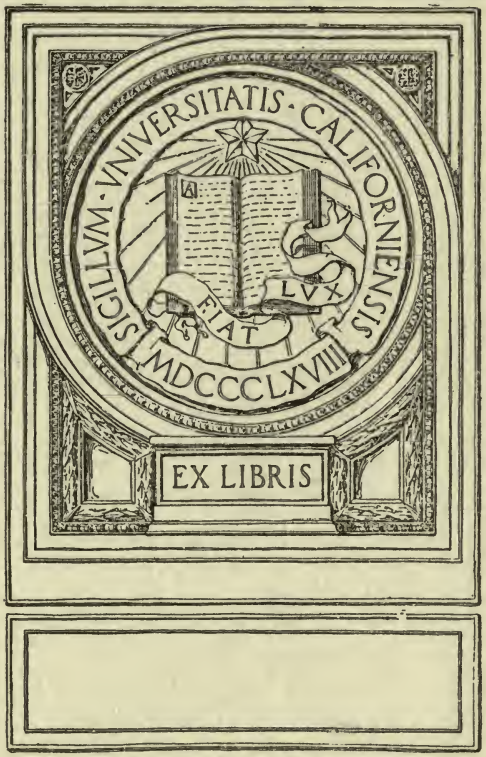
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VIEWS ON

PUBLIC QUESTIONS

A Collection of Papers and Addresses

OF

THEODORE NEWTON VAIL

1907–1917

PRIVATELY PRINTED
1917

Gift of American telephone
and telegraph Co.

Table of Contents

Foreword

IT occurred to one of Mr. Vail's friends that a collection of his public utterances would be a convenient book of reference for his library.

This book, privately printed, without his revision, consent or even knowledge, is the result; but it is with his approval that copies have been sent to a few of his friends.

New York,
December 1, 1917.

From the Annual Report of Mr. VAIL as President of the American Telephone and Telegraph Company, March, 1908.

Public Relations.

PROMOTION AND COMPETITION — INDEPENDENT COMPANIES.

THE unusual production and prices, during the past few years, of those commodities which this country sells to the whole world, with accompanying very general distribution of wealth, resulted in an almost phenomenal financial and industrial activity, stimulating new enterprises and promotions of all kinds, among them independent telephone companies.

The exaggerated stories of the fortunes made by original telephone investors, together with misleading statements of probable profits, made it possible to launch many of these companies pledged to *low rates for exchange service and high dividends to investors.* At these low rates, with "maintenance" and "reconstruction" expenses either intentionally or ignorantly disregarded, these companies for a time had an appearance of prosperity.

The result has been unfortunate in nearly every case.

The promises and pledges as to rates and profits, made as an excuse for their coming, as a basis for their franchise, and as an incentive to attract capital, are now admitted to be impossible. Most, if not all, of these companies, which have had an existence long enough to force attention to the items of "maintenance" or "reconstruction," are now asking for increased rates, and to be absolved from onerous conditions freely accepted and assumed at the beginning. Reorganizations are now in progress.

It would seem, as a whole, that the gain of the public through competition based on low rates has not compensated for the loss of capital invested in these enterprises.

During this period of strife and rush for development and extension, many subscribers were connected to exchange systems with little or no benefit to themselves or advantage to others, and much was done that under ordinary conditions would not have been done.

The result of these conditions has been to create in the minds of the public, and of public bodies, misleading and mistaken ideas of the telephone business. It has encouraged attempts at regulation of rates and business on lines that if obligatory or persisted in would be ruinous. In controversies as to rates, the policy of our associated companies has been to make a complete and absolute showing of the condition, cost and value of plant, cost and value of service, cost and necessity of proper maintenance, and the broad position is taken that neither our company nor the associated companies have anything to conceal or anything to apologize for. That the capitalization of all the companies is conservative, far within justifiable limits, and in the relation between the replacement value of the properties and the capitalization of the companies, unique. Fair rates, therefore, should be authorized or acquiesced in, for it is only by fair rates that good service to the public and permanent, healthy conditions can be created or maintained. With a full knowledge of all surrounding circumstances and conditions, it is believed that this would be fully acquiesced in by the public.

Fair rates would insure high-class plant and equipment maintained at a high state of efficiency, and would provide fair wages to employees, the highest paid for similar class of employment. Both of these are necessary to good service.

Fair rates should give fair return on the investment, and promise fair return on new money needed. This is necessary to maintain the interest of the existing shareholders in the proper administration of the business, as well as to provide for the continually increasing public demand.

Any revenue produced over and above such requirements and the proper reserve to provide for contingencies could be used for the benefit of the public, allowing the company to retain a part sufficient to stimulate the most efficient and economical management. It would be difficult, if not impossible, to get effective and economical management, such as would produce the best results for both the public and the shareholders, without recognizing this principle.

It does not seem possible that there can be any question of the justice of this position. That being granted, the facts to be settled are:—

Is the management honest and competent?

What is the investment?

Is the property represented by that investment maintained at a high standard?

What percentage of return does it show?

Is that a fair return?

Is it obtained by a reasonable distribution of gross charges?

If these questions are answered satisfactorily, there can be no basis for conflict between the company and the public, and the less the working conditions are made inflexible by legislative proscription, the better will be the solution of the constantly changing problems incident to a growing business.

The question of maintenance is of the greatest importance and will be referred to more at length later.

Competition.

The value of any exchange system is measured by the number of the members of any community that are connected with it. If there are two systems, neither of them serving all, important users must be connected with both systems. Connection with only one is of but partial value and cannot be satisfactory. Two exchange systems in the same community, each serving the same members, cannot be conceived of as a permanency, nor can the service in either be furnished at any material reduction because of the competition, if return on investment and proper maintenance are taken into account. Duplication of plant is a waste to the investor. Duplication of charges is a waste to the user.

The advantages claimed for competition are lower rates and improved service. Exhaustive competition may temporarily produce either or both of these results, but, as before stated, this temporary gain is purchased by an excessive waste. Duplication of plant and operation cannot produce either result without exhaustive competition. Given the same management, the public must pay double rates for service, to meet double charges, on double capital, double operating expenses and double maintenance. In most cases of proposed competition an examination of the prospectus will show that, by some process, it is expected to make good a capitalization equal to at least two or three times the actual cost of the construction. The only benefits are to the promoter.

Public Control.

It is contended that if there is to be no competition, there should be public control.

It is not believed that there is any serious objection to such control, provided it is independent, intelligent, considerate, thorough and just, recognizing, as does the Interstate Commerce Commission in its report recently issued, that capital is entitled to its fair return, and good management or enterprise to its reward.

What is Fair Return on Capital?

With guaranteed or reasonably certain income, money can be obtained for any enterprise at moderate rates.

With uncertainty — owing to competition and opposition, possible or actual, or possible regulation of rates without proper investigation or consideration — a more or less speculative price must be paid.

Subject to these general rules, "locality" and existing general conditions will establish the rate.

Fair Charges. Upon What Based. Exchange Service.

An exchange system is made up of circuits (each consisting of two wires) radiating from a central office, or from central offices connected by trunk lines, so arranged that each circuit can be connected directly or through trunk lines with the others. There are in these circuits of the Bell system about 7,000,000 miles of wire — over two miles of wire to each subscriber — one-half in underground conduits. The system of radiating circuits is the most expensive part of the exchange system to build, it is least durable, therefore most expensive to maintain, calls for the largest part of the total investment, and consequently must bear the largest part of the cost of capital.

The real value of a telephone exchange system depends entirely on the distribution and number of other members of the same or other communities connected with the same or connecting systems, with whom any subscriber can have prompt and satisfactory communication.

Any member of a community connected with an exchange system can be reached as well, but not as conveniently, from a central or public office as from a subscriber's station.

To reach any member of a community not connected with any exchange system, whether from public station or subscriber's station, is too inconvenient and impractical to be considered for ordinary use.

Therefore, the particular circuit connecting any subscriber with the exchange is what might be termed a *convenience to that particular subscriber, but a necessity to all other subscribers.*

It is not merely the maintenance of the individual circuit connecting with the exchange that is paid for by any subscriber; *it is in a greater measure the use from time to time of the circuits, trunks and facilities which make communication possible with all other subscribers.*

It is the ability to communicate with others that makes the exchange valuable; it is the use of other circuits than your own.

The cost and value of the system to any subscriber do not depend so much on the number of communications had as on the number and extent of other circuits and facilities necessary to give the communications desired.

It is plain, therefore, that the character of the circuit connecting any subscriber with the exchange does not determine either the cost or value to that subscriber of the exchange connections.

The many and complicated systems of charges prevailing indicate the struggles experts have had in their efforts to establish consistent and reasonable rates.

As the value of the exchange to the subscriber depends upon the number of subscribers within reach — rates must be so established that the maximum number of subscribers can be obtained, so that the greatest number of those with whom communication may be wanted will be connected with the exchange. The cost of any circuit, therefore, must be largely distributed between those who may desire to communicate with the particular subscriber connected by that circuit.

The cost or value cannot be exactly distributed — an approximation is reached by measured service charges, or by a classification of service between business houses and residences with a sub-classification of plant between "direct" and "party" line.

Business rates are higher for the reason that presumably the business subscriber connects with the greatest number of other subscribers, and consequently makes use of the greatest number of circuits and operating facilities in an exchange.

Residence rates are lower because the residence subscriber connects with a limited number of other subscribers, and because he makes more limited demands on the central office.

It being established that the measure of value is not in the particular class of line connecting any subscriber to an exchange, but in the use of the exchange system as a whole, and that the value of any exchange depends on the area covered and the maximum number of desired individuals that can be reached, rates must be so adjusted that no rate shall bear unjustly on particular individuals or classes; that, at some rate, connection with the exchange is within reach of anyone who can add to the value, to others, of the exchange, and that, as a whole, the revenue will be sufficient to maintain the plant, pay fair wages, make enough return on capital and enterprise to insure good economical management and sufficient capital to meet the increasing demands of the public.

Maintenance.

Utter disregard for repairs and reconstruction, usually comprised under the head of "maintenance," has been the cause of more misunderstanding on the part of the public and public bodies having to do with rates, of more self — or selfish — deceit on the part of promoters of telephone enterprises, and of more mistakes on the part of the investing public than any one factor in the telephone business.

With a new plant, "current repair" is at a minimum, and can be for a time disregarded; with a growing plant, it is too easy to lose it in construction; but sooner or later, if not provided out of current revenue, where it belongs, it will be found either in increased construction — that is, capital charges — or in a depreciated plant.

Any company paying dividends and fixed charges, particularly dividends, without first providing for proper maintenance, can have but one end — disaster.

In any consideration of this question the leaning should be towards liberal rather than inadequate maintenance. In any properly administered company any excess would be found in betterments or construction, and consequently in reduced capital investment, while inadequate maintenance would soon show in quality of service and in reconstruction requirements. In

other words, surplus maintenance would be offset by decrease of capital charges, while inadequate maintenance requiring new construction in time would increase capital charges.

Attention is called to the facts shown above that during the past five years there has been expended out of revenue for maintenance and reconstruction about $150,000,000 on plant, which now has a replacement value of $488,000,000.

General.

The past year completes what may be called the thirtieth year of corporate organized work in the development of the Bell Telephone System. In the mind of Mr. Bell, the invention and its application had simultaneous growth. During the first year, such of the many "imaginations" and ideas as to development as were demonstrably practical were assimilated and the business was established on the lines now followed which make our company with its associated companies a national system with millions of subscribers connected by millions of miles of circuit with local exchange systems, all bound into one large comprehensive system by the toll and long-distance lines with their 163,000 miles of poles and 1,664,000 miles of wire, the whole interdependent and intercommunicating, an aggregation or union impossible to destroy in detail, and impossible to reproduce as a whole.

Each year has seen some progress in annihilating distance and bringing people closer to each other. Thirty years more may bring about results which will be almost as astonishing as those of the past thirty years. To the public, this "Bell System" furnishes facilities, in its "universality" of service and connection, of infinite value to the business world, a service which could not be furnished by disassociated companies.

The strength of the Bell system lies in this "universality." It affords facilities to the public beyond those possible on any other lines. It carries with it also the obligation to occupy and develope the whole field. The urban field was the first to receive attention and the development keeps pace with the demand. The semi-urban and rural demand came later. This has been met both directly by the operating companies and indirectly through local, co-operative and rural combinations, under license from, and connected by toll lines with, our operating com-

panies. The policy adopted during the year, of selling telephones and telephonic apparatus, has given fresh impetus to this line of development, which is now showing most gratifying results.

This position of our company has been reached only by a large expenditure of capital, which is, however, fully represented by plant and property with an earning power that must be considered satisfactory.

If this expenditure is but considered as the financing of thirty-five distinct companies occupying thirty-five distinct territories and is considered as so distributed, rather than as a whole, the aggregate does not seem formidable. In this focusing of capital there are distinct advantages in that the revenue is derived from so many and such varied sources, and that the success of our company lies not in the success of any one company but in the average of all.

From the Annual Report of Mr. VAIL as President of the American Telephone and Telegraph Company, March 1909.

American Telephone and Telegraph Company's Relations to Associated Companies.

THE relations of the American Telephone and Telegraph Company and the associated companies are not generally understood. The American Telephone and Telegraph Company is primarily a holding company, holding stocks of the associated operating and manufacturing companies. As an operating company it owns and operates the long-distance lines, the lines that connect all the systems of the associated operating companies with each other.

In addition to these two functions it assumes what might be termed the centralized general administrative functions of all the associated companies.

The Bell system is one system telephonically interconnected, intercommunicating and interdependent. This is such a system that any one of over 4,000,000 subscribers can talk with any other one within carrying power of the voice over wires, the only exception being that the Pacific Coast and the Middle Rocky Mountain region are not yet connected.

This system was built up under this policy and its continuance as a system depends on the continuance of the policy.

In the telephone business development is continuous. As conditions enlarge and change, new methods develop. The whole business suggests changes and stimulates inventions, and opportunities for improvements are frequent.

If each separate exchange or group of exchanges had not been assisted and directed in the development and introduction of these new ideas, methods and inventions, there would now be as many systems, as many methods of operating as there are separate companies. This would have made impossible the organization which now gives the Bell system that universality and preponderance on account of which no matter how many other systems may exist, every one of any commercial or social importance must have connection with the Bell system.

The same generalization runs through many departments. The companies are so organized, or fast becoming so, that every department continues through the local administration to the central administration of the American Telephone and Telegraph Company.

The American Telephone and Telegraph Company owns and maintains all telephones. It also owns either directly or through the Western Electric Company all patents.

It has a department which was organized at the very beginning of the business and has continued since, where is to be found practically everything known about inventions pertaining to the telephone or kindred subjects. Every new idea is there examined, and its value determined so far as the patent features are concerned.

The Engineering Department takes all new ideas, suggestions and inventions, and studies, develops, and passes upon them.

It has under continuous observation and study all traffic methods and troubles, improving or remedying them.

It studies all construction, present and future development or extension schemes, makes plans and specifications for the same, and gives when desired general supervision and advice. It has a corps of experts which, in addition to the above work, is at all times at the service of any or all of the separate companies.

When it is considered that some of these questions involve the permanency, duration and usefulness of a telephone plant costing millions of dollars, and changes costing hundreds of thousands, some idea of its importance can be formed. To give an illustration: One group of patents covering inventions which seemed likely to be useful and economical in the service was purchased by the company. These inventions were developed into operating apparatus and put into use. While this cost hundreds of thousands of dollars, placing it beyond the scope of one operating company, the saving already accomplished to the associated companies runs into the millions.

A large staff has been and is continuously engaged in the consideration of disturbances arising from transmission and other lines carrying heavy currents, and in many cases that any telephone system can even exist in the vicinity of such lines is due to the constant and continued attention given this subject.

Every new trouble, and there are many, comes before this department. When settled there, it is settled for all. This has established a commercial, operating and plant practice not only for our own associated companies, but for others of high standing throughout the world.

All devices or inventions submitted receive the most thorough and painstaking investigation, and it safe to say that there has as yet been no instance where any invention, system or method, rejected by the Patent and Engineering Departments of the American Telephone and Telegraph Company has ever had any permanent success when used elsewhere.

The Manufacturing Department creates and builds the equipment and apparatus which have been adopted. In this way throughout the whole grand system will be found standardization and uniformity. This is not any handicap on improvement or development of the art, for, on the contrary, every suggestion or idea, and there are many, has abundant opportunity to be tested, which would not be possible otherwise. No one of the companies could by itself maintain such an organization, and it would be fatal to any service to introduce or try out undeveloped ideas in actual service.

In the Legal Department all the big and general questions are looked after. It forms a clearing house in all legal matters for all the legal departments of the separate companies to which assistance and advice are given on all questions of general scope.

In the administration all questions which affect all companies, all questions between the associated companies, and the general policy and the general conduct of the business, are considered and close touch and relationship maintained with all parts of the system. Experts on every subject connected with this business are continually at work on old or new subjects and ready at call to go to the assistance of any of the companies. In short, the great work and substantially all the expense of the American Telephone and Telegraph Company are involved in this "Centralized General Administration," taking care of all those matters which are common to all companies, or which if taken care of by each company would mean multiplication of work, effort, expense without corresponding advantage or efficiency.

To sum up, quoting the words of the representative of a large stockholding interest in one of the associated companies: "The

contract relation with the American Telephone and Telegraph Company is the biggest asset this company has."

General.

In submitting this report, we wish to call your attention to two things which indicate the stability of the company and property.

One is the wide dispersion and small average holding of the shares — including the shareholders in the associated and connected companies, there are over 70,000 shareholders in the Bell system. From January 1 to March 2, the date of bond conversion, the shareholders increased about one hundred per week.

Another is the stability of the business, year after year shows an increase, no matter what the prevailing business conditions. There has, it is true, been a slight decline in the rate of increase in exchange earnings, and the toll line business has given some indication that conditions were not normal, but even in that there was an increase in earnings.

This stability and the position that the Bell system holds is due very largely to the policy and conditions under which it was developed, not alone to the telephone.

