocks represent the deferred claims upon the general or future prosperity. The advantage of the preferred over the common stock may be illustrated thus: A company may earn a small sum after paying all the fixed charges (bond interest, rentals and taxes) too small, however, to provide dividends for a large number of common shares, but may be enough to pay a lower rate of interest or dividend upon the preferred.\(^1\) The credit of the company will be much improved by the declaration of a dividend upon the preferred. The financial condition will be better and rumor of disaster will not so easily shake the confidence of the public so as to bring financial strain upon the company. "In 1888 the Chicago, Burlington and Quincy, though

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suffering a great loss due to a strike of its enginemen, declared a dividend on stocks at a rate of 4 per cent out of an accumulated surplus. This company did not earn it at all, but this declaration was justified by the circumstances.\(^1\) Another occasion for the issuing of preferred stock is in the course of reorganization. The newly reorganized company is in need of cash to pay off the prior claims and for the necessary repairs of the railway property up to the standard of safety in order to bring the working condition to its highest efficiency and, of course, to increase the volume of traffic if possible. "In 1888 the Chesapeake and Ohio railway was reorganized. The "B" bonds were exchanged for two thirds of their face value into new five per cent bonds, and for one third into first preferred stock. When the company was becoming prosperous, the first preferred stock was, in 1893, exchanged two thirds into "blanket" four and a half per cent bonds and one third into common stock.\(^2\) "In 1877 the Lake Superior and Mississippi Railroad was sold under foreclosure to the holders of its first mortgage bonds, who exchanged their bonds into preferred shares at the rate of $1,200 of each shares for each bond of $1,000.\(^3\)

The last two cases mentioned above indicate that preferred stock is generally issued under special circumstances. By so doing the needs of the company at the time of emergency were relieved while the holders of old bonds received a nominal value more than that of their original investment.

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1. Greene's Corporation Finance, p. 11.
2. Ibid., p. 9.
3. Ibid., p. 9.
Many lines maintain a separate improvement account. What is considered legitimate maintenance is charged directly to the operating account, while extraordinary betterments are paid from a separate fund even though this fund is drawn in its turn from the surplus earnings. So an enormous amount of money has practically been spent for improvement without increasing the capital.

The property and efficiency of operation greatly depend upon the physical conditions of the roads. When the business is prosperous the price of the stock rises and, in reality, the value of the property also increases. Thus investors, when they buy the stock not only receive a return in the form of dividends but also an increase in the value of their holdings. There is still another form which may be equal to either of these in value, that is, "the occurrence of 'rights' to the purchase of new stock below the market, when an increase of capitalization is projected". 1 The following is an illustration. Take xy company for example. Suppose a new issue of $20,000,000 be authorized, and stock holders of record were to have the opportunity of subscribing to the new stock at par to the extent of 25 per cent of their holdings. Suppose again, when these rights were offered, both the common and the preferred stock of xy company were selling about $200 per share. In other words, the stock holders would subscribe to shares at $100 which would presumably be worth in the neighborhood of $200 per share as soon as issued. The effect of this would be to create "rights" worth $20 per share.

This will be varied in value according to the fluctuation of the stock. The following is to illustrate the value of "rights".

100 shares at $200 per share = $20,000
25 shares at $100 per share = 2,500
Total cost of 125 shares $22,500
Average cost per share $180

The average cost being deducted from the market value there is left $20 which is the value of the rights.

So long as the capacity for extension and improvement is not wholly taxed, an improvement means an increase of return. The additional issue of stock, in fact, does not cut down the rate of dividend, that is to say, the earning power will not be weakened by the new issue.

From the above illustration it is seen that the real cost is below the market value and the difference is the value of "rights". This somewhat resembles stock-watering. When investors buy the new stock they anticipate that the road can continue to earn the same percentage on the increased capitalization as easily as upon the old. If the new issue does not represent sensibly a rather high percentage of increase in the total capitalization of the road, the issue would not immediately impair greatly the dividend paying power of the road and as a rule, not at all.

Of recent years a new form of security has been issued, convertible bonds - a bond which at the option of the holder, may be turned into stock at a fixed price. 1 "The Pennsylvania, the Atchison and the Delaware and Hudson have practiced it".

1. Snyder's American Railway as an Investment, p. 47.
The bonds are issued at par convertible into common stock of the company at par. For example, take the Union Pacific. They could have been purchased as low as $90 in 1904. Next year the Union Pacific common had began to raise above par, the bonds, of course, went with them. When the stock was sold above $190 the convertible privilege represented a profit of nearly 100 per cent on the investment. 1

It presents a minimum risk with a considerable speculative opportunity of gain. The option remains with the holder to keep his bond or turn it into stock according as he considers it to his best interest. The interest payments come before any preferred dividends or for that matter, if they exist, before interest payments on income bonds.

They are junior securities in case of the foreclosure of the company to the first mortgage or such prior liens; but if the road be in good shape, financially, and if the fixed charges, including the interest on the issue of convertible bonds consume no more than fifty to sixty per cent of the total net income, the road being supposed in good condition, well managed and well maintained, the security is as good as the average investor would find elsewhere. 2 The conversion price is fixed somewhat above the market price of the stock. The idea is that two or three years of opportunity should be allowed for the road to utilize the funds secured from the sale of the securities in improvements and new constructions. When these improvements begin to show in

1. Snyder's American Railway as Investment, p. 47.
2. Ibid., p. 46.
increased earnings, the stocks should rise to the conversion price and the holder may then step in and take advantage of the issue.

The investor may have the advantage of a fixed rate of interest which is just the same as a holder and at the same time the opportunity of conversion is not impaired. So with the advantage of becoming a shareholder he partakes of none of the hardships which may be entailed upon ordinary stockholders. For this reason it is not very advantageous to the corporation and the issue of this kind is not a sound policy of financing the railway for improvements or new construction. On the other hand, this issue is better than the issue of ordinary bonds which bear interest at fixed rates.

They are generally simply a junior security, a general lien on all sources of income. This is determined by noting the percentage of fixed charges on total net income and the margin of safety, what is the average income of the road and what are the new securities.

The first effect of issuing convertible bonds is to increase the fixed charges so it is plain that a road cannot as safely issue convertibles as it can issue stock. Moreover, the issue of convertibles lies as a dead weight on the stock itself. For example, if the road issue $50,000,000 of bonds convertible into common stocks, and the conversion price be at par, then, when the common begins to climb above par and the conversion takes place, the stock will be loaded with the extra requirements of dividend disbursements. The situation of the prior stockholders will not be nearly so good as if the road had is-
sued ordinary 4 per cent bonds. The issue of convertible would tend to depress the price of the stock more than does the issue of ordinary junior lien bonds; but the disadvantage of the former is to some extent compensated by the possibility of its conversion and thus lessening the fixed charges when necessary.
CHAPTER III BONDS.