A telephone — without a connection at the other end of the line — is not even a toy or a scientific instrument. It is one of the most useless things in the world. Its value depends on the connection with the other telephone — and increases with the number of connections.

The Bell system under an intelligent control and broad policy has developed until it has assimilated itself into and in fact become the nervous system of the business and social organization of the country.

This is the result of the centralized general control exercised by the company, the combination of all local systems into one combined system developed as a whole.

Nor could the development have been made in any other way. If the business had been developed by different organizations — each absolutely independent of and unrelated to the others — each little system would have been independent and self-contained without benefit to any other. No one has use for two telephone connections if he can reach all with whom he desires

connection through one. Through the development of the Bell system, the relation and benefit as a whole have been considered. The policy has been to bring together all units which contribute to the value of the whole. The demand for facilities is seldom found waiting in these days for the facilities to come. The demand is created by the existence of the facilities. This is particularly true of the telephone service. It took courage to build the first toll line — short as it was — and it took more to build the first long-distance line to Chicago.

If in the early days the immediate and individual profit of the long-distance toll lines had been considered, it is doubtful if any would have been built.

There are no other countries where the telephone service occupies the same relation to the public. Elsewhere narrow control and a policy of restriction have prevented its full development. Whatever is good in those systems has been adopted from the practice in this country.

There has been oftentimes comparison between the rates of this and other countries. The average rate of this country taking all classes of service and conditions into consideration is about the same as the average rate of all other countries. There may be no maximum rates in other countries equal to some in this country, but on the other hand, there is no such maximum value given. Cheapness is relative to value, not to price. Value in telephone service depends on development, extent of system, certainty and promptness. Promptness and certainty mean operators and facilities sufficient to meet the maximum demands. It means constant and close attention on the part of attendants, sufficient in number to immediately care for any of the many troubles inherent in everything connected with the service from both outside and inside, the troubles which seem to develop and multiply with the development and increase of the business. Promptness and certainty in meeting maximum demands mean idle operators when the demand is less; it means a small average use of operators and facilities.

In any given time a certain possible use — number of connections or messages — expressed in units of service can be given by any fixed number of operators with certain given facilities. If in any given time these possible units of service are not availed of, they are lost — they pass away with the time.

Promptness and certainty therefore mean that each message, connection or other unit of actual service availed of must bear the expense of a number of unused possible units not availed of. If, instead of the immediate or prompt service of this country, the service as it exists in most other countries were in vogue, the cost would be reduced, but to a much greater extent would the value be reduced. Delayed service — service which keeps a line of customers waiting, so that there need be no loss of units of service, would reduce to a minimum the number of operators and given facilities, and all that creates cost.

Instead of waiting and idle operators and facilities, there would be waiting, idle and patient, customers.

We do not think the American public desires this kind of service.

During the year we have had many questions before the courts, state commissions and other public bodies. We have met them in a spirit of absolute frankness and candor. The results have been on the whole satisfactory, and the treatment we have received has been fair and considerate, and we have found an evident desire to ascertain the real conditions and to meet them fairly.

While during these discussions the anxiety of the officials of our companies has been keen, their attention distracted from the ordinary operations of business and the work and expense incurred in furnishing information and in attendance have been great, we believe that through this work and through our policy of publicity, our relations with the public are closer, the public mind is better informed, many erroneous impressions and opinions have been corrected, and that the public is beginning to recognize and admit — what the "Bell system" as conducted by the American Telephone and Telegraph Company stands for to the community at large.

An article by Mr. VAIL on Business Training, in "System" Magazine, November, 1909.

BUSINESS TRAINING.

ALL business as now conducted — particularly those lines of business which embrace the so-called industries — requires specialized training and technical education, in fact so much scientific knowledge that the distinctive line between "business" and "profession" is fast disappearing.

Anyone who hopes to achieve success, even the average, must know more, or at least as much, about some one thing as any other one and not only know, but know how to do — and how to utilize his experience and knowledge for the benefit of others. Broad success depends on singleness of purpose, clear perception of what is to be desired and to be accomplished, and capacity to recognize true values of men and things and properly place them.

Thorough preparation in elementary knowledge, wherever and however acquired, development and training of the powers of concentration and application, is the best, in fact the only, foundation upon which to build this special or technical training. After this the willingness to persevere in the effort to accomplish something for the purpose of accomplishment, the ambition to do whatever is to be done and whatever is undertaken and do it right — making personal ambition secondary to everything else — will bring about great success, providing the God-given, or inherent, capacity to do great things exists; but in any case success up to the full measure of capacity.

Without this preparation and training failure is absolutely certain.

The crying evil of the young man who enters the business world today is the lack of application, preparation, thoroughness, with ambition but without the willingness to struggle to gain his desired end.

Mental and physical strength comes only through the exercise and working of mind and body.

There is too little idea of personal responsibility; too much of "the world owes me a living," forgetting that if the world does owe you a living you yourself must be your own collector.

The cause of all this is the lack of and continual letting down of both domestic and social discipline. Convention and morals are purely a matter of discipline; discipline need not necessarily be brutal or even severe, but better brutal than none at all.

It is for the parents to see that the youth has the foundation training and discipline. If the youth is given that, he will get for himself every bit of the rest to the limit of his capacity.

Opportunities never were more plenty than now, but one must have the training and development not only to recognize opportunity but take advantage of it when recognized.

From the Annual Report of Mr. VAIL as President of the American Telephone and Telegraph Company, March, 1910.

History and Development of the Telephone System.

IN spite of repeated attempts to make known the real facts of the early history and evolution of the Bell system, there seems to be still much misunderstanding.

At the risk of being prolix, and of repeating what has often been told, the history and evolution and development will be retold as briefly as possible.

The telephone was first introduced to the public in 1876, and put to the first practical or commercial use in 1877. During that year was organized the first "association" or "company" to hold the patents. The first companies to systematically exploit the business were formed in 1878, one for New England, and one for the rest of the United States and Canada. These two companies succeeded to all the rights and property of the original association. The capital, $650,000, 6,500 shares at $100 par each, represented the patents, such rights and property as had resulted from the time and money expended up to the spring of 1878, and in addition $100,000 in cash.

Early in 1879, these two companies were consolidated into one company, the National Bell Telephone Company, the first company to attain any prominence.

The capital of this company was $850,000, 8,500 shares of $100 par value each; $650,000 in shares was given share for share for the stock of the two old companies and $200,000 in shares left in the treasury. The treasury stock was sold as the company required the money, *for the best price obtainable.* The $200,000 par yielded to the treasury $430,000 in cash, an average of $215 per share, the last 500 shares having been sold for $600 each.

It was during the existence of this company that the permanent foundations were laid upon which is built the present comprehensive system.

It was in the fall of 1879, that the settlement was made with the Western Union Telegraph Company which removed the most formidable and powerful competitor from the field.

It was during this period that those fancy flights in the prices of the stock took place, the $100 shares (of which there were only 8,500) being quoted at one time at $1,000. Few, if any, transactions took place however at this price or anything near it. The sale of 500 shares of the treasury stock at $600 per share was probably about the best price at which any considerable transaction took place.

The stock of this company was fairly well distributed among 338 holders, an average of about 25 shares each, twelve holding in lots of 200 shares or over an aggregate of 4,795 shares out of the 8,500 shares.

At the highest quotation the total market value of all the shares of the company would have been $8,500,000. According to the popular belief, over twelve of the original investors have been credited with realizing, if not more, at least as much as this.

No dividends were paid by this company.

The rapid increase in the business called for more capital. Early in 1880 the American Bell Telephone Company was organized and the business of the National Bell Telephone Com- transferred to it. The shareholders of the National Bell Telephone Company were given for each share of their stock six shares of the new American Bell Telephone Company stock. Eight thousand five hundred shares of the treasury stock were at the same time sold at par.

At the close of 1880 there were 540 holders of the 59,500 shares, an average of 110 each. Twenty holders of 500 shares or over had in the aggregate 33,190 shares. This was the last year that a majority of the stock was closely held.

In 1881 the first dividend was paid.

The American Bell Telephone Company continued the business until 1899, during which time the capital stock had increased from $5,950,000 to $25,886,300. The $25,886,300 capital was held by 6,961 shareholders; 62,649 shares were held by 61 shareholders in blocks of 500 shares or over, while the balance, 196,214 shares, was held by 6,900 holders.

The increase in the stock had been sold for cash at various times, yielding the company more than enough in premiums above par to offset the shares that had been issued for patents, inventions, and property of the National Bell Telephone Company.

When the American Bell Telephone Company transferred its business to the American Telephone and Telegraph Company there had been over $28,000,000 actual cash paid into the treasury of the company by shareholders as against $25,886,300 capital outstanding. During the time no stock dividend or dividend of surplus in cash to pay for stock issued was made.

The market price of the American Bell Telephone Company shares during the year ranged above $200 a share. The company was paying 15 per cent. dividends yearly.

The demands of the business required much larger capital than could be provided under the corporate powers of the American Bell Telephone Company. The American Telephone and Telegraph Company, a company organized to operate the long-distance traffic, purchased the business in 1899. The consideration was cash, but in effect the shareholders of the American Bell Telephone Company received two shares of the American Telephone and Telegraph Company for each share held. The dividends were put on a 7½ per cent. basis and were increased in 1906 to 8 per cent., at which rate they still continue.

Since 1900 the stock of the American Telephone and Telegraph Company has been increased from time to time as the business called for money. At the close of 1909 there were in the hands of the public $256,475,300.

So much of this stock as was not sold to the shareholders at par was sold for cash at a premium, the highest at $152 per share, or was issued in exchange for the convertible bonds at about $134 per share. None of the stock has been issued as a dividend, nor have any cash dividends been declared to meet payments for stock issues.

At the close of 1909 the premiums thus received over the par of the outstanding share capital amounted to over $14,000,000.

The original owners and promoters of the telephone were first of all business promoters. Their idea was to develop the business on broad lines. Whatever reward they expected or

received was the legitimate reward following a legitimate development of a substantial and beneficial business.

The Bell system was founded on the broad lines of "One System," "One Policy," "Universal Service," on the idea that no aggregation of isolated independent systems, not under common control, however well built or equipped, could give the public the service that the interdependent, intercommunicating, universal system could give.

This is no recent or new idea or theory. It is co-existent with the business; in fact the theory was evolved and developed before the business, and the business has been developed on that theory.

To develop the business it was first necessary to develop the "art." It was unique, nothing like it existed; the whole art of the practical application of electricity was new and undeveloped.

To develop the business to the best advantage all the best in the way of instrumentalities, apparatus and methods must be controlled. Apparatus and methods at the start were crude, but new instrumentalities and new methods were suggested from daily association, practice and study.

It was necessary to develop these, improve and reduce the useful to practice, and eliminate the worthless. For this purpose a staff of technical, electrical and mechanical operating experts must be gathered together and educated. To educate and assist these, to enable them to do intelligent work, avoid repetition and duplication, all that had gone before and all that was being done here and elsewhere must be known. For this purpose a bureau of research and information was formed. Patent and legal experts must be employed and educated to secure the advantage of this work and study, as well as to furnish protection in the use of the patents.

A highly developed manufacturing organization under proper supervision and control was required to reduce to practical use these ideas and inventions, as well as to secure the standardization and uniformity of instruments and apparatus.

To ascertain which were the best of the methods being evolved in field practice, to educate the others in the use of them, to assist generally in the development, and to bring about stand-

ardization of operating practice and methods, a staff of traveling experts, observers and teachers was placed in the field.

It is necessary to the growing and constantly improving business that this work be continued. It is being done much more economically and far more effectively by this company than it could be done by the associated companies, and without expense to them except so far as it is covered by the miscalled " rental " of telephones.

The preliminary work was certainly difficult enough. Add to that the necessity of educating a doubting, hesitating public who looked on the invention as little better than a toy, and some idea of the task can be formed.

In the promotion and exploitation of the business two methods were possible.

One company covering the whole country. This would require a large executive and administrative staff in the field, and a large capital which, at the time, it was impossible to secure. Under this method, state organizations would also have been necessary to hold franchises.

The other way was to enlist a large number of individual workers, each with some capital, large faith and expectation, with great capacity for work, who would cover the field and develop the business.

To insure a common policy and central control, all licenses were issued for small units of territory under restricted terms, confining the business entirely within each territory. The parent company owned and furnished the telephones, had all reversionary interests or rights in the territory, and the right to connect the units with each other for the purpose of forming a universal intercommunicating telephone system. For this purpose the long-distance lines and other toll lines were built. Under these temporary licenses certain rentals, so-called, or royalties, were paid to the parent company for the use of the telephones and other inventions owned, and also as compensation for all the many other services rendered, as described above. When these licenses were made permanent and included all future as well as all existing inventions, and the right to the business within the units of territory, the parent company retained an interest in the business which was represented by a stock interest in each company.

These licenses called for a continued certain percentage of the stock of the company, but this right was soon waived by the parent company.

Through purchases to defeat the attempts of hostile interests to get possession of some of our associated companies, through the necessity of financing the companies for the purpose of keeping up with the demands for development, and through the purchase of its pro rata of new issues, the American Telephone and Telegraph Company acquired its large holdings.

The book valuation of the American Telephone and Telegraph Company's interest in the share capital of the associated operating companies December 31, 1909, was nearly $306,000,000; *of this only* $16,000,000 *was received through contract or for licenses.* The balance, $290,000,000, was obtained under precisely the same conditions that shares have been received by the other shareholders.

While the settlement with the Western Union Telegraph Company in 1879 removed from the field the most formidable and powerful competitor, it must not be concluded that the American Bell Telephone Company had the field to itself. The Bell system did not then, nor did it in any year or any time since the great value of the telephone to the world was established, have a monopoly of the business or anything approaching it.

Patents and inventions were necessary for defence, but were no protection against imitators.

There was a continued running fight in the courts and in the field. The fact that the Bell won every case in the courts availed it nothing except that it was credited with a monopoly which did not exist.

The only time that the Bell Telephone was without a competitor was at the Centennial Exhibition of 1876.

Competition.

There is not, nor can there be, any competition between these local associated operating companies, as under the conditions under which they can use the instruments and inventions, they must operate entirely within their respective territories; nor can there be competition in the telephone exchange systems operat-

ing in the same territory such as exists between other public utilities, certainly not such as exists between two gas companies or even between a gas and an electric light company.

The telephone system does not give you a "commodity" or a "product," or even a "service" except so far as it is service to make up a "path" or "line" or "highway" for personal communication with a party at some distant point.

The value of a telephone system is measured by the possibility of reaching through its connections *any one — at any possible place.*

There can be said to be no limit to those with whom one may desire communication at some one time or other. Ordinarily your communications are confined to a certain few other subscribers; occasionally you may wish to reach certain others, but there are times when it is an absolute necessity to get a connection with some one possibly unthought of or unknown before, and the importance of this connection may be vital.

A purely *local* exchange has a certain value.

If it has, in addition to its local connections, a connection with outlying contiguous localities, it has a largely increased value.

If it is universal in its connections and intercommunication, it is indispensable to all those whose social or business relations are more than purely local.

A telephone system which undertakes to meet the full requirements must cover with its exchanges and connecting lines the whole country. Any development which is comprehensive must cover some territory which is not, and may never become, profitable in itself but must be carried at the expense of the whole. *It must be a system that will afford communication with any one that may possibly be wanted, at any time.* To do this the system must offer a connection of some kind, and at such rates, as will correspond to the *value* of the system to *each* and *every user.*

"Interdependence," "intercommunication," "universality" cannot be had with isolated systems under independent control, however well connected. They require the standardization of operating methods, plant facilities and equipment, and that complete harmony and co-operation of operating forces, that can only come through centralized or common control.

Wherever two systems exist, each has, with the exception of a percentage common to both, a different list of subscribers. Those of large and extended social or business connections must connect with both, while those who do not connect with both get only partial service — the same character of service offered by two street car lines, each having its tracks on and running through the principal main street of the town but each extending into and serving entirely different sections of the community.

Offering a connection with a so-called competing exchange, having a list of subscribers either entirely or largely different, is offering a different service, except so far as they connect the same subscribers, and there it is of no benefit, as either one would serve the purpose. Two exchanges, each with the same list of subscribers, cannot, in the nature of things, exist. One or the other would be unnecessary because a subscriber would be paying twice for the same service when either exchange gave all that could be obtained from both. It would be like paying two fares each time you ride in a street car to maintain a parallel line, although you could ride in but one at a time. Competition of that character increases the cost to you. Competition is only of service when it reduces your cost or increases your service.

ECONOMY OF COMPETITION.

By reason of duplications, duplication of investment, duplication of operation, competition in telephone systems cannot, in the nature of things, produce economy in operation, and without economy there can be no reduced charges.

With only one system, at once is eliminated the duplication of subscribers' lines — so also is eliminated the greater part of the unused and idle staff, equipment and plant, and with this are also eliminated capital investments, capital charges, operating salaries, plant maintenance and depreciation. That it contributes also to the comfort and convenience of the subscribers is in itself no small consideration.

WHAT HAS COMPETITION DONE FOR THE PUBLIC?

No one can dispute the fact that the Bell methods and system are the standard and have been accepted as the best the world over.

Telephone rates have fluctuated. Beginning with simple and crude instrumentalities and methods, with small developments, the rates were low. As facilities increased, as methods and apparatus improved, and apparatus almost new and hardly in use had to be discarded to make place for new and improved methods, rates had to be increased.

In the New York City exchanges, apparatus and plant practically good as new to the value of over eight and one-half millions of dollars, have been discarded because new improvements had made them obsolete, nearly all between the years 1883 and 1902, and the same is relatively true of any exchange system. As methods, plant and apparatus became more fixed and permanent, methods of operating improved, operating expenses declined, and reductions in rates followed — not because of competition.

Western Union Telegraph Company.

In taking over a substantial interest in the Western Union Telegraph Company, this company assumed a substantial obligation to the public in addition to that which it already had. To make clear the extent of this obligation and the resulting advantages, and to illustrate the various shades of relation between the telegraph and the telephone, some explanations will be interesting and instructive.