As money-borrowing is necessary to business success, which means the maximum of earning power, so bond-issuing is a matter of vital interest to railway corporations. Hence consideration will now be given to this subject.

Those who invest their money in bonds are not partners in the business but merely money-lenders. Generally they are indifferent as to the success or failure of the company if in either case they are fully assured of the safety of the money loaned to it. As such a surety, a mortgage for the amount loaned is demanded. To make sure of the reliability of the mortgage, information thru investigation of the property must be secured.

A mortgage equal to the full value of the property is believed generally to be an unsafe investment. The popular idea of investing safely, is to lend money in return for a mortgage covering only the minimum value of the property, at a rate of interest comparatively low.

If the sum of money asked for by the borrower is higher than the minimum value of the property, the loan cannot be made, for if accepted, it violates the general principle of sound finance. On the other hand, if the value of the property is estimated at its minimum but a high rate of interest is charged, the action is unwise. For when the credit of the corporation is steady and the public has confidence in its financial condition, it is not necessary for the corporation to raise the rate of interest or to valuate its property above the minimum in order to attract the money-lender. The best inducement for the world’s increased
amount of capital ready for investment, is credit. In depressed times the safe borrower can secure the needed money easily and cheaply. The lenders wish to have a good security for their investment and not to have an extra-ordinary high rate of interest.

If willing to put their money in business risk, money lenders are no longer such but become business partners. The unwillingness to run business risk with their money is the very sentiment that induced them to become money-lenders.

A money lender does not interfere with the management of the corporation, does not care for details of its business condition, nor legally, can he have a voice in its affairs. Thus the question naturally arises, "How is he protected from loss with respect to the money loaned to mortgagers?" The money-lender is protected by law in such a way that, "if interest or principal is not paid when due, or if any other provision is not complied with, then the mortgage shall be foreclosed and the property sold to the highest bidder."(1) Thus the creditors of a railway company have a legal right to foreclosure. Since railway property in every respect is not similar to real estate, a foreclosure usually results in reorganization.

In the history of American railways there may be found a great number of cases of foreclosure. Almost without a single exception a reorganization committee is necessary. Bondholders have perfect control of the reorganization thru the appointment of the members of the committee. For legally they are empowered

(1) Greene's Corporation Finance, pp. 35.
to choose the members. In this way they may secure proper representation for themselves in the committee or reorganization. "The principal use of the right of foreclosure in railway bonds is to convey title to a reorganization committee in case of insolvency." (see Greene's Corporation Finance pp.36.)

It is a well known principle that, "security both for interest and principal is the essence of the creditor's position." (see Greene's Corporation Finance pp. 43) Now so far as their invested and earned money can be carefully protected by legal rights over their debtors, they will be satisfied with the process of reorganization. Altho their money is safely guarded, one more point cannot be neglected. Unlike real estate, the railway business is always associated with commercial conditions. If the capitalist looks for a safe investment he can not forget to investigate the particular road in which he thinks of investing his money. If the earning capacity of the company is poor, legal rights cannot protect from the loss of money, for they must resort to a revaluation of the security on a basis lower than the original so as to bring the new company to an earning capacity.

Second in importance to the security itself is the form of the mortgage. Many disastrous consequences result from improper statement of the mortgages. Usually railway mortgages begin with the name of the company and the particulars of its incorporation followed by an extensive list of the properties mortgaged. Prior liens upon the property or upon any part of it must be stated. The amount for which the mortgage is to be issued is stated usually
with the purposes for which the money is to be used given in detail. Then a statement may be put in about the foreclosure under which the trustee is allowed to certify bonds for sale to the public.

A trustee is usually appointed for the purpose of issuing bonds, of watching any over-issue and of seeing that legal formalities be properly and strictly carried out. The mortgage often contains a clause exempting the trustee from all liabilities under any circumstances. In some recent mortgages there are sections relating to reorganization in case of insolvency. Those sections referring to the foreclosure of the mortgage are usually very carefully considered and worded. A common arrangement is that "in case of non-payment of interest, when such a default continues for six months, at the request of a small proportion of the bondholders, the trustee may begin foreclosure proceedings or enter upon the possession of the property or in case of demand made by a considerable percentage of bondholders, shall do so." (see Greene's Corporation Finance, pp. 40)

From this clause we can see that the practical control of foreclosure proceedings falls into the hands of a certain small portion of the holders of the bonds outstanding.

For example the old mortgages of the Philadelphia and Reading granted this privilege to ten per cent of the outstanding bonds.

In some others there is embodied, "a clause which allows the trustee under certain circumstances to withdraw the foreclosure proceedings if such have been begun, for experience shows that
more valuable results are obtained by compromise." Moreover some mortgages provide that the majority of the bonds outstanding is allowed to direct the trustee to buy the property at foreclosure in accordance with a plan of reorganization. (see Greene's Corporation Finance pp 41.)

In some others the trustee is authorized to create new mortgages prior to the one under consideration. All provisions discussed so far are those in common or special forms of mortgages.

Now to guard against any ill results to either the company or the bond-holders, good corporation lawyers are usually retained to formulate carefully the terms of the mortgage in strict accordance with the equity of the case. The stockholders wish to put the conditions of mortgages in such a form as will minimize their burden as much as possible, while the bondholders intend to have the mortgage so drawn that the safety of their money will be assured. The provisions of a mortgage are often determined, as to their nature, by the reputation and consequently the credit of the company.

After formulation of the mortgages bonds are issued. "Sometimes bonds are to be certified by the trustee from time to time merely on the resolution of the Board of Directors; but the modern mortgages deny this power of issue until forms are observed."(see Greene's Corporation Finance pp. 39) For instance in case of bonds on a road under construction it is often provided that no new bond shall be issued until a certificate is filed with the trustee, signed by the president and the chief engineer, certifying that the
stated number of miles of road has been completed and turned over to the operating department.

All the points discussed above are general to all kinds of bonds, issued with direct or indirect claims upon the property. Now as to kinds of bonds, there are two classes; first, those having direct claims upon the property named after the kind of the mortgage; second, those having indirect claims upon the property and named according to the circumstances under which they are issued.
CHAPTER IV.
BONDS - Continued.

Prior lien bonds do not require exhaustive discussion. Their lien is superior to that of other issues. They may or may not be the first mortgage bonds. They are issued when a railway system has been formed by the consolidation of many small roads each of which has issued bonds upon their respective properties. Since time has increased the value of the system, new bonds are issued over the amount of the original mortgage upon the increased value of the whole system. These new bonds are the prior lien bonds. Of course, the original bonds take precedence over those newly issued.