The connection or relation between the telephone and the telegraph is not in any sense one of substitution, it is supplementary; one is auxiliary to the other.

Telegraphy eliminates the time of transit of correspondence, by the electrical transmission of the text from office of origin to office of destination, but it is incomplete in that the methods of collection and delivery are slow and primitive.

Telephony eliminates distance by placing parties at distant points in direct personal communication with each other, but the expense prohibits its use for the transmission of written messages over long distances.

Telegraph operation as carried on must have a separate, distinct and entirely different operating organization and equipment from that of a telephone company.

Line construction and maintenance are common to both the telephone and the telegraph, and can be combined or performed

jointly with economy. The same wires may be used for both telephone and telegraph circuits and at the same time. The differentiation between telephone and telegraph construction and operation begins with the stringing of the wires.

Where there is density of message traffic sufficient to keep busy an expert telegraph operator, the telephone cannot be used in competition with the telegraph in the handling of message traffic, but at some point of less density of traffic the telephone will gradually supersede the telegraph in handling message traffic.

The elementary differences in the scope and operation of the telephone and the telegraph in the handling of telegraph traffic indicate that each will occupy a distinct and well-defined field:

The telegraph between centres of density and for long distances.

The telephone for short distances and for the collection and distribution between the customer and such centres.

About 65 to 70 per cent. of the telegraph traffic is between, that is, both originates and ends in, about 550 cities and towns of 10,000 or more population. The Western Union telegraph lines reach over 22,000 smaller cities and towns and villages, at most of which the commercial telegraph traffic would not of itself support a telegraph office. This business is now being performed necessarily under some joint arrangement, for the greater part with the railroad companies. While these arrangements will be continued, a greatly extended and improved service will be given in connection with the Bell system with over 5,000,000 stations located in 50,000 cities and towns, most of which will be put in immediate connection with telegraph offices at central points. *In this way the electrical transmission of messages will be extended from the actual point of origin to the actual point of destination.*

There are comparatively few places where there is business enough to warrant a "night and day" telegraph service, but there is no place where "night and day" telegraph service is maintained that is not in the centre of a "Bell system." Practically no Bell exchange is ever closed — therefore there are few subscribers of the Bell system who cannot be placed within reach of night and day telegraph service.

Under the new conditions, when in full operation, each service, the telephone and the telegraph, will find its level of use, its field of best usefulness, with a distinct improvement in, and advantage to, both services.

Such economies as follow will be taken advantage of to increase the facilities and where possible reduce the cost to the public.

Before any change can be made in the existing rates for existing service, it will be necessary to await the result of studies now being made, as it is claimed that the irreducible cost of handling is so near the revenue received for each commercial message that no reduction in rates would be justified by any probable increase in business.

Improvement and extension of existing service and introduction of new classes of service will be the first effort of all interested. The first of these will be the introduction of the "Night Letter" and others will follow.

The benefits and advantages from this complementary operation will come, but not all at once. Careful study and consideration are being given to all questions by all interested. Existing plant will have to be rearranged or reconstructed, new plant constructed on proper lines. The necessary safeguards for the protection of the company and the public will have to be worked out.

The idea of operating the telephone and the telegraph in accord, each supplementing the other, is not a new or untried one, but has been ineffective because of the lack of common influence in the control of the operations. With the employees of both companies actuated by a common purpose, this can be effectively done; without a common influence in the operation it has been practically impossible.

General Considerations.

It is the duty and obligation, as well as self-interest, of a public service corporation to give efficient service up to the limits of reasonable practicability and to furnish such service at a reasonable price.

As a rule all capital invested in any public utility is permanently invested. It cannot be salvaged to any extent, nor can it be used for any other purpose. The chance of any

return upon the capital is entirely dependent upon inducing or educating the public to make use of the service so offered. To do this, whatever is offered must be offered at a price which leaves the user a margin of profit — if not in money, in comfort and convenience — at a price which the public will accept, and that must necessarily be below the actual value of the service to the public.

Although there have been abuses in corporate management and in the manipulation of both property and securities, *for which there is ample remedy if existing laws are enforced,* yet it must be admitted that the tremendous development of utilities in this country as compared with other countries, with their contribution to the comfort and convenience of the public, is to a certain extent due to the lack of proscriptive restrictions.

The profits that have been realized by public service corporations in the development of new and beneficial facilities are insignificant in comparison with, and are certainly justified by, the enhancement of values and the unearned increment which have accrued to the public and which could not have existed but for this development.

The one attracts more attention because of its corporate character, while the benefits are of a private character, widely dispersed in smaller units and as a rule to individuals.

It is but natural that corporations should have some misgivings about a control of internal management by a body *without any responsibility that could be called accountability,* and without the practical knowledge or experience or information which comes from the daily dealings with questions; a control which would undertake to decide upon questions widely different, complex and far-reaching, over which expert managers of life-long study and experience are sometimes at a loss; a control over methods of business which usually are the evolution of years of practice, and are so interwoven with the fundamentals of business that they cannot be changed suddenly without great disturbance.

Too much importance is apt to be attached to claims of theorists or inventors, as any one can judge by comparing the wonderful promises and claims made with the results achieved.

All great developments in any line of industry have been from crude and imperfect beginnings by a process of evolution,

by improvement in detail the result of suggestion from association, operation, or study.

The original idea upon which may be founded great development may be revolutionary but it never springs full-fledged or perfect into the world.

Public utility companies have obligations and are responsible both to the public and to their shareholders. It is a responsibility with accountability. Prevent them from imposing upon the public with fictitious issues of securities, or with exactions on the public with which to pay dividends on those fictitious securities.

As to their internal management, operating methods, leave something to their self-interest, to their responsibility with accountability; do not impose upon them such control as might force upon them new methods, new apparatus, new ideas which have not been tried out, which have not been put through the crucible of practical experience. Theories and new ideas will be welcomed by any progressive corporation for without them development would be stayed, but all that is improvement must come through a process of evolution, by the gradual elimination of the useless and adoption of the useful, through experimental application modified to existing conditions.

We believe that if there is to be control, there should be protection, and that beyond the lines set forth above, any control ceases to be control and becomes management or operation. We believe that management or operation by a body without any accountable responsibility would be prejudicial to the best interests of the service and of the public, and destructive of property and the rights we are supposed to possess.

Our company has a vital interest in the proper solution of the telephone problem, and we believe that we are working the problem out on the broad lines of the greatest benefit to the public as a whole.

From the Annual Report of Mr. VAIL as President of the American Telephone and Telegraph Company, March, 1911.

Public Relations.

IN all times, in all lands, public opinion has had control at the last word — public opinion is but the concert of individual opinion, and is as much subject to change or to education.

It is based on information and belief. If it is wrong it is wrong because of wrong information, and consequent erroneous belief.

It is not only the right but the obligation of all individuals, or aggregations of individuals, who come before the public, to see that the public have full and correct information.

The Bell System gained 740,027 subscribers last year. Of the total number of subscribers over 1,000,000 were new during the year.

The American Telephone and Telegraph Company gained 4,558 shareholders last year. Of the total number of shareholders many more were new last year.

The excuse for setting forth at great length the policy, facts, beliefs and desires of the Bell System and those administering it, even to the extent of repeating much that has already been said and explaining some things familiar to many, is to inform the new public, the new subscribers, and the new shareholders.

Every fact that is stated is correct.

Every argument or reason is believed to be well founded and based on facts and is intended to be impartial.

The position of the Bell System is well known.

It is believed that the telephone system should be universal, interdependent and intercommunicating, affording opportunity for any subscriber of any exchange to communicate with any other subscriber of any other exchange within the limits of speaking distance, giving to every subscriber every possible additional facility for *annihilating time or distance by use of electrical transmission of intelligence or personal communication.* It is believed that some sort of a connection with the telephone system should be within reach of all. It is believed

further, that this idea of universality can be broadened and applied to a *universal wire system* for the *electrical transmission of intelligence* (*written or personal communication*), from every one in every place to every one in every other place, a system as universal and as extensive as the highway system of the country which extends from every man's door to every other man's door.

It is not believed that this can be accomplished by separately controlled or distinct systems nor that there can be competition in the accepted sense of competition.

It is believed that all this can be accomplished to the reasonable satisfaction of the public with its acquiescence, under such control and regulation as will afford the public much better service at less cost than any competition or government-owned monopoly could permanently afford and at the same time be self-sustaining.

The Bell System as at present constituted was evolved first through the local exchange.

In the beginning of the business it was impossible to get the necessary capital for development in any large amount. In the place of large capital, small capital and the optimism of individuals had to be utilized. Small capital, large hopes and individual effort brought about a development by limiting the size of the exchange territory given to each individual to his possibilities. In this way the country and smaller cities were largely developed before much was done in the larger cities. The capital to develop New York was estimated at less than $100,000, yet it was a long time before even that could be raised. Even if it had been possible to raise capital to exploit the whole country through one company, it would have been impossible to use it properly. The business was new. Those who constructed and operated it had to be educated. The policy of small units and individual effort, with concentration, application and resourcefulness brought a more rapid development and education than could have been had in any other way.

In this formative period, when the business was new, before distant speaking possibilities were shown, all communication was local. No two exchanges were either equipped or operated on the same lines or under the same methods, nor did they need to be; service, judged by present standards, was poor, but satis-

fied the local use; better service was not known. Later development of the toll line, of lines connecting exchanges, and of long-distance service made the deficiencies of the service glaring and the necessity of improvement imperative.

It will be remembered by many when the long-distance service was first introduced special connections had to be built for the users; now every telephone station or line can be equally well used for long-distance speaking.

With the extension of the speaking limits of the telephone over connecting lines came also the necessity for the extension of the territorial limits of the exchange systems, the necessity of standardization, uniformity of apparatus and operating methods, and an effective common control over all. The necessity for system was the beginning of the Bell System. The combination of the separate exchanges and lines into larger aggregations or organizations followed. It was necessary to have more effective organization with more effective administration and management, and with resources sufficient to make the changes which experiment and experience had found necessary.

It is impossible to define the territorial limitations of a telephone system because from every exchange center communication is wanted up to the talking limits in every direction.

This process of combination will continue until all telephone exchanges and lines will be merged either into one company owning and operating the whole system, or until a number of companies with territories determined by political, business or geographical conditions, each performing all functions pertaining to local management and operation, will be closely associated under the control of one central organization exercising all the functions of centralized general administration. But whatever may be the form of the operating organization, there is bound to be for legal purposes and the holding of franchises, some sort of subordinate state organization which will bring the business and property in each locality under the jurisdiction of the state in which it is situated and operated.

The American Telephone and Telegraph Company, which is the owner of all or part of each company forming the Bell System, is not simply a holding company. It is not a combination that has eliminated competition between the companies

controlled by it. There can be no rivalry or competition between local exchanges in adjacent territory. Those desiring the service of exchanges in adjacent territory in addition to their own can get it much better and cheaper through their local exchange. To give direct individual wires from one exchange territory into another would be impractical from the multiplication of lines and prohibitive on account of cost. The American Telephone and Telegraph Company is a centralized general administration for all the companies. It does the financing for the extension of the business. It furnishes the engineering, operating and other experts. It maintains a productive and protective organization so far as patents are concerned. It defends all the companies against all infringements. It undertakes to bring about improvements by working out the ideas and suggestions of others, both in and out of the business. Its agents keep each company fully informed of all that is going on in the field. It avoids all duplication of efforts, of experiments, of trial of new methods, apparatus, etc. It looks after the public relations of the companies. In other words, it performs all that service which is common to all, leaving to the local companies the local management. The organization is not unlike that of the United States, each local company occupying its own territory and performing all local functions, the American Telephone and Telegraph Company binding them all together with its long-distance lines and looking after all the relations between the local companies and between local companies and other companies. To have developed the telephone industry to its present state of efficiency would have been beyond the ability of any one of the local companies.

All independent systems which have been started have more or less followed the same lines, but within restricted areas, whether built by one company or interest, or by several. First, the local exchange, then the toll line to outlying points, and then the long-distance line connecting with other independent exchanges, tieing them together to form a system affording facilities for communication between the subscribers of one exchange and the subscribers of the other, but limited in scope, and without the community of interest necessary to a common system.

In other words we have the Bell System on the one side, developed on the lines of a universal, intercommunicating and

interdependent service. We have the opposition on the other side, segregated exchanges or limited systems without universality, incomplete and inefficient, neither interdependent nor intercommunicating, except to a limited extent.

Corporate Organization and Combination.

There is nothing of greater common interest, nothing which is exciting more comment and discussion at the present moment, than the questions of state control of corporate organizations and of combinations, especially of those controlling public utilities.

Corporate organization and combination are the necessary and logical solution of the problem of caring for the wonderful development which has been going on all over the world, and particularly in this country, in the recent past.

Combination only can cope with that industrial development of the present time which is far beyond the scope of individual effort or capital. In those good old times, one man, with his own capital, could carry on even the largest operations. The margin of profits due to low wages and large selling prices enabled the owners of such individual establishments to live and enjoy the best to be had in those times, and amass fortunes — fortunes relatively as large as any of the present — from an amount of gross business, the profits from which today would not be sufficient to pay the wages of a shop superintendent.

The development of the arts, the necessity of extensive laboratories and experimental departments, with technical staffs competent to keep abreast of modern progress and find out how to *utilize all of everything,* the large gross production at small margin of profit, the large capital requirements necessary to conduct business on these lines; all these place modern industrial enterprises either beyond the financial ability of any one individual, or far beyond the amount that any one individual wishes to have in any one venture.

Without attempting to discuss the history or evolution of "Company," "Corporation," or "Monopoly," and similar organizations or combinations of trade, it can be said that the first and oldest step towards corporate organization was partnership. Corporate combination is but a partnership wherein

the partners are represented by shares held in various amounts by the various investors.

These corporate organizations and combinations have become a permanent part of our business machinery; the public would not, if it could, abolish them.

Who would ever consent, or would the requirements of business allow, that the railroads between the great sections of our country revert to the independent lines that once existed, with all the consequential delays, inconveniences and disadvantages to traffic and travel? Who would be content if the telegraph business should be carried on by the transfer of messages from one to another of the numerous companies, formerly independent, but now combined and giving direct transit over the whole country?

That there has been in large measure reason or cause for the existing unfavorable public opinion as to corporations, trusts and combinations, is beyond question, but it does not follow that there is reason or cause for the wholesale denunciation and condemnation of all corporations, trusts and combinations. Nor does it follow that all that is bad is centered in or confined to those prominent in the public eye.

Many of the practices most severely condemned are but the amplification or continuance of practices or customs common in the current affairs of business, practices or customs which were not wrong in themselves, but wrong in the abuse of them.

Public utility corporations and other combinations have too frequently assumed that new laws and regulations were disastrous and ruinous without first giving them a fair trial, and legislators too often have displayed an ignorance or disregard of existing laws, spreading the idea that new legislation was a cure-all for any undesirable condition, while it was often only a political play, and the enforcement of the existing laws was utterly neglected. The results have been bad. While business will adjust itself to any condition if given time and opportunity, sudden change of conditions will result in disaster to some interest, but not as a rule to those at which the change was aimed.

There is too little consideration given to the fact, based on all experience, that no one interest can permanently prosper unless all other interests are in a prosperous condition, and to the fact that any sudden change in existing conditions will

always be taken advantage of by some one interest to the detriment of other interests in general.

The proper use of corporate organization or combination under proper regulation or control cannot be objected to.

What is and should be condemned, prevented and punished, is the abuse made of corporate machinery to the detriment of public welfare and such abuse as has been and is being practised so extensively for purely speculative and oftentimes swindling enterprises.

It is largely this abuse by professional speculative promoters and swindling security vendors, mostly on a comparatively small scale, not in any way associated or connected with the general business organizations or systems, that has been the cause of most of the popular odium surrounding this necessary machinery of business. It does not seem possible that the only way of reaching such offenders is through penalties for "misuse of the mails," but however or by whomever the remedy is applied, he who does it should receive the heartiest thanks and appreciation of the community.

The large corporate combinations which often in popular opinion are supposed to be owned or wholly controlled by some one man or some few men, are, in fact, made up of thousands and ten of thousands of silent partners, the shareholders, who are the real owners. The existence of these real owners, these shareholders, is often obscured in the shadow of some one or more individuals who dominate these companies, not by large ownership, as popularly believed, but by administrative and operating aggressiveness and successful management. The shareholding owners are in the aggregate very numerous and, in any other country than America, would be frequently in evidence and heard from, would always take an active participation in all meetings, annual or special, and would in that way protect themselves and their holdings by associating the corporation or combination in the minds of the public with the particular and separate individual ownerships, or interests in them. In this way that same protection, recognition or consideration, to which all interests, whether individual or corporate, are alike entitled, would be assured.

THE "SERVED" AND THE "SERVERS."

Under the existing conditions the corporations or combinations represent the "servers." To the shareholders, dividends represent good management and desirable investment, but to many of the community the community that is "served," profits which in individual enterprise would be considered reasonable are unreasonable and forced out of their pockets by unscrupulous management or illegal or dishonest practices.

The contest between the "served" and the "servers," the "producer" and the "consumer," between "he-who-has" and "he-who-has-not," has been going on from the dawn of civilization, from the time when some one had more of some one thing than he wanted, while another had none, or less than he wanted.

From time immemorial efforts have been made in some way to control or restrict any accumulation, in the hands or in the uncontrolled possession of any individual or set of individuals, of those things which had become necessary to public wants, and to prevent necessities from in any way getting outside that control which natural competition, or the law of supply and demand under normal conditions exercises.

There has always been and will always be the laudable desire of the great public to be served rightly, and as cheaply as possible, which sometimes selfishly degenerates into a lack of consideration for the rights of those who are serving.

On the other hand there has always been the laudable desire of the "server," or the producer, to get a profit for his service or production, which sometimes degenerates into a selfish disregard or lack of consideration for those who are served.

This conflict, which originated with the first commercial transaction or exchange, has continued ever since and will continue to the end of time.