The Erie Railway prior lien four per cent bonds of 1906 are so called because they take precedence over the Grand mortgage bonds. The prior lien bonds are not necessarily senior ones and they may not be the first mortgage bonds. The line mentioned above has six issues secured by liens on a substantial portion of the main line of the system to which the prior lien bonds are junior. The Northern Pacific issued prior lien four per cent bonds of 1997 secured by a first mortgage on substantially the entire property of the Northern Pacific. From a financial view point these bonds are considered very conservative. Baltimore and Ohio also issued prior lien three and a half per cent bonds of 1925, secured by a lien practically equivalent to a first mortgage, a considerable portion of the main line of the road. As the securities of these roads are very safe owing to their conservative estimation in value, their issues are favorably regarded among investment securities.
Next in importance are the first mortgage bonds, the nature of which is explained by their name. They are bonds issued with a lien upon a whole system composed of a number of lines which have been consolidated or in other words, any mortgage which is issued with a lien upon the whole property is a first mortgage. The bonds may or may not be preceded by prior lien bonds. When a railway corporation is in fair circumstances and is working under normal financial conditions, the mortgage issued is often of this class. All other kinds are issued for certain purposes. In some cases the company must comply with the legal requirements, or live up to clauses of the charter, or are limited and restricted by the provision of the old mortgages. Something must then be done to attract capital to investment. The railways follow different financial methods as exigencies may demand. However, the first mortgage is often issued under ordinary conditions. The amount to be issued for the first time after the organization, is offered to the public. The entire property is free from any obligation, while the credit of the company is not yet impaired by any disaster. The confidence of the public in the company, therefore, is normal. Under such conditions, then, these bonds find a ready sale, without other special inducements being added.

An investor likes best first class mortgages for he has, then, a preference claim upon the property over other bonds. Almost every company makes use of this kind of bonds for all other devices of issuing bonds will not be sought for until the first mortgage is issued.

Among other kinds of bonds, perhaps the most interesting is
the debenture or debenture bonds which has peculiarities not possessed by any other class of bonds. Mortgage bonds have a lien on some tangible property which is the only means of guaranteeing the safety of creditors' money and of protecting him from loss. Now debenture bonds do not have this kind of lien. They are not secured by a mortgage or by a lien upon any portion of the property of the issuing company but are rather a lien upon the earning capacity. For this reason they are called, also, plain bonds. They are similar to the unsecured notes of an individual or corporation. Some debentures contain no formal statement of agreement with the trustee for the benefit of the bondholders. Under such circumstances the bond itself is the only instrument bearing upon the corporation obligation. The interests of the debenture holders are better protected when the railway company enters into agreement with a trustee, who, as a representative of the bondholders, in case of a violation of any of the covenants by the railroads, is in a position to take whatever steps may be proper to protect them. While debenture bonds are not secured by a lien on any specific property of the company, there is frequently inserted in the indenture, covering the rights of the bondholders, a provision that so long as any of the debenture bonds are outstanding and unpaid, the railroad company may not make any new mortgage upon its railroad without including therein every bond issued under the indenture and other bonds issued under and secured by any such mortgage. The Lake Shore and Michigan Southern Railway Company has two issues of debentures outstanding and in each case the indenture provides
against further issues of mortgage bonds without including the outstanding debentures. The indenture of a debenture usually asserts that the issue has been properly authorized and provides for certification by the trustee in order that the bonds may be properly authenticated.

In order that the issue of bonds may be properly guarded, no more than the amount authorized by the trustee may at any time be outstanding.

To protect the creditors of the company, the bondholders, it is provided that their claims for both the principal and interest must precede any distribution of dividends or assets of the corporation, that is, debenture must be satisfied before any other claim upon the earnings of the company. Consequently all classes of stocks if a corporation are inferior to the debenture so far as the guaranty of interest is concerned. But they are not always senior bonds if a specific clause is put in.

For the company, this kind of issue is not always advantageous, for the provisions in the indenture put too much restriction upon the issuing company so that subsequently the company is liable to find a considerable obstacle in the way of adjusting their financial condition. Such a restriction may exercise an influence upon the company, similar to that of a government protection as in the case of the Union Pacific. In 1873, to prevent the impairment of government lien, Congress passed a law prohibiting the Union Pacific from increasing the bonded debt of the property subject to this lien. By this law the Union Pacific could secure no fund for
extension or improvement, which were absolutely necessary, so they had to devise other means. Objection to the issue of debenture may not be so serious as in the case of government loan, but it may be sufficient to create future trouble. The issue of this class of bonds is resorted to under certain conditions. A number of them have been issued. They were brought out under peculiar circumstances and conditions which have influenced American railway finance to a great extent.

Moreover, only roads of the first class commanding high credit can sell their unsecured bonds or debentures at fair prices. Thus this kind of issue is not often advantageous or beneficial to companies whose financial reputation is not very sound.

The collateral trust bond is also a very important kind of bond. Its nature and character are indicated by its name. The bond made its appearance when almost the entire railway mileage of the country, through combination or consolidation, became a part of or subject to the control of a few large systems. The issue of this class of bond may be due, (1) to the misfortunes of the railroad, (2) to the necessity of new construction for which funded obligations had not yet been created. The methods of its use generally fall under three heads, (1) A railroad company may purchase a controlling interest in the securities of a competitor or connecting line, paying for them in cash and reimbursing itself by mortgaging the securities thus purchased, collateral trust bonds being issued against them. (2) The purchasing company may exchange its collateral trust bonds directly for the desired securities of
the second company and deposit these securities obtained in exchange for the collateral trust bonds. (3) The trustee of the mortgage may sell the collateral trust bonds on the market and purchase the desired securities of the connecting line and deposit them under the mortgage. There are three further reasons which may urge financiers to issue them. They are (1) to refund previous issues of bonds, (2) to convert a previous bond-issue for the purpose of increasing its authorized amount; and (3) to consolidate and unify the mortgages of railroad companies which enter into consolidation.

Control of connecting lines is generally obtained by the exchange of collateral trust bonds directly or indirectly for the desired stocks and bonds which become the securities of the collateral trust bonds. So far as the securing of the controlling interest is concerned this policy is quite advantageous, but there are disadvantages. If the control is secured through the ownership of stocks, the burden born by the owners may be thrown off by selling those stocks as soon as the parent company finds the connecting, that is, the controlled line, is burdensome. In some instances, the owners may redeem the collateral trust mortgage and sell the underlying securities; this method is rather theoretical. In many cases, purely for purposes of control, the securities of the new railways are not put upon the market, but transferred to the parent company and the latter, in turn, places upon the market its own collateral trust bonds secured by a mortgage upon those stocks and bonds of the subsidiary company.

Financially, this may affect the earnings and working capi-
tal quite unfavorably. It may impair working efficiency by diverting funds which otherwise might have been paid out as dividends or might have been used for other needful purposes. Being, then obviously unwise, such a step should not be taken by the company unless it is obliged to do so.

Occasionally railway companies, organizing subsidiary companies for new property, buy the stocks and bonds of these new companies. Then the parent company issues collateral bonds with the mortgage upon the stocks and bonds of the subsidiary companies. The investor favors this plan as he prefers a first lien upon a specific piece of property rather than a junior mortgage upon the whole system. If the new bonds were issued by the parent company they might be the junior bonds while issued by a new subsidiary company, they would be the first mortgage bonds upon the new property. As to the holders of the collateral bonds they have to look entirely to the collateral for their safety. If the collateral consists of stock of the subsidiary company, the collateral bondholders would have no greater security than if they had an equal amount of the stocks of the subsidiary company, that is, they run almost the same risk as the shareholder, but without the advantages of a shareholder. He has no voice in the control of either the parent company or the subsidiary; he cannot in any way directly control its prosperity, for the interest of his security is fixed and he cannot secure a larger future return if the growth of railway business makes it possible to pay a higher dividend. The bond holders under no conditions are entitled to more than that fixed at the time of issuing. Many collateral bonds which are secured by the
pledge of bonds are better than stocks. If the bonds which are deposited as collateral are well secured, it is plain that the collateral issues are also safe. For this reason the holder of the collateral must examine the nature of the collateral, the conditions under which the bonds pledged were issued. Various protective measures are provided to meet the variations in the reliability caused by collateral. If the collateral is stock, full power should be given to the trustee in case of a default in the payment of interest or principal of the bonds—that is—the power of voting the stock, selling it or distributing it among the bond-holders. With some roads the trustee is allowed to sell stock (collateral) without a formal foreclosure and holders of collateral bonds are entitled to use his bonds in payment for the purchase of the stock. Some collateral trust mortgages permit the issuing company to substitute other securities of equal value for the collateral, in part or whole if the trustee is satisfied with this substitution. This permission seems disadvantageous to the investor, for it may permit good collaterals to be replaced by the poor securities.

In 1902 the purchase of the Louisville and Nashville railroad was financed by an issue of collateral bonds to the amount of $35,000,000 secured by deposit of $30,000,000 of the capital stock of the Louisville and Nashville R. R. Co. The control was effected by purchasing of $30,600,000 of the $50,000,000, total capital stock of the Louisville & Nashville R. R. Co. At the time of issue, the Atlantic Coast Line R. R. was in a good position, its own stock was selling well above par and the value of the Louisville & Nashville stock deposited with the trustee was in excess of the amount
of the bonds issued against it. So the worth of the collateral trust bond depends upon the value of the collateral.\(^1\)

The Chicago Rock Island and Pacific Railroad was formed to take over the stock of the Chicago, Rock Island and Pacific Railway and the stock of the St. Louis and San Francisco Railroad. A large proportion of these railway stocks was acquired by the new chartered company and pledged to secure the issue of the latter's collateral trust bonds. The par value of the bonds issued was just equal to the par value of the stock deposited against them. The stock of the railroad was owned in turn by a third corporation, the Rock Island Company which had entire control of the consolidated Rock Island system. From these cases cited it can be seen that the issue of collateral bonds is rather for purpose of controlling interest than for financial adjustment.

Another class of bond is the divisional bond. This, though emphasized as a divisional mortgage is generally an obligation of a large system secured in addition, by a lien upon a particular division. This may or may not be a first class bond. Its worth depends upon the credit of the issuing company and the nature of the division mortgage. Examples of this class are numerous. The Chicago, Burlington and Quincy Railroad, Illinois Division three and one-half and four per cent bonds are regarded as one of the best securities. The issuing company, the Chicago, Burlington and Quincy commands a high credit for the Illinois Division upon which these bonds are secured, comprises the main line and branches of the road in the populous part of the state of Illinois. The Chicago, Milwaukee and St. Paul line has also issued a number of
divisional bonds.

Branch mortgage bonds are similar to divisional bonds. Obviously the mortgage of this class is a branch line instead of a division as in the case of divisional bonds and of course this can not be at the same time the main line of the system. This may be a first mortgage bond. The Missouri Pacific Railway has an issue of this class of bonds outstanding. It is a first mortgage four and a half per cent gold bonds secured on the Carondolet Branch. 2

There are many other kinds of bonds such as bridge bonds, terminal bonds, and so on. The Chicago, Rock Island and Pacific's Little Rock Bridge first mortgage six per cent bonds secured by first mortgage on the bridge over the Arkansas River at Little Rock, Ark. and on the property, appertaining there-to, is an example of the former kind which is similar to the division but is much inferior in worth. The same company's Choctaw and Memphis Railway first mortgage five per cent fifty years bonds are secured by a first mortgage on the line from Hopefield, Ark. to the boundary line of the Indian Territory, 282.34 miles, and also on the terminals in Memphis and on the ferries, inclines and other facilities for crossing the river at that point. This bond bears a mortgage upon miscellaneous property of the company and it can not be called either divisional or branch.

The importance of terminals in the successful operation of a railway is fully appreciated by the public and the railway com-

(2) Poor's Manual 1908 P. 577.
pany regards the terminal as important as the line and the rolling stock. A large amount of capital has been spent upon terminals to bring operation to its highest efficiency and for this reason mortgages upon terminal property are well regarded by investors. They accept willingly, mortgages on such properties as passenger stations of great cities like Chicago and New York, the land used for approaching tracks being very often included in the properties. If a company is to continue its business and is unwilling to yield its traffic to some rival line, convenient, suitably located terminals are of the greatest importance.

At certain places the same terminal may be used by two or three railways and therefore its value may be subjected to change. So the use of these terminal properties, immediately, as securities may be affected largely by the prospect of a future increase or decrease of the terminal in value.