Until the state, or condition under which society was organized, began to be complex there were very few things which were not and could not be regulated by the law of supply and demand, the law of substitution of one article for another in case of scarcity, or by the laws of competition. In the simple life, which was with the masses of the people until very recent years enforced, and is with all laudable, there were few articles

which were in themselves necessities, and of these very few which did not have alternative articles of use, or substitutes, and, in fact, there was little that was not produced by the local community or by the family. Those few things which, in the growth of civilization, and particularly by the increase of urban population, were of general use and necessity for all, those few things in which the masses of the public had an interest in receiving regularly and reasonably, soon became the object of control or regulation, and here was the beginning of and reason for state control and regulation or state ownership.

Public Control.

Public control or regulation of Public Service Corporations by permanent commissions, has come and come to stay. Control or regulation exercised through such a body has many advantages over that exercised through regular legislative bodies or committees. The permanent commission will be a quasi-judicial body. It should be made up of members whose duty it will be, and who will have the desire, the time and the opportunity, to familiarize themselves with the questions coming before them. It should act only after thorough investigation and be governed by the equities of each case. It would in time establish a course of practice and precedent for the guidance of all concerned.

Experience also has demonstrated that this "supervision" should stop at "control" and "regulation" and not "manage," "operate" nor dictate what the management or operation should be beyond the requirements of the greatest efficiency and economy.

Management or operation requires intimate knowledge and experience which can only be gained by continuous, active and practical participation in actual working, while control or regulation can be intelligently exercised, after judicial hearing, by those who have not the knowledge or experience to operate.

State control or regulation should be of such character as to encourage the highest possible standard in plant, the utmost extension of facilities, the highest efficiency in service, rigid economy in operation, and to that end should allow rates that will warrant the highest wages for the best service, some reward for high efficiency in administration, and such certainty of

return on investment as will induce investors not only to retain their securities, but to supply at all times all the capital needed to meet the demands of the public.

Such " control " and " regulation " can and should stop all abuses of capitalization, of extortion or of overcharges, of unreasonable division of profits.

If there is to be state control and regulation, there should also be state protection — protection to a corporation striving to serve the whole community (some part of whose service must necessarily be unprofitable), from aggressive competition which covers only that part which is profitable.

Governmental control should protect the investor as well as the public. It should ensure to the public good service and fair rates. It should also ensure fair returns to the investor.

A public utility giving good service at fair rates should not be subject to competition at unfair rates.

It is not that all competition should be suppressed, but that all competition should be regulated and controlled. That competition should be suppressed which arises out of the promotion of unnecessary duplication, which gives no additional facilities or service, which is in no sense either extension or improvement, which without initiative or enterprise tries to take advantage of the initiative and enterprise of others by sharing the profitable without assuming any of the burden of the unprofitable parts or which has only the selfishly speculative object of forcing a consolidation or purchase.

State control and regulation, to be effective at all, should be of such a character, that the results from the operation of any one enterprise would not warrant the expenditure or investment necessary for mere duplication and straight competition. In other words, the profits should not be so large as to warrant duplication of capitalization in the competition for the same business.

When thoroughly understood it will be found that " control " will give more of the benefits and public advantages, which are expected to be obtained by state ownership, than could be obtained through such ownership, and will obtain them without the public burden of either the public office-holder or public debt or operating deficit. It is conceded that as a rule private management is better, more economical and more efficient than public management, and much more advanced and enterprising.

The economical margin between public and private management has been shown by experience to be more than sufficient to secure the best private administration.

When through a wise and judicious state control and regulation all the advantages without any of the disadvantages of state ownership are secured, state ownership is doomed.

State control of public utilities should not prevent progress, should be sufficiently unrestricting to encourage the introduction and demonstration of the value of any new or novel enterprise, and should allow sufficient reward for the initiative, enterprise, risk and imagination of the adventurers behind such enterprises. It should discriminate between the useful adventurers or promoters, pioneers in fact, and those pirates or sharks who, on the strength of other successes, extravagantly capitalize undeveloped ideas, and exchange the worthless securities for the savings of deluded and credulous investors. Corporate control and restriction should always exist to a sufficient degree to prevent such speculative promoting, and such stock-jobbing schemes.

The regulation or control of any new or novel thing which is a mere convenience and not a necessity can be left largely to the laws of trade; such a thing, if offered, must be offered at a price acceptable to the public, who are the customers, at a price which in the opinion of the purchaser leaves him a margin of profit either in convenience or enjoyment. Under such control private initiative can be depended upon for the introduction of everything believed to have possibilities.

The combination of the promoter, investor and capitalist, with their imagination, personality, optimism and desire, has been at the bottom of every development of every kind or nature which has benefitted the human race in the way of utilities, and still is the only way in which new utilities can be developed. Whenever any great works have been undertaken by governments they have been on lines of old development, based on experience of that which has been developed by the persistent genius and application of some individual or group of individuals.

State control or regulation, to be effective, should when exercised, be accepted and acquiesced in by the public. If all the decisions not in exact accord with the desire or contention of

the public are condemned, if it is expected and required that all decisions be against the utilities controlled, if politics and political effect are to govern decisions, if decisions go for nothing with, and are not respected by the public, failure and disappointment are bound to follow, self-respecting men will refuse to act, the standard of appointments will fall and state control and regulation will become a disgrace, and the evils which it was intended to correct will multiply.

If any company gives good service, meets all the reasonable demands of the public, does not earn more than sufficient to provide for the maintenance of its plant up to the latest standard and for reconstruction of plant when worn out or obsolete, pays only fair dividends to its shareholders — if a company is only doing this its rates and charges to the public cannot be unreasonable.

Competition vs. Control or Regulation.

Effective, aggressive competition, and regulation and control are inconsistent with each other, and cannot be had at the same time.

Control or regulation, to be effective, means publicity; it means semi-public discussion and consideration before action; it means deliberation, non-discrimination; it means everything which is the opposite of and inconsistent with effective competition.

Competition — aggressive, effective competition — means *strife,* industrial warfare; it means contention; it oftentimes means taking advantage of or resorting to any means that the conscience of the contestants or the degree of the enforcement of the laws will permit. To make competition effective great and uncontrolled latitude of action is necessary; action must be prompt and secret.

Aggressive competition means duplication of plant and investment. The ultimate object of such competition is the possession of the field wholly or partially; therefore it means either ultimate combination on such basis and with such prices as will cover past losses, or it means loss of return on investment, and eventual loss of capital. However it results, all costs of aggressive, uncontrolled competition are eventually borne, directly or indirectly, by the public.

Competition which is not aggressive, presupposes co-operative action, understandings, agreements, which result in general uniformity or harmony of action, which, in fact, is not competition but is combination, unstable but for the time effective.

Competing Exchanges.

Two local telephone exchanges in the same community are regarded as competing exchanges, and the public tolerates this dual service only in the fast disappearing idea that through competition in the telephone service some benefit may be obtained both as to rate and efficiency. Competition means that the same thing, or a satisfactory substitute, is offered. In this sense there can be no competing exchanges unless each exchange has substantially the same list of subscribers, which is in itself inconceivable.

It is not telephone service *per se* that an exchange affords; it is a particular, definite telephone connection between two people which can only be given between two parties connected with the same exchange or the same system. Each of the several independent exchanges in the same community offers you telephone service, but telephone service only with its particular list of subscribers.

Opposition exchanges compete in the same way as do two street railway lines, each starting in the center of the city, running a short distance through the same main street, and then branching off, each supplying an entirely different district of the city. Those traveling only from point to point on the main street can use either line, pay one fare; there is to this extent competition — there is a choice. Beyond that, to reach the other districts, there is no choice, there is no competition; one line or the other must be taken, depending on the particular district wished to be reached.

In the case of the street car service, payment is made only to the line used, when used.

To be in a position to obtain full telephone service where there are opposition exchanges, subscriptions to all are necessary.

In all other opposition utilities, to get the full service one or the other is paid — not both.

As before said, the purpose and object of an exchange is to afford a direct speaking circuit between parties at points distant from each other, to afford a highway for personal communication between any two. The exchange gives nothing but that connection, does nothing but provide that highway of communication, and place it at the service of the two parties desiring to communicate. The actual communicating is done by the parties themselves over this circuit placed at their exclusive service for the time being. To get this service, however, both parties must be connected with the same system; if not, the telephone circuit between the two parties cannot be made.

In two exchanges each having 2,000 subscribers, Messrs. A, B, C, D, E, F, G, H, I, J, K, L, M, N are connected with one, and Messrs. A, B, C, O, P, Q, R, S, T, U, V, X, Y, Z, connected with the other. Messrs. A, B, and C can use either exchange to connect with each other, but to connect with each other one exchange with one subscription and with but one payment would be sufficient. This is not competition; this is duplication.

Messrs. A, B, C can connect with all the others on both exchanges only by two subscriptions and two payments. There is no choice; there is no competition.

Any competition between opposition exchanges is confined to obtaining new subscribers — to increasing their subscription lists. Neither the same thing nor what could possibly be called a substitute is offered. Each exchange affords that connection between the subscribers on its particular list and that is all — between Messrs. A, B, C, D, E, F, G, H, etc., or between Messrs. A, B, C, O, P, Q, R, S, T, etc. A subscription to only one exchange is of no benefit when a connection with the other exchange is wanted, subscription to the other exchange is also necessary. This is not competition in any beneficial or any other sense.

When anyone decides to become a subscriber to an exchange he does not go to the one which offers any other inducement than the ability to connect with the people with whom it is the habit or necessity of the person subscribing to communicate. If it is his habit or necessity to communicate with some or all of those on both exchanges, subscriptions to both exchanges are necessary; in other words to get the advantage of complete local

telephone service in a community, subscription to every local exchange in that community is necessary.

The fundamental idea of the Bell System is that the telephone service should be universal, intercommunicating and interdependent; that there are *certain people* with whom one *communicates frequently* and *regularly;* there are a *certain few* with whom one *communicates occasionally,* while there are *times* when it is *most necessary to get* communication with *some other one,* who, until the *particular necessity* arose, *might have been unknown and unthought of. It is this necessity, impossible to predetermine, which makes the universal service the only perfect service.*

On the assumption that a perfect telephone system must afford this direct highway of communication between any two desiring to converse, this system must reach everyone; must be universal, comprehensive. To the extent that any system does not reach everyone it is not perfect; to the extent that any system does not reach everyone, it is not in competition with the one that does; and to the extent that both systems reach everyone it is merely duplication; it is not competition.

Two exchanges may compete for subscribers, but not by offering the same list of subscribers; it would be impossible to keep the list of subscribers to any two opposition exchanges the same. One may offer a more desirable list of subscribers from your point of view than the other, therefore you will subscribe to that one, but if both offer an equally desirable list of subscribers to you then you must choose between them, or you must subscribe to both exchanges.

One may call the carriage industry and the automobile industry competing. They are in a sense, or one is a substitute in a very general sense for the other. One might say the wholesale or retail flour merchant and the rice merchant are competing, as one is a substitute for the other, but two exchanges offering different lists of subscribers are not competing even in that sense, as neither is a substitute for the other, in that on one you may have communication with certain people, and on the other with certain other people; therefore they are not competing.

Two exchange systems in the same place offering identically the same list of subscribers, if such a thing can be imagined, are as useless as a duplicate system of highways or streets in a

village not connecting with each other, but each reaching all the residents.

Physical Connections.

Physical connection. What is meant by it? And what object is it intended to accomplish?

Where there are two or more so-called competing local telephone exchanges in the same territory, each offers a particular service; each offers a connection with its particular list of subscribers.

Physical connection would connect these separate exchanges by trunk lines the same as exchanges belonging to one system are connected.

This in itself would be as easy matter in many cases, and would allow the subscriber to one local exchange speaking connection with the subscribers to the other local exchanges. A fairly satisfactory service could be given if all of the exchanges had the same general style of equipment, uniform operating methods, and if harmony and concert of action between the operators of entirely independent and rival exchanges could be assured.

But what has been accomplished? You have enabled any subscriber to any exchange to communicate with any subscriber to any other exchange. You have not avoided the objectionable duplication. You have not given service to all the exchanges for one subscription. This can only be done through merger or combination, not by physical connection. Physical connection implies separate and independent entities. For the privilege of this physical connection with the other exchanges the subscriber to any one of the exchanges must pay. This payment or toll must be more or less the equivalent of what the regular subscribers pay, otherwise there would be discrimination.

If the equipment and the operating methods of the opposition or independent exchanges physically connected are different, the service is bound to be unsatisfactory. No one of the exchanges can have any control over the operators of the other exchanges. There is bound to be strife and contention between the operators, resulting in delays and poor service. Each exchange must necessarily give preference and attention to its own service.

From the standpoint of local telephone exchange service, therefore, there can be nothing to gain from physical connection, either in economy or quality of service.

The most important matter to consider in connection with physical connection, the one that has the greatest bearing on the subject, is the character of such physical connection between telephone exchanges, and wherein it differs from regular exchange or service or physical connection between other public utility companies.

A telephone exchange does not furnish a commodity, does not transport goods, nor does it transmit messages.

What the telephone exchange does is to place at the disposition of any subscriber a telephone circuit, consisting of two wires, connecting such subscriber with another person at a distant point. This circuit enables them to carry on speaking communication with each other; it must be continuous and unbroken; it is for their exclusive use and while the circuit is at their service it cannot be used by any others desiring to communicate, or for any other telephone purpose. The employes of the exchange render no other service than selecting and connecting the wires together to form this circuit, and putting the parties in communication. To do this, and do it satisfactorily, the operators making up the circuit must have absolute control of the wires necessary for these circuits over the whole distance between the points of communication; that is, the operator at the starting point must have either control of or perfect working unity and harmony of action with all the operators of all the trunk lines and exchange lines necessary for this circuit.

These conditions can only exist where there is a strong, common interest or control.

Physical connection between independent or opposition exchanges means, therefore, the placing of the wires necessary to give it effect out of the control for the time being of the owning company and under the control of a competing, opposition company, to enable that competing, opposition company to give its subscribers the use of property, equipment, facilities, operating staff, other than its own, and for the time being depriving the owning company and its subscribers of the use of such facilities.

Physical connection demands the exclusive use of an integral part of the property and facilities and operating staff of one

company for the customers of a competing company, no matter how urgent may be the owner's necessity for the immediate use of such property and facilities, nor how small the surplus facilities beyond the owner's requirements.

If the service consisted of carrying packages or transmitting messages along with other packages or other messages, or hauling cars to their destination, or accepting through tickets or transfers from connecting or cross lines of travel, it would be very different. In such cases the property, facilities and operation remain in the control of the owning company or its operating staff; no property intended for the benefit of the customers of one company is put to the exclusive use of another company; all that is done, is the same as is done with and for all comers. The package or passenger is carried, or the message transmitted, to its destination at the convenience of the company, along with other packages or messages.

So far we have considered only the local exchange. Physical connection between independent or opposition telephone systems or between an independent local exchange and a telephone system presents not only the same but many more complications, and is far more objectionable.

To better understand what is meant by physical connection and what it is meant to accomplish, a knowledge of the evolution and development and policy of the Bell System is necessary, and what that policy and belief is.

Repeating what has been said above, it believes that the telephone system should be universal, interdependent and intercommunicating, affording opportunity for any subscriber to any exchange to communicate with any other subscriber of any other exchange within the limits of speaking distance, giving to every subscriber every possible additional facility for *annihilating time or distance by use of electrical transmission of intelligence or personal communication.* It believes that some sort of a connection with the telephone system should be within reach of all.

This is what the Bell System aims to be — one system with common policy, common purpose and common action; comprehensive, universal, interdependent, intercommunicating; like the highway system of the country, extending from every door to every other door; affording *electrical communication of every kind,* from every one at every place to every one at every other place.

To create this system has been the policy of the Bell interests from the beginning. It is the only way by which a satisfactory telephone service — satisfactory to the public or profitable to its owners — can be maintained.

The Bell System as established is as advanced and extended as the country as a whole will warrant. Its policy of extension carries it a little in advance of the public demands. In any effort to cover the whole country many unremunerative exchanges and toll lines have to be constructed and operated. Some of these will in time become remunerative; some never will, and those, for the benefit of the whole system, will have to be carried at the cost of the whole system.

Most of the opposition exchanges have been built up in a selected territory with capital obtained by the promise of, or in anticipation of large profits; as a rule capitalized far in excess of the plant value or construction cost. Subscribers have been obtained by promises of improved service at low rates. Many of such exchanges owe what success they have, where there is any success, to personal local influence or interest. Many, if not all, have been a disappointment. The day of local exchanges or limited telephone systems has gone. This is recognized and fully appreciated by those who have exploited or are operating them.

The idea of physical connection is born of a desire to get for these local and isolated competing or opposition exchanges or these comparatively limited exchange systems, the advantage of the more extensive, comprehensive Bell System. To get for the subscribers of these so-called competing, opposition exchanges the connections which their own systems do not give them, to get for their subscribers all the advantages enjoyed by subscribers of the Bell exchanges by giving them the use of a part of the Bell System.

Physical connection would force the Bell System to place at the disposal of and under the control of any opposition company, Philadelphia for instance, for the time being, one of its circuits from Chicago to Philadelphia, to connect that Bell circuit with the circuits and system of the opposition company and disconnect it, for the time being, from the circuits of the Bell System.

This is not carrying packages or transmitting messages for the subscribers of the opposition Philadelphia exchange; it is

turning over to that exchange for the use of its subscribers the property of the Bell System.

The fact that the opposition exchange could get such facilities would enhance its importance at the expense of the Bell System.

Physical connection would force the comprehensive Bell System, which has been built up with foresight and enterprise and is being maintained in its completeness at the cost of maintaining unremunerative exchanges and unremunerative lines, to turn over to, and put under control of, any opposition system for its use and benefit, for the time being, a physical part of the property of the Bell System and at the same time deprive the subscribers to the Bell System of the use of such property. Physical connection would oblige any system to construct and maintain surplus facilities and employ a surplus staff of operators for the benefit of any so-called competing or opposition — but less enterprising — company.