If the companies using such terminals do not transfer their favor to other terminals, the value of the terminal property is likely to be retained. The questions requiring consideration in connection with these terminal bonds are therefore (1) whether the terminals are most accessible to all lines, for instance, whether the terminal properties covered by the mortgage are the best; and (2) whether the lines occupying the terminal will continue to use them during the term of the bonds. In some cases railways issue terminal bonds upon their own property, remote from centers of traffic and hence not valuable from that standpoint. The security of these bonds must be determined by judging as to whether the land for country terminals has some special value for its use.
If the company can choose easily another piece of land to lay tracks and set up buildings the value of those terminal bonds is dependent upon the general success of the company rather than upon the property mortgaged. These so-called terminal bonds are secured somewhat nominally upon the terminal properties. When our investor intends to put in money for such bonds, a knowledge of the general condition of the company both traffic and financial is essential. Where the property is situated in large towns and belongs to the company itself, the case is different. The value of the grounds and building will be a large consideration and will be judged in different ways. Most terminal bonds are first mortgage bonds and not very inactive when they are put on the market.
We will now turn to the consideration of equipment bonds. These are also called equipment notes for the reason that they usually mature serially, that is, a certain amount of the issue is due every year or every six months. They are in some respects similar to collateral bonds. They are secured not by the pledge of other bonds or stock as the collateral, but by the pledge of rolling stock, by a lien on freight cars, locomotives or coaches. The issue of this kind of bond usually arises from the fact that when a railway wants to buy a rolling stock, it may have no available fund sufficient for this purpose, so it may arrange to pay the manufacturing company about ten or twenty per cent of the entire cost and issue for the balance of the purchase, notes secured by the equipment. The procedure of issuing this class of bonds is rather peculiar. A trustee is necessary and has the title to the notes, that is, he is note holder. The indenture under which these notes are issued has a provision that the railroad may use the equipment, but that a brass plate shall be conspicuously placed on each car, locomotive or coach, indicating that it is owned by the trust company. As the rolling stock will depreciate somewhat year after year, the amount of notes outstanding against it is continually decreasing and, if the issue and the amount to be matured each year are properly adjusted, the value of the equipment is always in excess of the amount of notes that remains outstanding. Since the life of the property is not very long, the maturity of these notes runs generally about ten or fifteen years.
which may be considered the average life of such property. Title
to the equipment remains in the trust company, subject to lien of
unmatured notes, until the notes are fully paid. This arrangement
is advantageous both to the investor and to the company, for on
the one hand, the company can use the equipment, while paying for
them on an installment plan; and on the other hand, the
price of the notes is usually normal and investors may secure a
large return from them. A good example of the use of equipment
bonds is to be found in the following: In 1902 the Wisconsin Central Railway issued the equipment trust five per cent bonds to the
amount of $415,000 redeemable $60,000 yearly to 1912, secured on
new equipments costing $738,459. The company paid in cash about
forty per cent of the entire cost. In 1905, the same company
issued the equipment trust obligations to the amount of $340,485
of which $254,085 were four and a half's payable in semi-annual
installments and the remaining $86,400 were five's payable also
in semi-annual installments, the first run from April 13, 1905 to
Both of them were secured on twelve locomotives, ten passenger
coaches, two chair cars, three baggage cars, five box freight cars,
and two hundred gondola cars. In addition to the various kind of
bonds mentioned, there is another peculiar form of bonds, which
once was fairly popular but has since been disregarded by invest-
ors. This is the income or preference bond. Its peculiarity lies
in the fact that the provisions in the indenture are so framed so
as to combine the lien of a mortgage with the contingency of inter-
est, thus it combines in one the essences of stock and bonds, one
of which is contradictory to the other. The mortgage in the usual
form declares the principal to be a claim upon the property, but
followed with another, that no interest shall be paid unless it
has been earned. As to the distribution of earnings as interest
on those bonds, the Board of Directors are the only authority who
have the absolute right of judging whether any net earning is
applicable to this interest in any given year. So the most serious
undertaking in issuing income or preferred bonds is to combine the
two opposite commercial principles in one form. The investor in
a railway securities does not like to involve himself in the man-
agement of the corporation. Hence he does not care about the pro-
fit or loss due to the success or failure of the company. He
simply looks for a safe investment for his money. A corporation
seems to him to have sufficient security, he will invest the money
therein and receive the interest on the same and the principal
when due. The security for both interest and principal is the es-
sence of the creditor's position, while the contingency depending
upon success is the essence of the stockholder's position. When
these two are combined in one, any attempt to thrust both upon the
investors does not attract but rather repels them. So these bonds
are generally issued under special circumstances such that the in-
vestors have to take them. In case of insolvency, income bonds
have been issued to old security holders in part payments for sac-
rifices which they are asked to make.

To compensate for the contingency of interest and render the
bonds more attractive to investors, clauses are inserted providing
for cumulative interest. If financial conditions will permit, however, the company prefers to issue bonds being non-cumulative interest. Cumulative interest means that the interest unpaid during certain year or division of it, may be accumulated and claimed upon future income. But they used to issue non-cumulative. The following are examples. In 1877 the Union Pacific issued the Oregon Short Line Railway none-cumulative income "A" five per cent bonds secured on the entire property of the Oregon Line Railroad Company, subject to prior liens. The bonds are to receive interest if earned, at the rate of five per cent per annum, non-cumulative, before any interest can be paid on the income "B" bonds. The total issue is $7,185,000 of which the Union Pacific owns $6,761,500 and the Oregon Short Line $38,500 leaving $385,000 outstanding in the hands of the public. On the same date, the same company issued the Oregon Short Line Railway Collateral Trust non-cumulative income "B" four per cent bonds secured on the entire property of the Oregon Short Line Company subject to prior liens, also secured by deposit of $16,281,400 common stock of the Oregon Railroad and Navigation Company. The bonds are entitled to interest at the rate of four per cent per annum, non-cumulative, payable out of the earnings of the company, or out of dividends on the $16,281,400 common stock of the Oregon Railroad and Navigation Company or both. The total issue is $14,841,000 of which the Union Pacific Railway Company owns $14,793,000 leaving $48,000 outstanding in the hands

(1) Poor's Manual 1907 P. 810.
(2) Ibid.
of the public. In 1889 after the reorganization of the Atchison, Topeka and Santa Fe, income bonds were issued, and in 1886, the Philadelphia and Reading, after its reorganization also issued the same kind of bonds. As we have said, the Board of Directors representing the shareholders have the absolute control of the financial adjustment. They may in years of good earnings put into the property the surplus revenue which ought to be used to pay interest on the income bonds, and they may continue this policy until the earnings of the company are sufficient to pay dividends on stock. The income holders usually have no remedy against such arbitrary appropriation of the earnings. Sometimes in order to relieve the income holders from any such possible disadvantages they are given the power of voting and then their situation is similar to that of holders of preferred stock. If the holders can only guard against any possible abuse through the voting power, it would be better for the company to issue the preferred stock instead of preference bonds for it can by this way avoid unnecessary complication.

The sinking-fund bond is an old type of bond. The indenture of this class of mortgage provides that a certain sum shall be set apart annually and paid to the mortgage trustees. These sums are to be invested in the company's bonds of the issue to be retired either by purchase in the open market or at a price stated in the mortgage. The particular bonds to be retired are drawn by lot and the result is advertised in the daily papers. The bonds thus chosen cease to attract public attention. The bond purchased by lot shall

(1) Poor's Manual 1907 P. 810.
maturity the company could pay at par would be poor financial policy and a use of the current revenue of the company is greatly reduced. As these bonds are mortgaged upon a certain piece of property this security is the main hope of the investor. Hence he concerns himself but very little with the sinking fund.

There is another class of bond which differs from the sinking fund bond both in name and in character. This is the first and refunding mortgage bonds. Most of them bear three and a half or four per cent interest and run from thirty to fifty years. The cause of the issue of this class of security is generally prosperity of business. During the panic of 1893 many roads were insolvent, due to the fact that many of them were extraordinarily bonded. After this panic their management became very conservative. A good deal which formerly had been charged to capital account, was transferred from earning. After 1900, however, the roads found that there were a number of high rate obligations maturing and that it was necessary to adjust the financial condition before they became due. Fortunately business was prosperous, the general financial situation strong and a large amount of capital was ready for investment. Availing themselves of these advantages the roads created the first and refunding mortgage bonds. This kind of issue not only enabled them to refund the maturing bonds and to make provisions for other maturing issues but also to provide funds for other purposes. These bonds, as their name indicates, were secured by a first mortgage. If that part of the road on which the bond is secured
not be cancelled but remain alive in the hands of the mortgage trustees, the interest on them being added to the sinking fund and used to purchase other bonds of the same system in case the bonds in question cannot be had at the fixed price. As a rule, the quotations of such sinking fund bonds are higher than the purchase price named in the sinking fund sections of the mortgage, so the investment of the fund in other securities is necessary. Sometimes the company takes over into the treasury all these securities held in the funds, and the maturing issue is met by the sales of other bonds of the same company which bear a lower rate of interest or are part of a larger mortgage and already sure of a market. This kind of issue is often advantageous to investors. If the bonds are compelled to be retired by lot, a certain number of each, at, say 104 per cent of their par value, the fact immediately decreases their value as investment. No investor likes to buy bond, however, good which he will be compelled to give up a short time after the purchase, for if the bond is good the longer the time it remains in the market the better the bond buyers like it. Another objection is that no one likes to search continually through advertisements for notices which he may or may not chance to see. On the other hand the company also is not quite in favor of providing a sinking fund system which will draw yearly a certain sum from the revenue for the purpose of buying that particular issue of bonds in the open market. Such a buying would soon create artificially a scarcity in those bonds so that the price quotations would be above the normal. To purchase at a high premium bonds which at
is an essential part of the system, and if the amount of the issue is not too heavy, these bonds are very attractive to those who favor conservative investments.

Next we have the general mortgage bonds. During the business depression of 1890 to 1896 the roads issued many of them, a result of the reckless railroad financing of the decade preceding 1890. The general mortgage bonds were secured by a general or "blanket" mortgage on all the property of the company, the lien being subject to the first, or underlying bonds. Most of the general mortgage bonds bear four or five per cent interest; these were often issued after reorganization, the holders of secondary or junior mortgage bonds, bearing six or seven per cent interest being compelled to take them in exchange for their securities, in part or in full on which the road had been compelled to default—such exchange reduced the annual interest charges with the paying capacity of the road from its earnings. The general mortgage bonds of some great systems are now secured by a first lien upon important parts of the roads, as some of the first mortgage bonds which formerly preceeded the general bonds have matured and have been paid off with the proceeds of the general mortgage bonds. The authorized issue of these bonds has been very large and their liens long ones—frequently a hundred years.

A typical issue of this class is found in the case of the Chicago, Milwaukee and St. Paul Railway. A part of the bonds bear three and a half per cent interest and a part four per cent. The total amount authorized is $150,000,000 but only $40,000,000
has been issued, the balance being reserved to take up the Divisional and Branch Bonds having a prior lien, or to provide funds for improvements, extension, etc. These bonds are now secured by a first lien on over 1700 miles of road and are junior lien on nearly all the balance of the system.

Upon the consolidation or combination of different lines, the increased traffic resulting, raises the total value of the system. Upon this increase in value new bonds may be issued. So we have guaranteed and assured bonds, consolidated and unified bonds.

When a larger system absorbs a small road, it frequently buys the stock of the latter and guarantees its bonded indebtedness. The guarantee is endorsed on the bonds of the subsidiary company and signed by the proper officials of the parent corporation. A guarantee should be as simple and brief as possible. The guarantee of the Union Pacific Railroad appearing upon the Refunding mortgage bonds of the Oregon Short Line, due in 1929 is worded as follows,

"For value received, the Union Pacific Railway Company unconditionally guarantees to the owner of the bond, the punctual payment of the principal and the interest thereof as to the same mature, and agrees itself practically to pay the said principal and interest if default in the payment thereof be made by the Oregon Short Line Railroad Company.

Consolidated and unified bonds are issued under consolidated and unified mortgages and are very similar to the general mortgage
bonds, the total authorized issue is usually a large one and they run for a long period. As the underlying bonds mature, they are paid off by the consolidated and unified bonds. They are so called because many comparatively small debts are thus consolidated or unified.
CHAPTER VI.
CONCLUSION.

The expenses of a railway company are generally classified under three headings; viz., 1. Operating expenses, 2. Fixed Changes, 3. Betterments. These expenditures are supposed to be necessary for conducting the business and maintaining the existing conditions. If a company intends to build an entirely new branch line from some station, that will be the new property of the company, and the money spent for its construction ought to be called "capital expenditure". However, different railway companies have different policies. This sort of expenditure, together with all others of similar nature, is not always considered a capital expense. It is an important point whether they should be charged to revenue or to capital.

According to common sense any new work produced is a new property, and the money invested for this particular purpose should be treated as capital expenditure. Now there lies the difficulty. The fact is that the railways have not as yet reached a stationary condition; their traffic is continually increasing, and in order to meet its requirements they have to undertake new works and improvements, which can not be said to be directly productive, but which in part displace the original system as well as create new advantages. In general, revenue should only bear the cost of maintaining the existing line and works in proper repair, as well as the expense of carrying on the business; so the outlay for a partial production of a new work, strictly speaking, ought not to be charged wholly to the income account. But in the United States, the policy
of railway capitalization is to keep the value per mile as low as possible so a sum from the income account is set aside for permanent improvements. The effect of this policy is to deprive the stockholders of the dividend they might receive on the amount allowed for this purpose. If on the contrary, new expenditures were charged to the capital account, the company must issue more shares, and thereby materially decrease the profits of the old shareholders. Both have disadvantages, and to ascertain which is the better way requires a special statistical investigation. At present it is quite often that railway companies put aside each year a sum from the income account for permanent improvement, disregarding whether or not they have practically finished new works during the year; so they accumulate large reserve funds which certainly reduce to some extent the amount of dividends. "Such a policy may be magnificent but it is scarcely business; people invest money not for the purpose of seeing the profits accumulated, but to get some return upon it."\(^a\)