No possible compensation would be adequate for such service or such deprivation.

One of the arguments for physical connection is that it will stop duplication. How? All agreements as to territory, rates or character of opposition; all arrangements which would come under the head of combination or pooling; all understandings or anything that would be equivalent to consolidation or combination, must be eliminated; this is not what is meant by and is not a part of, physical connection. Leaving all understandings out of consideration what effect would physical connection have on the local opposition exchanges? Neither exchange could stop competing for subscribers. The exchange that did would soon dwindle to a point of absolute undesirability; in other words, to a point where the subscription list would offer no inducements to others to join. Consequently activity must be maintained, each exchange making every effort not only to retain all on its list of subscribers but to add more. The same territory must be covered, the consequent duplication of conduits, pole lines, central and branch offices must continue; in fact the strife or competition would have to be more severe.

It is claimed that physical connection would bring about one system, where any one telephone subscriber could obtain connection with any other telephone subscriber within the limits of possible communication. With physical connection that would be the case, after a fashion, but what kind of a system

would it be? It would be imperfect in that it would still be a dual system, with dual charges, made up of heterogeneous units of exchanges and lines, operated under independent managements with different operating methods and interests, with no common control over operators, without which service can not be satisfactory; in fact with all those imperfections that it has taken the Bell interests years to correct — imperfections which can be removed only by combination, agreement, understanding, which would be in effect consolidation.

Such demand as there may be for physical connection from opposition exchanges is a recognition of superior facilities and comes from a desire to get the benefits of those superior facilities.

So far as it comes from the public it is an expression of weariness with dual service or so-called competition.

Is there anything in practice, law or precedent that can compel one system, built upon a comprehensive basis, and trying to meet all the requirements of the public, to turn over its physical property for the use of so-called competitors — opposition exchanges built in selected territory with selfish views or motives? Is there anything to compel one to share the prosperity of a business created by enterprise and advanced policy with those who wish to appropriate the benefits of such work? Can any public utility company be compelled to divest itself of the operating control of its own property which was created for and may be needed at any time in the conduct of its own business? This is not the kind of interchange of business contemplated by the rules governing common carriers. It is not co-operation. It is pure and simple confiscation.

Telephone and Telegraph.

The relations between the telephone system and the telegraph system are complementary.

Telephone service is furnishing for the personal use of the public an electrical circuit for personal communication between distant points. Nothing is carried by the telephone company, no commodity furnished, nothing transmitted by its staff, and nothing done except to make up a direct circuit between, and place it at the disposal of, the parties.

It annihilates distance in that it brings parties at distant points into speaking distance with each other.

Telegraph service is the electrical transmission, by the operating staff of the telegraph company, of written communications for others.

It annihilates time in that it instantaneously transmits written messages between different points.

The telephone provides something to be used by the public themselves.

The telegraph performs a distinct service for the public.

A telephone "circuit" consists of two copper wires of superior construction, arranged in a particular relation to each other, forming a metallic circuit equipped with auxiliary apparatus, loading coils, etc., connected with a switchboard — all very complicated and elaborate.

A telegraph "circuit" consists of one wire at most — a grounded circuit. This wire can be divided into several distinct "circuits."

A telephone "circuit" cannot be used for telephone purposes by any but the two parties in communication, during the time of such communication, but the same telephone "circuit" can, at the same time it is being used for telephone service, be divided into two, four or even eight telegraph "circuits," each of which can be used for the transmission of telegraph messages.

While the existing telephone toll and long-distance lines can be used for telegraph purposes, the existing telegraph lines cannot be used for telephone toll and long-distance purposes until reconstructed and arranged as described above.

There are two factors which determine the cost of both services — Plant Cost and Operating Cost. The total of these costs must be distributed over the actual service performed, and the cost of each item of service, whether telephonic communication or telegraph message, varies directly with the total amount of that service. The more the capacity of the plant in service is utilized the less the cost of each particular item of service.

The plant cost is the fixed charge on capital invested in plant, the cost of its maintenance and the depreciation reserve.

The operating cost is more or less a constant initial charge on each item of service, i. e., telephone connection or telegraph message. In the telephone service it is the cost of the time of the operators in putting up the circuit or connection for the use of the parties, and getting them into communication with each

other. It is relatively small in that one set of operators can care for a number of circuits. In the telegraph service there is a large constant initial cost, for each message, made up of the cost of the skilled and expert operators on each circuit, offices with clerical and messenger staff for the collection and delivery, receiving, recording and preparing messages for transmission, insurance against mistakes in transmission or delay in delivery, etc.*

The possible use — the number of hours during which a telephone circuit can be used as well as the number of items of service, i. e., communications or connections, which can be given within those hours — is limited by the necessity of the *personal presence* on the circuit of the parties communicating; by the time necessary to get both parties on the circuit; by the time taken by the communication; and by the intervals lost while waiting for parties.

This limited capacity, together with the costly character of the telephone circuit, makes the plant cost of each connection or communication very large. The operating cost is relatively very small in that one set of operators can take care of the connections of a number of circuits.

The relatively small operating cost and large plant cost make *distance* the important controlling element in the cost of telephone toll line or long-distance service.

In the telegraph service the messages are transmitted by the operating staff, one after another, with the speed of writing. There are no lost intervals during the busy hours. The plant cost of each item of service, i. e., the telegraph message, is relatively very small, while the operating cost, for reasons given above, is relatively very large for each message.

The relatively large operating cost and small plant cost per telegraph message make distance a subordinate factor in the cost of telegraph service.

The ratio of the possible number of telegraph messages over the same wires compared to the possible number of telephone communications is very large.

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* NOTE.— It seems unreasonable that a telegraph company should have a possible liability of many thousands of dollars for a single message at ordinary rates. There is no other business where there is not some additional charge for insurance beyond a minimum.

It is possible to " telephone " messages, but while the operating cost would be somewhat larger than in the case of " telegraphing," the plant cost would make telephoning messages prohibitive over long distance under ordinary conditions. The use of the telephone for that purpose is therefore limited economically to short distances, or some situation where the plant cost would be almost or entirely negligible.

The small operating but very large plant cost of the telephone communication and the large operating but relatively small plant cost of the telegraph message limit the possibility of either being used indiscriminately or interchangeably to *very short distances, or to other particular situations.*

Under existing conditions or the present state of the art, the " telephonic " transmission of written messages cannot take the place of " telegraphic " transmission in the regular conduct of the business.

In a large way the complementary character exists in the joint occupancy and joint use for both purposes of the trunk line plant of both companies. For the general service of each the operating staffs of the telephone and of the telegraph are in every respect distinct and different, and not in the slightest degree interchangeable. Each function requires an independent operating organization, made up largely of experts in each particular business, complete in every respect. Any attempt on the part of a telephone company to do a regular " telegraph business " would necessitate a " telegraph " operating organization in addition to its " telephone " operating organization.

Before a telegraph company could do a " telephone business " it would be necessary to reconstruct and rearrange its entire wire plant; to construct and equip central offices, distributing subways and lines, subscribers' connections and stations, at a cost of several times its existing telegraph wire plant, and also to create a distinct " telephone " operating organization.

While the large economies are in the joint occupancy and the joint use of the trunk " wire plant," there are great advantages and large economies in the utilization for both purposes of other plant and operating facilities which must be maintained for a single purpose in any case, and which could bear the additional burden of the service of the other without an additional cost. There are in the distributing and branch lines of both services large plant and operating facilities which are only being utilized

to a small part of their capacities; where the business of either company is not sufficient to maintain either office or operating staff; where to maintain any office there must be utilized the office and employees of some business which has first claim on the service and attention of such employees. Under these conditions satisfactory service is impossible, and to a great degree affects the reputation of the whole service, particularly that of the telegraph. This large economic waste incident to separate service could be almost entirely eliminated by joint use or occupancy, and by bringing the business entirely under one common control or influence the efficiency and the reputation of the service could be greatly improved.

The utilization of plant and operating staff not fully employed makes it possible to collect and deliver messages by telephone and to connect exchanges and subscribers' stations by telephone toll lines with the night telegraph offices at other points.

To the extent that these waste facilities are utilized for public benefit and private profits, just to that extent regular standard service could be cheapened or *new service* and *additional facilities* given to the public.

The idea of universality has been referred to in connection with the telephone system. This idea can be broadened and applied to a wire system. We believe that the future development of the wire system in the United States will afford facilities for the annihilation of both *time and distance* by the general use of *electrical transmission* for *written or personal communication,* and will afford electrical communication of every kind of intelligence from everyone at every place to everyone at every other place. It will be comprehensive, universal.

To do this efficiently and economically means the combination of every kind of electrical transmission of intelligence into one system in order that new and additional uses may be developed and that the wire plant and other facilities may be utilized to their fullest extent.

Cheap service comes from full loads. In the wire service this can only be had by employing the plant to its full capacity, *all the time.*

In some lines of business like the transportation of passengers, where the unit of service is the car mile, and the overload capacity of the car is large, the average load can be greatly increased by making use of the " overload " during the few hours of maxi-

mum business. In no other way could the prevailing cheap fares be afforded for such long hauls.

In the electrical transmission of intelligence each item of service, the "message" or "telephonic connection" occupies the wires and the time to the exclusion of all else, and the law of increasing returns therefore works within the narrow limits of the capacity of the line. There can be no overload. *Cheaper service can only be given by the development of new or additional uses which can be distributed over the time now unused.* In the telephone business what can be done in this direction is restricted by the necessity of the personal presence of the parties using the telephone, which limits the use of circuits for telephone purposes to certain hours of the day. In the telegraph and cable business, under present conditions, it is different. There is a large capacity unused waiting to be utilized.

Expedited service means a large surplus plant to meet maximum demands, unutilized at all other times. The cost of the unutilized facilities must be borne by the expedited service. The result is high charges, due to small average load with consequent large plant cost.

Up to the present time the telegraph and cable business has been developed wholly on lines of *expedition* and the business that has been developed is such as will stand the extra cost of expedition. Theoretically at least, there should be no possibility of any further expedition, of any rush or special service, beyond what should be, if it is not now being given.

To do anything which would retard the expedition of the business as now developed would be detrimental to the social and business organization of the world; as in expedition lies the prime value of the present service.

Under a universal wire system operated on the lines and in the manner indicated above, the additional services will be given to the public at rates commensurate with the value of such services, and in the great possibilities of electrical transmission of intelligence some uses will be found or developed to absorb and utilize this enormous waste, and also relieve any congestion now suffered by the more important business by furnishing a service which would be satisfactory to such of the existing business as has heretofore had no alternative, but would prefer the new service.

The Night Letter — the first attempt — met with popular reception and is filling a definite place in the business and social world. The Day Letter, so recently introduced that its possibilities cannot yet be determined, will doubtless find its place. Depending upon the reception of these, other services will be introduced.

It is also intended to extend some of these new classes of service to the transatlantic cables as soon as it is made possible by the completion of negotiations and arrangements now pending.

Until the economies, which may result from the joint occupancy or joint use and the consequent utilization of these now unutilized facilities, are determined, there will be no changes made in the present conduct of expedited or regular service. Whether all or only part of the economic waste will be absorbed in the other classes of service is a question yet to be answered; until answered anything that might result adversely either to the quality of the service, the extension and introduction of new service, or to the reasonable profits to which the companies are entitled, would be foolish and uncalled for.

Résumé and Conclusion.

The following condensed summary of some of the principal things shown in this and previous reports is made with the purpose of taking away any excuse for further repetition or publication of those misstatements, distorted facts and erroneous conclusions which, for various reasons, are circulated from time to time.

It is shown that the total outstanding obligations of the Bell System in the United States, not including the manufacturing company, amount to $580,000,000. All the capital of the various companies composing the System not included in this consists of inter-company items and duplications.

It is shown that the book value of the property representing these outstanding obligations is $696,700,000, $116,000,000 in excess of the outstanding obligations. It is shown that in all cases of official appraisement the actual value of this plant has been found to be above the book value.

It is shown that there is no water in the capital of the American Telephone and Telegraph Company; that each $100 of out-

standing obligations is represented by more than $100 cash paid into the treasury; that the excess of cash paid into the treasury over the outstanding obligations at the close of the year amounted to nearly $17,000,000.

It is shown that the construction costs of the Bell System are small. The cost per exchange station is but $117.12. The cost per exchange station, including the extensive system of toll lines, is but $142.13. This valuation includes the first class exchanges and exchange construction. All or substantially all of the cheaper class of construction, the rural co-operative and association lines, is embraced in the sub-licensee or connected companies, constructed on the basis of giving a low-cost local service.

It is shown that the cost of construction per exchange station has steadily decreased from $199.00 in 1900 to $142.00 in 1910, notwithstanding the great increase in the investment in real estate, underground construction, toll line construction and copper wire.

It is shown that instead of increasing and oppressive rates there has been a continual decrease of the average annual charge for exchange service from an average of $44.68 in 1900 to $31.28 in 1910.

It is shown that the taxes paid in the year 1910 by the Bell System amount to over 5 per cent. of its gross earnings, 16.4 per cent. of its net earnings, and 1.4 per cent. of the value of its telephone plant.

It is shown that the control of the company is not vested in any one interest nor has it been used for the benefit of any individual or group of individuals; that the shareholders, recognizing an uninterrupted administration of their affairs in their interest have continued the Directorate on the same lines or the lines of natural succession from the beginning.

It is shown that the American Telephone and Telegraph Company is not in the accepted sense a trust nor has it been built up by absorbing competing companies or in restraint of business. That while the Bell System is made up of separate corporations, these corporations are not, never have been, and never could be in competition, and also that under any system of organization or under one ownership, separate companies are necessary for purposes of State jurisdiction.

That a universal and comprehensive telephone system cannot have any operating limits, but must give unbroken, continuous, connecting circuits under one control, from every subscriber's station in every direction to the limits of telephone speaking possibility.

It is shown that *bona fide* competition between local exchanges cannot exist, owing to the peculiarities of the service rendered by these exchanges.

It is shown that physical connection does not and cannot bring about any economical or beneficial result and increases instead of decreases the evil of dual construction and subscription.

That physical connection would give to subscribers of an opposition exchange the service and use of property provided for the use of others, and for which others pay.

We are charged with maintaining a large experimental and patent organization largely for the purpose of suppressing new inventions and improved methods. The Bell System does maintain a large experimental and engineering department, but for the purpose of developing the value and efficiency of anything that is new; what it really does is demonstrated by the fact that the construction, equipment and operating methods of the Bell System are the standard the world over. That the equipment of the exchanges of the whole world is either the same as, or is modeled upon, that of the Bell System. And that no construction, equipment or operating methods rejected or "suppressed" by the engineering experts of the Bell System have ever yet come into permanent use.

We are charged with making abnormal profits on the equipment, supplies, etc., furnished the operating companies by the Western Electric Company, and in this way increasing the cost of service to the public. It is shown that the profits on Western Electric sales to the operating companies of the Bell System are less than on sales to the independent companies, to the extent at least of the saving in the cost of selling to the operating companies.

It is also shown that the telephone service and the telegraph service are complementary, not competitive; that each has its own proper place; that joint use and joint occupancy of wires will reduce operating cost, maintenance charges and construction investment. That utilizing the unutilized facilities of both

will make possible large economies and improvements in the wire service as well as new, additional and useful services of both telephone and telegraph, for the benefit of both the corporations and the public.

An article by Mr. VAIL on "The Eleventh Commandment in Business" in the magazine, "Business," September, 1911.

"UNDERSTAND WHAT YOU HAVE TO DO."

"UNDERSTAND what you have to do — and do it," is the principle that I might designate as "the Eleventh Commandment in Business." It is the keynote from which either harmony or chaos may come.

When a man understands a thing the consummation of it is half accomplished. For he goes forth with knowledge. Knowledge is power. He has studied all sides of the proposition and is able to cope with and overcome difficulties as they present themselves. He is rarely surprised. He knows what to expect either for or against him.

One of the prime factors in producing failure is this thing of being taken unawares with a point of procedure that was left to chance, and the understanding of it not thoroughly attained. Thus the other man who has studied the thing more fully has the advantage that you lack. There is not much in chance.

Occasionally a decision of chance brings the desired result. But it is precarious — unsafe. If there is a doubt in the business mind as to the understanding of a transaction, it were better, even at a loss, to get the information that will make the matter clear. If a man realizes and has understood conditions, even though he meets with reverses it strengthens him for future action. He is not governed by self-reproach as to miscalculations.

Times without number we hear the complaint, "if I had only looked into it more closely." Often things look smooth and placid on the surface, and a hasty decision is made accordingly. And not until you have set sail do you realize the turbulent undercurrent which investigation might have disclosed.

It seems to me that here is the secret of success or failure — this thing of not only looking before one leaps, *but looking thoroughly* before so doing.

The man who is equipped with a sense of analysis and who can rightly measure the strength and weaknesses of the business at hand has the foremost faculty even in case of prospective

defeat; he can most often with a little effort make it measure up to his deduction. For his understanding creates a sense of security that makes him invulnerable in withstanding the whims of disaster. Frequently an unheralded influence not reckoned with, a slight technicality overlooked — elements that should have been taken into consideration, have been the cost of mistakes.

We do not despair of the mistakes made with seeing eyes, since we have gone into our project with full strength and willingness to abide by the consequences. But when we leave results to take care of themselves through laxity of understanding they take care of themselves accordingly, and leave you to the greater care later on.

It sums itself up, perhaps, in the " stop, look and listen " of the railroad crossing, which is the signal for going forward.

Thus the man who understands his work, and works understandingly, is he who creates the backbone of real endeavor.

From the Annual Report of Mr. VAIL as President of the American Telephone and Telegraph Company, March, 1912.

Reserves and Depreciation.

WHILE Commissions and all thorough investigators are agreed that provision must be made out of current revenue for depreciation and future replacement of plant, there seems to be some tendency on the part of others to question any accumulation of reserves.

To make adequate provision for future contingencies it would seem to be plain that in an increasing business there must also be an increasing reserve.