Some one says that American railways formerly had a great amount of "water" in their capital. Hence, today, they over-capitalize their property, even though some part of the "water" has disappeared, by charging a great amount of expenditure for new works to the income account. We will endeavor to bring out a fair discussion in order to show their true relations, but before this step, we will seek to define the term "water." \(^{2}\)"Water" is gen-

\(^{a}\) from McDermott's British Railways

\(^{2}\) Thompson's Capitalization pp. 32.
erally a term for 'fictitious capitalization'. It means that either stocks or bonds or both have been issued for which no equivalent was paid or is represented, and that the value of the property is not equal to the face value of these obligations. It is legally defined as a security issued as fully paid in, when, in fact, the whole amount of the par value thereof has not been paid in."{(2)}

In the past few years, the public has been led to believe that the purpose of "water" in the capital is to conceal large dividends on stock, and to forestall the demands for a reduction in rates. Another argument is that if a road has been capitalized at a figure, say five or ten times its value, it must meet a fixed charge five or ten times as great. This may be true but the early promoters of railways had a particular difficulty which had forced them to adopt the policy of stock-watering.

In early years, railway construction was not considered a perfect investment. During that time money in a perfectly safe investment commanded 10 per cent and upward. The sale of bonds at discount was sought for as an inducement to the investors. The early investors recognized that the stocks represented the risk only, the dubiou margin which is dependent upon sagacity, skill, and good management, while the bonds represented a certain minimum value for which the property and all its hereditaments and potentialities were pledged. Then the practice of "sweetening" the sale of bonds with bonuses of stock grew up. Bonds carrying 6 to 8 per cent would be sold with different amounts of stock thrown in a premium, the bond purchaser feeling sure of a share in the pro-

{(2) See footnote (2) preceding page.
property in any event and tempted to make the investment by the prospect of higher returns on the stock. The managers of railways followed the sound policy of reinvesting undivided profits in their properties. But in the stress of hard times there was often no net profit and some roads were thrown into receiverships. Through receivership and reorganization the capitalization has been greatly reduced. The following case is a typical one.

In 1877 the New Orleans, Jackson and Great Northern and the Mississippi Central Railroads leading from Cairo to New Orleans 567 miles were put in the hands of a reorganization committee. These two roads had a total capitalization of about $50,000,000. They were physical wrecks. The committee went to work and in five years thoroughly rebuilt them. They relaid every mile of track with new steel rails; they rebuilt all engines and cars and increased their number, and at the end of the time they turned them over to the Illinois Central Railroad with a capitalization of $28,000,000, (1) which represented all the money available during the period, including the earnings. In other words, it was the actual money applied to the uses of the corporation. The difference between the fifty millions and twenty-eight millions is twenty-two millions which is not shown by capitalization, but really exists in some form as property of the Illinois Central, while the five years earnings spent in the course of reorganization are unmentioned.

From 1876-1907 inclusive, the number of roads passing into

the hands of receivers were 683 covering 119,713 miles with a total capitalization of $6,696,072,000. Judging from the typical case, we can see easily that after the reorganization, a great deduction of the original capitalization must have been made and a great amount of earnings must have been absorbed. The actual capitalization which disappeared through reorganization may have been in excess of the amount of "water".

If we admit that the reduction of capitalization through receiverships is sufficient to counterbalance the "water" in stock, the effect of the policy of charging the permanent improvement to the income account, upon the capitalization is plainly seen. The table which follows below shows the investment in improvement from the income during sixteen years 1890-1905.

It will be observed that the undivided profits of the railways devoted to their betterment amounted to over three-fourths of the sum distributed in dividends.

<table>
<thead>
<tr>
<th>Year</th>
<th>Available for improvement</th>
<th>permanent improvement</th>
<th>net dividends</th>
</tr>
</thead>
<tbody>
<tr>
<td>1899</td>
<td>165 088 372</td>
<td>188 175 151</td>
<td></td>
</tr>
<tr>
<td>1900</td>
<td>143 691 430</td>
<td>183 764 236</td>
<td></td>
</tr>
<tr>
<td>1901</td>
<td>190 856 993</td>
<td>166 176 586</td>
<td></td>
</tr>
<tr>
<td>1902</td>
<td>172 977 856</td>
<td>157 215 380</td>
<td></td>
</tr>
<tr>
<td>1903</td>
<td>150 392 692</td>
<td>131 626 672</td>
<td></td>
</tr>
<tr>
<td>1904</td>
<td>142 754 358</td>
<td>118 624 409</td>
<td></td>
</tr>
<tr>
<td>1905</td>
<td>126 358 872</td>
<td>94 273 796</td>
<td></td>
</tr>
<tr>
<td>1906</td>
<td>78 370 389</td>
<td>83 995 384</td>
<td></td>
</tr>
<tr>
<td>1907</td>
<td>20 300 720</td>
<td>87 377 989</td>
<td></td>
</tr>
<tr>
<td>1908</td>
<td>26 525 485</td>
<td>88 097 757</td>
<td></td>
</tr>
<tr>
<td>1909</td>
<td>1 001 805</td>
<td>85 961 500</td>
<td></td>
</tr>
<tr>
<td>1910</td>
<td>16 821 274</td>
<td>101 607 264</td>
<td></td>
</tr>
<tr>
<td>1911</td>
<td>37 045 024</td>
<td>102 941 289</td>
<td></td>
</tr>
<tr>
<td>1912</td>
<td>45 499 874</td>
<td>101 929 135</td>
<td></td>
</tr>
<tr>
<td>1913</td>
<td>40 721 296</td>
<td>96 429 013</td>
<td></td>
</tr>
<tr>
<td>1914</td>
<td>41 765 491</td>
<td>89 688 204</td>
<td></td>
</tr>
<tr>
<td></td>
<td>264 885 472</td>
<td>1 289 709 898</td>
<td>1 877 933 765</td>
</tr>
</tbody>
</table>

We now see that a large amount has been absorbed by the improvements. The reason is that most of roads in United States were imperfectly built for transportation and great improvements are needed. The companies do not always charge the cost of these to the capital account, but often have a special fund to take care of their large improvements. For example when the New York Central and Hudson River Railway Company built a new depot at Albany, raised the tracks there and put in new bridges, eliminated the grade crossing at Buffalo, Albany and New York, these expenses were not charged to capital account. In case, the cost is so much that the company would not have any net earnings if it charges that expense to the income account it must issue bonds and stocks or both. But usually a special fund is provided unless the condition is such that a new issue is unavoidable.