There seems to be a tendency to insist that "betterment" of every character shall be represented by capital issue, and that depreciation reserve should be determined with precision, and that it and all reserves beyond it represent excessive gross charges; that is, gross charges greater than are necessary for the legitimate purposes of the company.

Reserves are a provision for deterioration and obsolescence of plant beyond that which can be covered by current maintenance and current replacements, and also for deterioration of assets and for fluctuations in gross and net revenue caused by varied business conditions. If there were an exactly ascertainable condition, with which all practice is in accord, many of the difficulties and differences of opinion connected with this question would disappear.

If the plant were kept in the highest possible state of efficiency by the expenditure of current revenue for repairs, maintenance and replacements, sufficient to maintain the plant at the highest possible efficiency, it could be operated perpetually and would never have to be replaced. Between this, and maintenance which barely keeps the plant in service, there is a wide margin, and in this margin is the origin of nearly all the differences as to cost of service, and in it is the opportunity to show large apparent profits at the cost of the future of the plant.

There are, however, in the conduct of business many conditions and possibilities which can not be met out of current net revenue and should not be met out of capital, but which if not

provided for in some way would put all industrial companies upon a speculative basis.

There is that obsolescence which comes from revolutionary improvements necessitating wholesale replacements of obsolete apparatus or plant, such as the replacement of overhead systems by underground systems, or such as took place when the present method of operating was introduced. There are those fluctuations in net revenue caused by business depression which cannot be overcome by immediate reduction of fixed charges, overhead expenses or operating costs. There is that constant tendency to increase in wages and cost of material, that tendency to increase in operating expenses and capital charges caused by the constant demand for increased efficiency or service, that demand for extensions, productive and unproductive, and that call for improvements in plant, equipment and apparatus. There is that increase in costs of operating, in greater ratio than the increase in business, peculiar to some branches of the telephone service.

These and many other possibilities always confronting industrial and public service undertakings must be provided for. They are not the subject of capital expenditures, and can only be provided for by an accumulating surplus and reserves invested in productive plant or securities. If these are not provided for, trouble if not disaster or destruction is inevitable.

Any practice which does not, at the cost of revenue, pass the property on from the present to the future in at least as good a condition as received from the past, is a mistaken practice; it is using capital for the benefit of the present at the expense of the future.

The main objections urged against an accumulating surplus are the following:

1. That it is provided out of excessive charges to the public for service.
2. That it tends to extravagance of operation, on the theory that close margins tend to greater economies.
3. That it affords a way of giving exorbitant and unreasonable dividends to the shareholders by some form of distribution of the surplus from time to time.

The answer to the third objection depends somewhat on the treatment and ultimate disposition of the unappropriated surplus reserves.

If these reserves are to remain as assets of the company, *indivisible, inviolable* and *inalienable* except for the purposes above mentioned, invested in productive property, it removes the strongest and only really tangible objection to surplus of the character herein advocated.

So far as the American Telephone and Telegraph Company and associated controlled companies are concerned, the third objection can be dismissed with the statement of their policy, which is as follows:

Except where in the extension of business extraordinary risks are taken which entitle them to some extra profit in consideration of such risks, or the net returns have not been sufficient to make an adequate return, if any, on the capital, the American Telephone and Telegraph Company and associated utilities controlled by it are and will be satisfied with reasonable average returns on their outstanding capital obligations, which compared with other business investments should be about 8 per cent., and will not expect or encourage any expectation of more than this; and in those excepted instances above referred to, they will only ask for that reasonable return which any equitable commission or court would award them.

As to the second objection. The most important and controlling factors of all charges for service are fixed charges and operating expenses. All public service companies not now, will soon be under government control and regulation, and all charges and expenditures will be under the close scrutiny of these regularly constituted bodies. If this does not protect against extravagance, nothing will.

In answer to the first objection, the many and marked peculiarities of the telephone and telegraph as distinguished from other public utilities justify ample surplus reserves.

Any new railroad or plant of local transportation company, gas or electric light mains must be constructed at least of a certain minimum standard or capacity, and as the cost of construction does not increase in nearly the same ratio as the increase in capacity, a large increase of business is always provided for in the building of any new plant. Another important consideration in the size of plant constructed is, that in emergencies large overloads can be carried on plants of this character for considerable periods. For these and other reasons, additional capital

expenditure is not continuous, seldom if ever, is imperative, financing arrangements can be definitely anticipated for long periods and adapted to the most favorable conditions and times.

With the telephone and telegraph, the case is entirely different. Except below relatively small minimum units, the telephone plant is built according to the business that is expected in the immediate future, and the plant necessary for the development of business can be added as needed, and to save charges on idle plant this is done. It is sometimes advantageous to anticipate growth, and it is often but only done *when the saving in construction costs and other advantages more than balance the cost of carrying the idle plant.* There can be no overload in the telephone business, the capacity of the plant must be equal to the peak of the business and to all possible emergencies. Each increase in business calls for an additional telephone circuit and each telephone circuit calls for additional capital expenditure, and under the requirements of the business all demands for extension of service are imperative and must be met at once.

This makes necessary regular periodical provisions for financing, which must be met regardless of the general business conditions.

Another and a marked disadvantage of the telephone business as compared with other public services is that the capital expenditure for gas or electric light plant is confined to generating plant and distributing mains; the customer's connection from street to house and the inside house installation are done with the capital and at the cost of the customer.

With the telephone each additional subscriber calls for capital expenditure from the central office to the house or place of business, and for all interior installation and wiring. This interior installation, representing large expenditure, is a burden not only on the capital but on the net revenue of the telephone, from which other service companies are free. For every one hundred thousand stations gained in 1911, two hundred and seventy-two thousand stations were installed. All the cost of the one hundred and seventy-two thousand, over and above the salvage, which is variable and small at best, is a charge upon revenue, and a general charge on all permanent subscribers, which would not be the case if the interior installation were at the expense of the subscriber.

All the advantages of an unexpended surplus reserve, which remains invested in an inalienable asset of the company, namely in productive plant, accrue to the public by the reduction of revenue which it is not necessary to earn to meet the capital charges, as the plant which is constructed out of these surplus reserves does not represent capitalization.

Among the more important advantages to a company of a large surplus represented in the fixed assets are the following:

It strengthens the company's credit, enabling the company to make its interest and dividend payments uniform and dependable.

It enables the company on the strength of this credit to obtain its capital requirements on the most favorable terms.

It enables the company to ride out commercial and financial disturbances which might otherwise cripple or destroy it.

It enables the company to maintain at all times the highest state of efficiency in its operation, which would be impossible for any company which is obliged to adjust its more or less inflexible operating expenses to the constant and inevitable fluctuations of business.

It is a reservoir, as it were, which, supplied by a fluctuating stream of gross revenue, enables the company to maintain even and uniform disbursement for service, maintain a uniform operating organization, and that high state of efficiency which can result only from a permanent operating force.

To reduce rates as fast as any surplus is created, to forbid any application of revenue to the betterment of plant, to insist that new capital shall be provided for such purposes, would never be thought of in any private business and should not in any corporate business, particularly public utilities, subject to other regulation and control than that of actual ownership. In individual or partnership business all revenue beyond stipulated amounts is left in the business, is a reserve, and in addition there is that reserve consisting of the entire assets of the individual. This is the basis of business credits.

The only sound conclusion that can be reached after full consideration of all the various phases and factors of the problem is, that ample reserves should be provided to meet not only probable happenings but possible happenings, and that such reserves should be so invested that whatever increment or revenue is to be derived from the amounts unexpended or not

used for the purposes intended will go to the public in reduction of charges for, or in improvement of, service, and that the value of a public utility plant should be represented by a relatively small percentage of outstanding securities calling for fixed charges.

No expenditure which does not produce increased net revenue should be capitalized.

Any public service plant which is represented by relatively small outstanding capital obligations is stronger, can better meet its public obligations, and so long as the surplus is inviolable and inalienable as above defined, and the company under government control and regulation, the greater the ratio of surplus and reserves to plant, the nearer we get to all the supposed advantages of public ownership without any of its risks, while retaining all the advantages of private management.

Public Relations.

Our views on the relations between industrial or utility corporations and the public, particularly our own relations, are so simple and direct as to seem almost commonplace, and to make reference to them seem like repetition. It is, however, only through repetition that we can be sure of a thorough understanding, and it is only by a thorough understanding that we can get that well-informed, intelligent public opinion that we desire.

We believe that our company has a most vital interest in, and that our future success and prosperity depend upon the working out of the telephone and telegraph problem in a way that meets with the approval of the public as a whole.

We believe, and we think the public is fast coming to believe:

"That telephone service to be perfect must be universal, intercommunicating, interdependent under one control, and that no isolated section can be considered independently of any other or of the whole system, and that rates must be so adjusted as to make it possible for everyone to be connected who will add to the value of the system to others.

"That the highest commercial value of the telephone service depends on its completeness, on the extent and comprehensiveness of its possibilities of intercommunication not only between

individuals but between aggregations of individuals, *i. e.*, communities."

We believe that we are working this problem out on the broad lines of the greatest benefit to the public, and that this is evidenced by the fact that our standards and lines of organization and operation are the standards the world over.

As a corollary to this — we recognize a " responsibility " and " accountability " to the public on our part, which is something different from and something more than the obligation of other public service companies not so closely interwoven with the daily life of the whole community.

But, in admitting this responsibility and accountability on our part, we must insist that the measure of it shall not be determined by impossible standards, *that equity and fairness shall be, and personal and political exigencies or partisan advantages shall not be,* the basis of judgments and requirements.

We cannot conceive of anything more unfair than was the spirit which actuated a minority — small, it is to be hoped — of a political club which stands for high purposes, when it was proposed to pass a resolution recommending " such action with regard to telephone rates and service as shall strengthen the party before the people of this state."

The same spirit actuates bodies or committees undertaking to legislate on service corporations when report after report of independent experts employed by those bodies to examine and report conditions on which to base action is objected to and rejected because the reports do not conform to their preconceived ideas of political desires or interests, and at the same time these bodies openly demand a report that does conform to their ideas.

This is only illustrative of the tendency on the part of individuals or temporary bodies, without any, or at the best with a very superficial or partisan, knowledge, often prejudiced by their own interests, to attempt to pass on complex business questions.

In our relations with permanent bodies of control and regulation during the past year, we have had so little in the way of difference or difficulty as to be almost negligible. In presenting or defending our cases, we have tried to be governed by equity to ourselves and consideration to the public in every way, and

have given such full reasons and such full facts to substantiate our cases that the only particular differences were those bound to exist between a public commission and a corporation, each trying to do what was best from its point of view.

Wherever we have had serious difficulties with representative bodies or the public, it has almost always been because those representing the public or legislative bodies were of temporary nature.

In all such cases we have presented our side with the same care as to the rights of ourselves and consideration for the public as in cases before permanent bodies. As a result our position and claims have been conceded and sustained, or if not, and it has been necessary to resort to the courts, we have in most instances been satisfactorily vindicated.

This only emphasizes the fact that all regulation and control of corporations serving the public should be by permanent bodies, judicial in their attitude, equitable in their purposes and actions, governed by a few simple laws based on the rights of the individual, the corporation and the community, and applied after the fullest examination and consideration.

The opinions and the facts that controlled or influenced the judgment should be matters of record, with the constitutional right of appeal in the corporation.

Temporary committees of bodies legislative in their functions, though trying to assume a judicial attitude, do act from an entirely legislative and sometimes political standpoint. Their decisions are frequently contradictory, irreconcilable and impossible, even when these committees are composed of fairly disposed men. Nor is this any reflection upon such committees. Their inability arises from the manner of their selection, the temporary nature and selfish interests of their positions, the engrossing nature of their many other duties, and the lack of time to familiarize themselves with questions involving years of practice and experience.

GOVERNMENT OWNERSHIP.

The discussion of the government ownership of the wire companies is not likely to become anything more than academic, at least for the present.

Even if the final conclusion should favor government purchase of all wire plants, there would be no unfavorable conse-

quences to the shareholders of the wire companies other than the obligatory liquidation. Any possible award for the property which the security holders would be obliged to accept would give them better than current prices for their securities.

It is, however, highly desirable that if there is to be discussion, it should be on the right lines and that whatever be the conclusion it should be reached after a full consideration of conditions as they exist, and of the practical experience of other countries, and not be based upon theories, expectations, prophecies, promises with no power to fulfill, or wrong ideas of existing conditions.

It is only in comparatively recent years that the present prevailing theories of mail service have been evolved, and the free interchange of communication, of intelligence, ideas and personal information has become a fundamental necessity to our modern civilization with its scattered and widespread family and racial interests; it is now established as one of the obligations of modern government. Expense is the last consideration, while unformity, extent of service, absence of discrimination and equal facilities for every one and every place are over and above every other consideration. No matter how much the costs in any particular service may vary, charges for the same classes of service must be uniform, moderate and within reach of all. Every one and every place must be on a plane of equality regardless of varying conditions.

The use of the mail service is so widespread and general, and its availability of such national importance, that whether it should be at the expense of the general revenue of the nation or of the specific revenue of the service is immaterial; even economy and efficiency are secondary to the inviolability, the freedom from espionage, from suspicion of private gain or benefit, from restrictions tending to limit its use.

It is a service that must be maintained by the whole for the common benefit of the whole.

Quite a different proposition would be the government operation of the telegraph.

Instantaneous and immediate transmission of communications is as yet a convenience or luxury, although under modern methods of business and commerce, it is an economical alternative to the cheaper mail service in business operations. The use of the telegraph may be a popular convenience, but it is

not a necessity and is still confined to the comparatively few, and for that reason should be at the cost of the few that find benefit and profit in that use. The ratio of the use of the mails to the telegraph is nearly 100 to 1, and less than 5 per cent. of the whole population use the telegraph.

The Post Office Department is an organization for the operation of the mail service over and through transportation facilities under private ownership and operation. The mails are taken from and delivered at the post-office by the transportation companies, and despatched on trains over which the Post-office Department has no control or concern whatever. The Post-office Department has its own problems peculiar to its service, many of them intricate and vexatious, but none such as are connected with the operations of a transportation company. There is no capital investment for transportation plant and relatively little for equipment. In the few instances in other countries where there is government ownership of transportation facilities, it is not because of or on account of the mail service.

Government operation of the telegraph would necessarily require the ownership, maintenance and operation of the transmission facilities and equipment, as well as the solution of many complex problems incident thereto, including that of profit and loss, all new to our form of government. Hundreds of millions must be invested in purchase or reproduction of facilities, all the charges on which, together with other costs, must be met out of the revenue from the service or become a charge on the general public revenue — all for the benefit of the comparatively few who would directly or indirectly profit by the use of the service.

The question of success or failure in any enterprise rests almost entirely with the organization. To create any new organization of such magnitude would be most difficult under favorable conditions, but the conditions which must control under government ownership would make doubtful the creation of an efficient and economical organization, or the profitable operation of a business which even under private operation has such a small margin of profit.

If the telegraph could take the place of the mails in popular use, all considerations other than public convenience might be brushed aside, but this it can never do; the great part of ordinary correspondence must be secret, it must be the written per-

sonal communication that is transmitted. The correspondence must not be limited in length or restricted in vocabulary, and in the ordinary affairs of life the time of transmission is relatively unimportant. The telegram may be used as an alternative but never as a substitute for the mails in the uses peculiar to them.

Immediate or instantaneous transmission of communication will always be relatively expensive, in that transmission facilities must be adequate to the maximum requirements at any time, with idle, unused facilities most of the time as a consequence. Overloads can only be taken care of by delay, which takes away all there is of value in immediate transmission.

The only possible way in which a telegraph service intermediate in value and cost between the mail and the telegraph can be given is by maintaining rates on instantaneous business at a point which will meet the entire fixed charges of the plant, in addition to the other costs of that particular service. All who make use of such service can well afford such charges; dispatch and efficiency are the only considerations. The idle intervals can then be employed for particular services at popular rates, based on operating costs and a small margin of profit.

The inevitable tendency under government ownership towards reduction of rates and uniform charges for all classes of service, would be destructive of profit in operation, and would make possible any popular services only at a cost of the general revenue.

In the arguments and prophecies that are being used in support of government ownership, history is but repeating itself. The same undervaluation of existing plants, the same exaggeration of the profits, the same optimistic and exaggerated statements of what would be the results of government operation that were made in favor of government ownership in other countries are now being made.

The facts are, that there is hardly a telegraph or telephone system in the world now operated by any government which shows a profit, even under accounting methods employed, and not one that would not show a deficit under accounting methods obligatory upon private enterprise. For authority, see any department report of any government telegraph system.

Another consideration, much misunderstood and often misstated, is the supposed superiority and cheapness of service in other countries.

Taking the kind and quality of service, the extent of territory covered and the wages to employees, there is no service in the world cheaper than the telegraph and telephone service of the United States. For authority, see statements made by departmental heads and reports of commissions of the various governments of Europe, and more recently of Manitoba, and the experience of travelers and business men the world over, and the statement of the Postmaster-General of Great Britain who said in Parliament that if he could have the charges made in the United States, he could give as good service.

There is not a single instance of telegraph or telephone companies operated by private corporations in competition with government operation, where the private service is not better than the government and profitable, against unprofitable government operation, if untrammelled by government interference.

Telephone and Telegraph.

The inter-operations of the telegraph and telephone systems are improving rapidly. The collection and delivery of telegraph messages by telephone is becoming popular. Telegraph facilities have been largely extended, and will soon be much further extended, by agency telegraph offices established at telephone toll stations, and by the connection of the telephone system with telegraph "all-night" offices. All these innovations have been of convenience and advantage, and in case of emergency a great benefit, to the public, but they have not as yet been productive of economy in operation or of profit.

The Western Union system is to the telegraph situation what the Bell System is to the telephone situation, in that each tries to give a comprehensive universal service, but the comparison ends there.

The Western Union has over 25,000 offices in over 21,000 places, and in addition many thousand agency offices at the toll stations of the Bell System. From less than 2,000 of the 21,000 places, with an aggregate population of about 40,000,000, over 90 per cent. of its entire revenue is obtained. Nearly 17,000 of the 21,000 places have an average revenue of but slightly above $10 a month with a maximum of $50 a month. Some joint operating arrangement, generally with the railroad telegraph service, has been made for these and many other

places where the revenue is insufficient to maintain an exclusive Western Union office. The increasing demand of the railroad telegraph service upon its operators, and because their first duty is to the railroad service, places the commercial telegraph service in a secondary place, which, with the best of intentions, is not conducive either to promptness or efficiency.

The Bell Telephone System has scattered over the whole territory exchanges or toll line centers from which radiate subscribers' circuits and branch toll line circuits. These centers are connected with each other by toll or long-distance circuits and constitute the telephone system. The toll circuits of the telephone system reach 70,000 places. At most of these places and upon substantially all of these branch toll circuits, and on many circuits connecting into the intermediate stations on trunk lines, there is not enough business to occupy fully either operators or wire facilities; were it not for the indirect advantage to the whole system few, if any, of them would have been established. While the telephone cannot be used interchangeably with the telegraph instruments in the transmission of messages over busy circuits by busy operatives, the "not-busy" operatives and circuits could be used for telephone and telegraph service "alternately" instead of "simultaneously," as there is not enough business to justify such circuits being "composited," *i. e.,* arranged for simultaneous use of telegraph and telephone. The joint use of such lines and operatives would be a source of economy. At busy offices and on busy circuits, the circuits could be "composited" for the simultaneous use for telegraph and telephone purposes. Each service would require its distinct operating force and its distinct offices, as the services rendered by the telegraph and the telephone are functionally and fundamentally different although both use wire circuits. The telephone makes up a circuit and places it at the use of the customers, who do the communicating; *i. e.,* it leases its circuits to others for personal communication. The telegraph by its own operators performs all the services of collecting, transmitting and delivering messages; *i. e.,* it transmits over its circuits, for others, personal communications.

The great economy and advantage would come from the "compositing" or simultaneous use of one system of circuits for the two services, eliminating entirely one of the wire systems. The advance in the state of the art of "compositing"

lines for joint use of the telephone and telegraph has been very marked in the very recent past.

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The existing wire mileage of the present telephone toll circuits and telegraph plants, brought up to standard construction with some provision for deficiencies or extensions, if "composited" or used jointly, would for all practical purposes be the equivalent of two plants each of the same mileage, one for telephone and one for telegraph; or to put it another way: the wire mileage necessary to give the same service need be about half the combined wire mileage of the two systems separately operated as now.

The annual gross revenue from either a telephone or a telegraph system should be approximately 33 per cent. of the total cost of, or the investment in plant. If in two systems of equal size one plant were eliminated and both services were performed over the other, the percentage of joint revenue to plant would be substantially doubled, or 65 per cent. To put it in another way: The maintenance of a wire plant costs about 30 per cent. of the annual gross revenue from that plant. The simultaneous use of a plant for both purposes would mean maintenance of one wire system against the doubled revenue from both services, or a decrease in maintenance alone of about 15 per cent. of the gross revenue. In addition to these savings there would be the savings of the capital charges and of taxes on plant which would be made unnecessary. This brings within the realm of possibility a reduction of from 20 per cent. to 25 per cent. in the gross charges or gross revenue without affecting the profits of the business.

In order to avoid confusion it must be distinctly borne in mind that the telephone service referred to here is the toll or long-distance service and not the circuits of the exchange service which could not be used for any other purpose. This toll or long-distance service is so intimately interwoven and interdependent both in operation and use with the telephone exchange service that it could not be separated, but the operation of the toll circuits in connection with the exchange circuits would not interfere with their use for telegraph purposes by a regularly organized telegraph staff.

These are the possibilities, fraught with all sorts of advantage to the public. Some of them are so clearly without the "restrictions" of business operation that they can be put in operation as fast as the physical changes can be made in the plant, but those of the greatest advantage, prudence would dictate postponing until after these business restrictions are made clearer or more definitely interpreted.

Address by Mr. VAIL at the Commencement Exercises of the First Graduating Class of the Lyndon Agricultural School, Lyndon Center, Vermont, June, 1912.

GRADUATES: For two years most of you have been busy learning how most effectively to do things, how to combine intelligence with your work.

Work in itself, without any other thought of what you are doing than to get through as quickly as possible, is mere drudgery — it is unpleasant and disagreeable, but on the other hand there is no work which cannot be made pleasant if you are interested in it and your mind is on the purpose of your work.

It is not only that work in which you are interested will have a wonderful effect on the enjoyment and happiness of your life, but also that work performed in that way will be useful and profitable.

Every bit of intelligence and interest you bring to your work adds to the pleasure, the ease and the profit of its doing, and as we are all obliged to work, these are most desirable things to have accompany and as a result of our labor and effort.

We are all apt to indulge in hard luck stories and thoughts, to dwell on our difficulties, and our bad luck, to think of the hopelessness of our getting on or bettering our condition. Always keep in mind that every one has difficulties, every one is surrounded with unfavorable conditions, and the more one thinks about them and dreads them the harder they seem. The easier one's life is, the greater the apparent troubles. Trouble and worry are the easiest and most prolific crops one can cultivate, but like all easy things useless. Real difficulties are as a rule surmountable, at least they have to be overcome but once; imaginary difficulties, inexhaustible and have to be overcome many times.

If you have your health and strength, and cultivate the capacity that you are endowed with to its greatest possible extent, and exercise it properly, there are few difficulties you cannot overcome or few obstacles you cannot surmount in obtaining your share of the good things of this life.

Every one of you cannot expect to reach the top notch of fame or riches, but with a predisposition to do the best you can

and make the best of everything, each of you can get all that is necessary for the highest enjoyment and happiness in this life. Enough is as good as a feast — in all material things enough is all that you need, more than enough brings with it care and trouble, worry and anxiety. All experience teaches that the highest enjoyment in life comes through simple sources, sources at the command of every one, and if you have all the enjoyment one can have, what matter if you have practiced sensible thrift and reasonable economies.

If you have the ambition and ability to do great things and your paths in life lead in that direction, remember that the enjoyment comes in accomplishing, not in fulfillment or after enjoyment. This is not only true of great but of small things. Each step in the progress of your work should bring with it the daily enjoyment and satisfaction of something done, some progress made. If you take this view of life and work you cannot fail to be successful.

Remember also that every bit of reward over and above the daily wage or your daily sustenance comes because of the intelligence, the direction, the organization, which enables you to save labor of yourself and others or to accomplish more with the same labor, or to produce something new which will add to the comfort of man. Mere ordinary labor only will produce that which will sustain us — it is intelligence accompanied by industry that produces more than this. Make your rule of guidance, industry controlled by intelligence and combined with thrift and economy. Economy of labor or economy of money are equally effective. Expend all in the shape of either labor or money that is necessary to accomplish, acquire or produce anything, but do not waste or throw away even a trifling amount.

Do not expect to jump into success. It is only by patience, industry and application that you can accomplish anything.

Do not try to live by your wits. Do not try to get something for nothing. You may succeed occasionally but you cannot permanently, and you lose more in self-respect and reputation than any profit can balance. Never make a trade without giving the other man that which is as valuable to him or which is as desirable to him as that which you receive is to you.

And now, as you go forth to your homes and to your real life, try to improve upon all that you take with you. Set an example of what such teaching, and such industry as you bring to bear

upon your work, will do. By showing others by your example what modest effort and right ideas will bring in the way of all that is desirable in this world, you are giving others the greatest aid and comfort that you or anyone else can give. By helping to teach others how to take care of themselves, you are doing the greatest good that can be done to others. Let charity be confined to those unfortunates who have not had the opportunity or capacity or ability to do what you can do, and by teaching all who possibly can be taught to take care of themselves, you have lessened the demand upon others by a great amount and made all those who otherwise would be objects of charity, independent, self-respecting citizens.

An Address by Mr. VAIL before the Merchants' Club of Boston, Massachusetts, in February, 1913, as reported by the Boston *Herald.*

THE TRANSPORTATION PROBLEM OF NEW ENGLAND AS A FACTOR IN ITS PAST, PRESENT AND FUTURE DEVELOPMENT.

THIS paper is intended to present existing conditions in New England, a sketch of the changes which have taken place in the past, together with some personal ideas as to what should be done to make a greater New England. It is presented by a citizen of New England greatly interested in its development and future position. It is presented by one who has been for years closely identified with Boston and Boston's interest, and who believes that the interests of New England and Boston are identical; that a greater Boston depends on a greater New England.

It is not intended to be controversial or to rouse discussion, but to rouse deliberation and consideration.

In this consideration the railroad situation is one of the, if not the most important factors, and, knowing that there are wide differences of opinion on this matter, you are asked to exercise a little patience and not to condemn any part until you have heard all and given it all your careful consideration.

THE RAILROAD SITUATION.

New England for the most part is by natural lines, by habit, tradition and custom, tributary to Boston, and if this is ever different it will be the fault of Boston. Whatever the country as a whole may contribute it will be small as compared with what the trade of New England will make of Boston either as a port or as a commercial centre. In this territory lies the substantial basis and the foundation upon which Boston's present and future prosperity must rest, and it is essential that this territory be developed to its utmost extent. A greater Boston and a greater New England are indissolubly connected and absolutely dependent upon each other.

New England was, up to recent times, within the life of men now living, self-supporting in that it produced nearly everything needed for home consumption. The agricultural interests prospered. Its hills were covered with varieties of forests that made the most valuable lumber. On the valley streams were located small manufacturing industries; at falls of the larger streams, great industrial centres grew up, in which were developed the principal manufacturing industries of the nation in certain lines. Its shore and deep sea fishing interests were unsurpassed. Its shipping interests covered the seas of the world with its ships.

Then came the destruction of old conditions and the creation of new ones.

The Effect of the New West.

The new West, with its free and virgin lands and cheap methods of cultivation, with its vast and free grazing plains brought near by the cheap transportation of our developing railroad systems, placed the New England and all eastern farmers out of competition and depreciated or ruined not only New England but all eastern agricultural interests. If the New England farmer remained on his farm he cultivated little or nothing beyond his own necessities. His hay crop was shipped away year after year to the detriment of his land. Orchards were neglected, the dairy abandoned and products of the farm were hardly sufficient for home and local consumption. Its lumbering interests in a large way suffered from the destruction of new growth through indifferent, careless methods of forestry and from forest fires followed by the denudation of the soil of the hillsides.

Its old style shipping business was doomed by the introduction of steam and the new methods of business brought about by steamship transportation and electrical intercommunication. Its destruction was accelerated by the Civil War and finished by the opportunities of a greater profit to capital in the development of the great western empire than could be obtained in the shipping business under the new conditions and methods with its increasing competition and diminishing margin of profits.

Thousands of the small manufactories on the smaller valley streams disappeared before the gradual increasing inadequacy

and the ever-existing unevenness of water power; the introduction of improved machinery and the increase of machine production as compared with manual production, and the steady contraction of the margin of profits on units of products resulting from new inventions, scientific methods and high organization.

Centralization Rapid.

The centralization of all kinds of production and manufacture proceeded rapidly. First home production for home consumption gave way to local production for local consumption, which in turn gave way to centralized concentrated production for widespread and general distribution and consumption. Dependence on local conditions, such as natural power, the vicinity of fuel or of raw material passed away. It is now possible to bring fuel or raw material thousands of miles to some manufacturing centre — originally located because of some natural condition — there to be turned into a finished product to be distributed and consumed at the very source of the raw material.

The opportunities in the new West and in the large centres where commercial and manufacturing interests were concentrating, not only attracted the capital but many of the best and most promising of the youth of the new generations who helped to create and develop the new western empire and these various industrial and commercial centres.

All rural New England suffered, and only urban New England showed any prosperity.

About all of that which made the greatness and prosperity of old New England that was left was its manufacturing interests, and these only because in its manufacturing methods New England kept in advance of the times. Effort and study devoted to improved methods and invention, which produced improved machinery and tools was encouraged, protected and rewarded. The needs of the world were studied and its wants anticipated; a mechanical and manufacturing instinct was developed. Its manufacturers kept ahead in all that was finer and better in quality and style, and were in the lead in the creation of new inventions and novelties and in the introduction of improved machinery and advanced methods.

The development of the stream highways of communication both in efficiency and cheapness, to a point unique in the world,

has revolutionized the commercial and social intercourse of the world and brought about entirely new conditions, which the telegraph and telephone have emphasized and made permanent. New economic laws have been created and old laws, traditions and precedents made valueless.

The Change Misunderstood.

The revolution has been gradual, insidious and complete and to a great extent misunderstood. To our efforts to stretch and patch the old traditions, precedents and laws to make them fit new conditions, most of the present confusion and disturbance and unsettled conditions are due, and the unscrupulous practices that will always be indulged in under lax enforcement of the laws and conventions of society are responsible for the rest.

Always bear in mind that outside of simple and vulgar robbery or swindling about all the evils of business we are trying to correct are done under the guise of legitimate methods, are simply the abuse or perversion of legitimate and common practices in business. These cannot be stopped by prescription. It is simply impossible to draw such close distinctions or make such exact definitions that the enforcement of the letter of the law would not harm legitimate business. Such abuse can only be stopped by holding all those who abuse legitimate methods to a strict responsibility and accountability for the results of their acts.

The students of economical conditions place too much dependence upon the practices and experience of the centuries of almost unchanged conditions of the past, and there has been too little experience as yet with the rapidly changing conditions of the present, upon which to base any new conventions or government or control. We must take time to work them out. Whatever the defects of our past commercial and economic practices and customs, we must not forget the results. The wonderful possibilities of our inheritance have been changed into tangible realities, and we are enjoying a well-distributed wealth and prosperity for all, such as has never been equalled. Our people have a purchasing power not equalled by the same number anywhere on the face of the globe.

New Opportunities for New England.

Great changes have taken place and new opportunities have opened up for New England. The western farmer, having exhausted the virgin richness of his soil and having to provide for the capital obligations as well as the depreciation of his farm, cannot produce any cheaper or better now than can be done in the East, and not only has the cheap production come to an end, but over-production as well. The consumption of all those articles of food, particularly those which can be produced in New England, has overtaken the production. All the products of the farm and orchard or garden, due to increased consumption and the purchasing power of the masses, are in such demand that prices are no longer at or below cost, and the New England farm is fast responding to these changed conditions and will continue to if the cheap products of Canada are not allowed to take the place in our economic conditions that the new West has grown out of. Remember one thing — that if prices are higher, there is a greater demand at those prices than there was at the lower ones, which indicates an increase in purchasing power greater than the increase in price. While the agricultural interests are but one of the many lines of development, in ultimate possibilities and influence on the development of New England they are great in importance far beyond the amount of gross production. Whatever is raised in New England and consumed in New England increases the wealth of New England. The manufacturing interests with their present position and existing methods, if not hampered with unwise legislation, can certainly not only maintain, but can increase their supremacy. The quarries of New England, thanks to our cheap transportation, are supplying all sections of the country with fine marble, granite and other products and are capable of still greater development. The hillsides and waste lands can, under a fostering care, be reforested and become of great value. Another feature of New England is its possibilities as a summer and winter playground as yet but partially developed. Its upland valleys, its hills and mountain scenery, its variegated coast and seaside attractions of natural beauty are unequalled, and its rock-bound and wonderfully wild and variegated coast and seaside attractions have no superior in the world.

Approaching the New England development from the standpoint of the importance of Boston as the commercial centre of New England and an important commercial centre of the United States, what is the situation to be met and how best to meet it?

Much depends on the railroad situation. You must not forget the conditions from which the present railroad situation was evolved; if you do not, and will consider for a moment what a change for the better has come, some good may come with your help. The New England railroad system originally made up of a few trunk lines, over which everything must pass, many of them running through a prosperous country and growing towns with a highly concentrated and profitable traffic on the one hand, on the other hand an infinite number of branch lines and extensions running through a rural and comparatively undeveloped country, and into the head waters of valley streams, many of them originally lumbering roads, each with a business limited by natural conditions, hardly sufficient to warrant their continuance even at the high tariffs prevailing on them. It was largely a system of trunk and branch lines with trains congested and overloaded at the start and diminishing as to trainload and carload until there was only an engine with a combination or passenger car, with the crew of the train as passengers. Inward bound the same conditions reversed. A succession of junction points with the incidental delays to receive cars and passengers from belated trains of branch lines run often without regard to the time table or connections or convenience of the public. While this has been partially remedied, it is far from what it is hoped to make it.

It must be remembered that the unit in transportation is the trainload or the carload. Full loads and continuity of haul and uniformity of traffic make for profitable operation. Starting with nothing at one end and accumulating a load or a partial load at the other makes average revenue per train or carload small, while the expense per train or car is only slightly affected.

If the tributaries of those lines, the feeders or extensions as it were, which have the sparse traffic, are independent in operation and ownership of the trunk lines or the lines of congested

traffic, there is neither in the service they can render nor in the rates they are forced to charge much to encourage the development of the sections they serve, and in the financial results nothing to encourage investment in improvements or extensions.

Compare the present facilities with those of the past, and it is to be hoped forever past.

What the Old System Was.

Was Boston or New England any better served when served by two companies between Portland and Boston, or by three or more independent corporations operating the lines from Boston to northern Vermont or New Hampshire, or between Boston and New York? Was it any better off because of the high rates and poor service which many of us seem to have forgotten? Our memory of old and primitive conditions, when enjoying improved conditions, is very poor. The favored lines enjoyed a monopoly of the trunk business. They were in the position of the "neck of the funnel" through which everything passes. They enjoyed a concentrated traffic and got all the profits of the traffic which the outlying independent and branch lines turned over to them, while the public served by these branch and feeding lines were served in an indifferent and unsatisfactory manner at exorbitant rates, and even at these rates the business was insufficient to pay operating expenses.

Did these undue profits of some lines in any way contribute to develop the branch or feeding lines which helped to collect and distribute the traffic, or help to extend these lines into new territory, or maintain upon them good and efficient services? Was the public any better served by this segregated aggregation of trunk and branch lines than it is now? Was it to the interest or advantage of New England or any part of it that those lines serving the outlying territory were bankrupt, poorly equipped, poorly constructed and most undependable in their operation? Did the fact that the public was called upon to pay the then prevailing excessive local rates for unsatisfactory service work for the development of New England?