The choice of either issuing bonds or stocks by a railway financier depends upon the general financial situation and the credit of the company. Ordinarily, people would think that the business condition of a railway has a great deal to do with the fluctuation of the market price of the bonds and stock; but facts show that this is not always the case. It seems that the market value is influenced by an entirely different factor which is independent of the value of the railway and even frequently independent of the net income and earning capacity. In 1900 the net capital of the railways of the United States was $9,547,984,611 while the market value was $9,163,170,382, about 96% of the true capitalization. In 1905 the true capitalization was increased to
§ 11 167 105 992. And if calculated on a basis of 96\%, the market value ought to have been about 10 720 420 000. But in reality it was about 12 864 500 000 or 15\% greater than true capitalization. In 1907 there was also a decline in the market price of securities of nearly two billions which was equivalent to 30\% of the capitalization. During that period the physical condition of the railway property in the country was better than ever; the traffic had developed to its highest efficiency; the gross earning surpassed any proceeding year, and the net earning showed an actual increase. Now in the time of an increase in commercial, physical, taxable and earning value of the railway, the market value showed a decrease by a comparatively large percentage. Hence, it certainly cannot be a measure of the true value of the property. Now let us consider the estimation for the purpose of taxation. This has some effect upon the financial condition of the company. The reason is that the taxation is kind of fixed charge to the income account, and that if the estimation is much higher than it should be, the company would bear more burden than it ought, and consequently it would suffer from such a heavy drain on the current revenue. This over-estimation will effect the entire financial adjustment, as the company's income would be unable to bear additional fixed charges, because of the payment of principal and interest on bonds. So the first important item for investigation is to see whether the estimation differs from the true capitalization. For the year 1904, the estimated value of all railway property and equipment, excluding that classed as real estate in certain states, was
$11,244,752,000 which was only $100,000 short of the commercial value. But the commercial value is not exactly the same as the true capitalization on the contrary, many reasons which will appear later, will show that it is impossible for the commercial valuation to bear a definite relation to the true capitalization. Therefore it is a different task to state definitely the relation of estimation to the true capitalization.

The calculation of commercial value is based upon the so-called true earnings. It is done by capitalizing this true net earning at a rate arrived at by an elaborated formula based on "the market price of the company's securities". The value of the result thus obtained depends solely upon two factors; viz., (1) the true net earning and (2) the rate determined. The formula for finding the true net earning is:

\[ \text{Gross Earnings} - (\text{Operating-Permanent Impo't Charge}) - \text{Tax} = \text{True profit from operation}. \]

Professor Adams, in the report of the Interstate Commerce Commission, has settled on 4.256 per cent as the exact rate for the valuation of railway property based upon the actual net earnings. Thus so-called commercial value is merely a capitalization of the entire earning capacity of the railway which must depend upon national prosperity and the success of the management. So it frequently happens that two roads under the same conditions, started with an equal amount of capital, may yield different amounts of earnings and certainly will be capitalized differently. Although the railroad is competitive in any way, it is a monopoly in many respects and may gain unearned money. Beside this, it is made
productive not only by applying the capital but all other intangibles, such as franchise. So the commercial value which is based on the earnings includes those intangibles and the relation of commercial valuation to the true capitalization is very indefinite.

There is another method generally called the physical valuation. This is based on the inventing of tangible properties, the amount of which depends on the cost of construction. But the franchise, the gain through the growth of the country and through able management and other items which are not pecuniary capital are not included. This valuation may be used as a means to govern the rate charged, for it is independent of the earning capacity, to which the rate charged, bears a direct relation. For the opposite reason the commercial valuation can not be used to determine the rate. The physical valuation may also be used as a basis for the value of the property in case of purchase by a government. There are four valuations; (1) Total original cost or actual investment at the outset; (2) Reproductive cost of the system under present conditions; (3) Structural value for the service and wear irrespective of earning capacity, i.e., capitalizing on the basis of depreciation; and (4) Market price of the physical property obtainable at open sale. No two of these methods will give the same value. Anyone of them is entirely independent of the true capitalization. Although the physical valuation has its use, it has little to do with the true capitalization.

Now we come to the true capitalization. What is meant by it? Some authority states that the true capitalization depends
upon the following: stocks, bonds, miscellaneous obligations, income bonds and equipment trust obligations. When we apply this to some practical cases, other features arise. Many roads own stocks and bonds of other companies or have lines of others or another under lease, so that there is duplication both in the number of miles and the amount of capital. In order to have a true net capitalization these duplicates must all be deducted and the following is the result:

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gross capital stock</td>
<td></td>
</tr>
<tr>
<td>Common</td>
<td></td>
</tr>
<tr>
<td>Preferred</td>
<td></td>
</tr>
<tr>
<td>Funded Debts</td>
<td></td>
</tr>
<tr>
<td>Bonds</td>
<td></td>
</tr>
<tr>
<td>Mis. Obligations</td>
<td></td>
</tr>
<tr>
<td>Income bonds</td>
<td></td>
</tr>
<tr>
<td>Equipment Trust Obligation</td>
<td></td>
</tr>
<tr>
<td><strong>Total Gross Capital</strong></td>
<td>**</td>
</tr>
<tr>
<td>From which deduct,</td>
<td></td>
</tr>
<tr>
<td>Stock owned by Ry. Corp'r'n</td>
<td></td>
</tr>
<tr>
<td>Bonds</td>
<td></td>
</tr>
<tr>
<td><strong>Total Stocks and Bonds owned</strong></td>
<td>**</td>
</tr>
<tr>
<td>Net Capitalization</td>
<td></td>
</tr>
<tr>
<td>Divided by net mileage== (miles of line less trackage miles)</td>
<td>**</td>
</tr>
<tr>
<td>Net capital per mile</td>
<td>**</td>
</tr>
</tbody>
</table>
BIBLIOGRAPHY.

C. Snyder's American Railways as Investments, 1907.
T. L. Greene's Corporation Finance, 1906.
E. Z. Lane's Railroad capitalization and Federal Regulation; the Review of Reviews, 37, 711-4.
A. D. Noyes' Finance; Forum Vol. 38, pp. 489.
W. L. Snyder's Railway Overcapitalization; Outlook, Vol. 84, pp. 312-6, 557,559.
E. R. McDermott's British Railway, 1904.
Railway Age and Gazette, Vol. 45, pp. 1619.
S. Thompson's Cost, Capitalization and Estimation of American Railways 1908.
F. W. Mundy's The Earning Power of Railway, 1908.
Poor's Manuals, 1907, 1908.
S. Daggett's Railroad Reorganization, 1908.
W. Z. Ripley's Railway Problem, 1907.
S. S. Pratt's The Work of Wall Street, 1906.