Such conditions may encourage the building of trunk lines to share the prosperity of the existing ones, and to be an additional burden on the community, but it does not develop the

territory and is probably the cause of quite if not all the inherited distrust and trouble in the railroad situation.

Would you go back to the day when a good part of the railroads of New England were the plaything of speculators, the victims of receiverships and reorganizations? Was it of any advantage to the corporation or the public that the very profitableness of some of these lines placed them in a position where they were forced to protect themselves in any possible way open to them from greedy and unscrupulous speculators, promoters and politicians, who made all sorts of attacks upon them under the specious plea of offering competition or protection to the public? They were sinned against and probably sinned themselves, but self-protection is the first law of nature, whether in an individual or corporation, and there cannot be much blame attached to these roads for using in their defence the same weapons or means used against them.

If there are defects, there is no reason why there should not be. The evolution is not yet complete and the perfect railroad system for New England has not as yet been completed; nor will it be for some time. It exists as yet as a dream in the minds of those at work upon it. Do not condemn all that has been done because it is as yet incomplete. The reconstruction necessary to make it more acceptable and perfect is a matter of time and in itself surrounded by difficulties of all kinds.

What is the solution of this problem?

An Ideal Solution Sought.

When we have a difficult or involved problem before us, we look it over, study it from every standpoint, think out all the possible solutions, and then by a process of elimination try to get at an ideal one as the standard or as the objective point. We would then consider the surrounding conditions, the personal equations, the antecedents, the traditions, affiliations and elements of every kind that would influence the solution, and work for that solution which within the limits of possible accomplishment was under all conditions nearest our ideal, never losing sight of it and always having in mind to so shape our course as to take advantage of any changing conditions for the better.

In this paper it is not intended to discuss the conditions, or possibilities, but try and point out an ideal solution, taking it

for granted that if we can all agree on that it will only be a matter of time when that or something near it will be worked out.

In the consideration of the question there seems to be at least two controlling propositions:

1. The New England railroad situation question cannot be considered by states, but must be considered as a whole or in large and comprehensive sections. Slight diversity of interests must be subordinated to the general good, not only in the railroad question, but in our interests of every kind.

2. There must be uniformity of rates and uniformity and continuity of service over all the railroads of New England. Uniformity of rates means community of interests. Continuity of service means either common management or that close working arrangement which can only come from community of interests. Uniform rates and good service on all the system even to the most remote terminal of the least important branch line are necessary to the highest development of our territory because development will follow the lines of superior facilities and economical transportation. Rates are fixed by operating costs. Operating costs are not uniform. The rate in any system or part of a system is fixed by the average cost on that part of the system to which the rate applies — consequently a uniform rate over the whole of New England, if all lines are to be treated equitably, must be based on the average cost of transportation over the whole of New England, and that means community of interest over all New England. If you do not have uniform or substantially uniform rates then the charges on the extensions of the feeding and tributary lines, those lines upon which the further development of the rural sections and sparsely settled country are wholly dependent will have to charge rates for service as they have in the past and do to a certain extent now — from two to three times more than the rates necessary on the main lines of large traffic, and even with such high rates the service will necessarily be poor and the profit would not encourage much development. Uniform rates tend to development, and though uniform rates may not directly pay for some of that development, indirectly the traffic contributions they create and service they render inure sufficiently to

the whole and to the general community to warrant their construction and existence.

This means that it must be so arranged that strong and profitable lines of concentrated traffic carry the feeding and distribution lines tributary to them and also that the railroads which serve the richer system must carry those which serve the less profitable sections.

Traffic Conditions Unusual.

The traffic conditions of New England railroads have no similarity in the conditions and situation of any other section of the country; in their relations between local and through passenger and freight traffic; long and short haul; transportation cost; terminal and junction cost due to the expensive terminal and junction facilities compared to the railroad mileage, there is nothing to compare them to in this country.

Short hauls and expensive terminals make large operating costs.

A great, if not the greater part of both freight and passenger traffic of New England is not what could be considered trunk line traffic, and certainly not long haul traffic. Almost every variety of commodity from the outside for distribution to all points in New England is brought to the borders by each of the various outside trunk lines, while from every shipping point inside traffic is routed out via every trunk line that approaches New England, the particular point of origin or point of destination having but little to do with the choice of route. From every boundary junction point traffic is received from and sent to each shipping point in New England. To illustrate: Cotton comes in quite freely via St. Albans and Newport. For this reason the distribution of incoming and the concentration of outgoing traffic could be much more effectively and economically done at these boundary points supplemented to a certain extent by a few of the most important junction points.

Importance of Terminals.

Few realize the importance to the traffic of terminal and transfer facilities at the large centers and important junctions. It may be said in general terms that the possible movement of

traffic on any line is measured by its terminal facilities. These terminals must increase in proportion to the traffic, not to the railroad mileage, and we all know what a great increase there has been in the traffic of the New England railroads since the movement toward unity. The terminals do not contribute to the traffic of the roads, but do materially to the cost of the traffic. The terminals are located where the value of property is high. Therefore the cost of proper terminal facilities is a very large proportion of the cost of the system — and this is particularly the case of the New England railroad system.

The railroad or transportation problem of New England is not so much one of transportation as it is of collection and distribution. The solution would seem to be to treat the whole as nearly as possible as one vast terminal system over which all the trunk line systems approaching New England from without could distribute their traffic by trainload, carload or package. Combined and operated as one system there can be established direct lines, with direct trains or direct cars from outside lines, where traffic would warrant, from every point of entrance into New England, to all of the more important manufacturing or commercial centers and junctions. Every important shipping point in New England would be directly served and served infinitely better than it would be if there were independent direct lines connecting all points with the outside; in fact, so far as public service was concerned, there would practically be a direct line from every outside connecting line to every point in the terminal system, and every connecting trunk line would have as effective a connection with every point in New England as if it physically reached that point. What an improvement this can be made over transfer after transfer, from line to line, with all the incident delays at junction and transfer points and the red tape of necessary precaution for the protection of the transferor and the transferee, to say nothing of damages, losses and the delays consequent upon the indifference of the employees of one line to the business interests of the other lines.

Regulation or Control.

In connection with what follows, there must be kept in mind that efficient control and regulation if not already in existence will soon be, and that the operation and administration of the

New England railway system under the suggested new conditions would be under such control and regulation. If such control and regulation can be exercised jointly by one commission acting under authority of all the states, so much the better. The New Haven railroad is no longer merely a Massachusetts or Connecticut proposition, nor the Boston and Maine a Massachusetts or New Hampshire proposition, or the Central Vermont a Canadian proposition. With all due respect, all are a New England proposition.

Competition in public service systems cannot go hand in hand with state or national regulation or control. Regulation or control was intended to leave no margin in the permitted charges for service to pay the capital charges on duplicated plants or maintain two or more plants at a high state of efficiency when one would answer public requirements. This makes impossible those conditions under which competition thrives, but in its place brings about all the practical results and advantages to be derived from state or national ownership, without any of its attendant obligations or disadvantages of government operation.

New Trunk Line Not Needed.

You may balk at the suggestion that there are sufficient number of trunk lines passing through New England; that no additional trunk line into or through would contribute to either its wellbeing or further prosperity. It could not connect with any section not already contributory, nor reach any point inside not already supplied. It can develop little if any traffic which cannot be developed, nor give any advantage in rates which cannot be had without it. Every dollar expended upon new lines entering New England from without puts an additional burden on the commerce of New England without any corresponding advantage.

There has never in the history of railroading been a competing line built through substantially the same territory touching substantially the same points and competing for substantially the same traffic, which has permanently succeeded. No permanent competition has been established, and the end has always been consolidation or combination, and though there was usually profit to the promoters and speculators, there was loss to the

credulous investors. The so-called competition of so-called competing lines which has succeeded is that which exists between railroads parallel and built between distant competing points, it may be, but distant from each other, and each of the roads having tributary to it, its own supporting territory.

Make a railroad map of New England, with the volume and direction of traffic indicated, and then, if you please, say where the line dividing the railroads between two or more systems should be drawn. This is impossible if you intend to give all New England an ideal transportation service. It would be impossible to outline two or more entirely independent systems, independent of each other in management and control, and yet give New England an ideal transportation service. To give such a service there would have to be such inter-operating arrangements as could only come from close community of interests and something approaching common management.

In these days of expensive high standard construction and costly terminals the managers of railroads are beginning to realize that it is wise to meet each other in the joint use of important stems or parts of main trunks, and the day is not far distant when unnecessary duplication will end. Control and regulation must force upon all utilities economies and better methods, and joint use is an important step where that joint use does not interfere with operation, and is not sought for the purpose of building up a rival system at the expense of the existing one, and when so arranged as to inure to the advantage of all. Where existing facilities can be made to bear the burden of existing or possible traffic, it is economic folly to create duplication.

By reducing the number of independently operated systems the aggregate equipment and other reserves could be reduced; all duplications of main lines, extensions of branch lines, equipment, stations, terminals, administration and organization could be done away with, and the expenditures of revenue or capital which would be employed in all these unproductive ways would be saved or used for the necessary improvements existing in every direction — main line — extensions and tributary lines, equipment, stations and terminal facilities, and in the many improvements which increase the facilities and economies of operation, which would be impossible under segregated operation and management.

Every fraction taken off the cost, every minute taken off the time of getting freight through New England counts toward the development of a greater New England. Every convenience which will enable a passenger to get directly through or into New England without the uncertainties of junction points, dread of delays, missing connections, enforced "layovers," would develop traffic and would make of every traveler an advocate and advertiser of greater New England.

Uniform System Necessary.

By some system or in some way must a uniformly efficient railroad system be maintained. It is necessary to the development of New England as a whole. The placing of the New England railroad system upon the highest lines of efficiency requires the expenditure of large sums of money. With uniform rates the revenues of the whole distributed over all would make all self-sustaining and remunerative and warrant and provide for such expenditures. Why then destroy by useless duplication the ability of the better parts of our railroads to carry the weaker parts? The extension of any trunk line through New England would mean such duplication with all its detrimental effect on existing lines, its burden for the public, and without any possible advantage to anyone.

It is not necessary to tell you that to obtain money for railroads or for anything there must be a certainty as to interest or dividends, a feeling of security for the principal. In these days when, because of regulation and control and increasing expenses for wages and material and improvements, to which traffic rates have not become adjusted, the financing of railroads on any extensive scale is by no means an easy proposition.

Your railroads as a whole are capitalized lower per mile, are in better physical condition, give you better service at less cost than the railroads of Europe, and cheaper than five years ago.

How many of you are now selling goods or giving service cheaper than you did five years ago? How many of you, where conditions of production outside of labor, and material and labor are the same, have not covered that increase in cost of labor and raw material by increase in your price?

Improved machinery or increased output or utilization of existing plant may have in some cases enabled you to maintain

profits at the same or even lower prices, as has been the case in some utilities, particularly in transportation, but in transportation the reduction from these causes has reached what might be considered an irreducible minimum. Carloads, trainloads have reached their maximum, while strength and endurance of material has reached a limit which will only be improved very slowly relative to the past improvement.

Present Conditions.

Can you, after due deliberation and fair consideration, conclude that there is any possible way of successfully operating the railroads owned in New England except in the interests of New England? To assume for one moment that they are being managed in the interest of anything but New England and Boston, upon which their entire welfare depends, is crediting a narrow view and short sight to those men who have put themselves where they are by their broad views, foresight and anticipation of what was coming and prophetic instinct of what could be done and what should be done. Conditions or transportation may not be perfect, but certainly they are far from disastrous or destructive or inefficient when New England can bring fuel and raw material from outside, can manufacture products some $3,000,000,000 in value, and send them for distribution to all sections of the country, even to the very territory producing the fuel and raw material.

The prosperity of to-day is only that which is due to the normal consumption of our country as a "going and growing concern." If we had settled and certain conditions with the underlying conditions as they are the expansion, extension improvement and development that would be going on would make an enormous additional demand for every product of earth, shop and laboratory. Every dollar invested on this account would be expended over and over many times.

New England and Boston.

New England is now in a position to respond much more readily and with less effort than at any time within the last half century. An increase of population, an increase of consumption of its products, an increase of production of everything possible for home consumption and for export beyond its

boundaries is bound to come with the slightest encouragement and effort. You must study the needs of the world in manufactured products if you wish to maintain your supremacy in the anticipation of those needs. You must foster, encourage and protect initiative and enterprise. You must remember that those who are in competition with you are your own stock and are not to be ignored or brushed aside easily. You must all combine and co-operate to make the further development of New England along lines that are profitable, and as New England develops so will Boston.

New England and Boston may in competition get some benefit from other fields, but this should not be done to the neglect of opportunities at home. New England capital and energy expended in the development of outside fields may produce profit and wealth and bring prosperity to those fields and additional wealth and capital to New England, but the real prosperity is not brought about by mere possession of wealth or capital; it is the locally utilized, employed capital that makes prosperous communities and great centres. It is the energy and capital employed in local enterprises where a large part of every dollar spent is spent at home for home labor and home productions, it is the small expenditures of a great many, not the large expenditures of a few, that will make a greater New England and a greater Boston, but the greater New England must be always in advance of the greater Boston. Every one interested must remember that all must share in that prosperity, that no one industry or utility can be starved to the advantage of any other. It is the aggregate prosperity of each that makes for the prosperity of the whole. Let utilities, industries, individuals or capital have their legitimate share and you cannot drive away prosperity.

What Prosperity Depends On.

Intercommunication as the basis of all civilization, and prosperity is in direct relation to its completeness and perfection. No territory, town or city can permanently prosper if served by inefficient public utilities or facilities. The character of a community is best judged from the general conditions of its surroundings. Bankrupt or decaying railroads and public utilities either are the result of or will result in bankrupt or decaying communities.

The prosperity of New England depends greatly upon its development in all that maintains activity and attracts and retains population. The prosperity of Boston depends entirely upon the development of New England, and the prosperity of the railroad system depends on the development of New England. The greater New England, the greater Boston, and the greater the railroad system. There is absolutely no separating the prosperity of the railroads of New England from New England and Boston.

To do or have done all these things there must be encouragement and support to those doing them, that the doing may be agreeable and the result advantageous. We must recognize that the only motive for doing things beyond the ordinary is the hope of advantage of some kind to the doer. The spending of millions for constructive development must not be confronted by unnecessary risk, obstacle, or difficulty, or subjected to technical, trivial, imaginary objections, attended by captious criticism, political strikes, or be made the football or target of the politically ambitious, or suffer from the inheritances of the past.

Remember that, if initiative enterprise or undertaking is surrounded by impossible conditions, or placed under unreasonable restrictions, it will be only a matter of time when evasion and corruption and unquestionable methods will creep in, and honest effort, fair dealing and worthy enterprise and initiative will be driven out.

The Kind of Control Needed.

A few simple, plain, understandable and general laws rigidly and impartially enforced by equitable, unbiased and unprejudiced authority and the holding of every individual to a strict responsibility and accountability for every act will do more to bring about right methods, respect for the rights of others and consequently protection of our own rights, than is possible by any other way.

If the necessary control or regulation of these enterprises upon which the public is dependent, are not on a satisfactory basis, make it so; if existing boards or commissions have not the public confidence, create those that can have, and when done, trust them and let them have time and opportunity and assistance in working out the problem. The problems before them are complicated, involved and cannot be worked out either by

amateurs or educated theorists of no practical experience, or by those who would solve them as a recreation or in odd moments snatched from other business. Examine a man's past record before you swallow his present professions. Do not let those seeking personal or political revenge or advantage or notoriety at whatever or whosoever cost have any control or influence in the settlement of these matters. If you call in technical theorists and experts, let them be selected from those of some practical experience.

Because some parts of existing laws are defective or ineffectual, the remedy is not reached by passing new laws and leaving the old ones on the statute book to further complicate the situation and make it less understandable. Guided by experience with what exists, correct the imperfections of the old, let evolution guide and control the law makers. Common sense guided by experience in time evolved the common law, which in itself if applied with firmness, impartiality and with rigidity, will very nearly if not quite cure or eradicate all existing evils and make revolutionary methods unnecessary.

Public Pays in Long Run.

The public must, in the long run, in one way or another, pay for service, the costs of such service including taxes, and in addition pay for the invested capital. The quality of service will be regulated by the net revenue and the capital will be paid for either by the dividends and interest or in the depreciation and destruction of plant, but no service can be permanently rendered at less than cost, including capital charges and taxes.

Any person or corporation who offers to duplicate an existing, or create an unnecessary utility, has some other object in view than the benefit of the general public he pretends to serve. Draw the line sharply between the speculator and the upbuilder, between the man who is seeking to benefit something outside and the man whose whole interest must necessarily lay with you.

Get together, all of you, and push and pull, subordinate individual interests, think only of the interests of all, your individual interests cannot prosper alone or by themselves. Make a big situation by making a big New England, and you will find that individual interests will be taken care of as you can take care of them in no other way.

A greater New England and a greater Boston is bound to be made, but will only be made by a get together policy. It must be centrifugal, not centripetal force or action, a policy of mutual concession to the common interests of all. With everyone helping it will not only come faster than you anticipate, but will come as a double benefit and blessing, contributing to the whole country in many ways at least as much as it gains for itself, and New England will once more be put into the pioneer premier position which it once had and to which it is entitled, and which in your hearts you are all hoping for.

From the Annual Report of Mr. VAIL as President of the American Telephone and Telegraph Company, March, 1913.

Plan for Employees' Pensions, Disability Benefits and Insurance.

A PLAN for Employees' Pensions, Disability Benefits and Insurance adopted by this company, its associated companies, the Western Electric Company and The Western Union Telegraph Company, was put into operation on January 1, 1913. This company has made an initial appropriation of $2,000,000 and undertaken to credit interest at four per cent. per year on the unexpended balance and to appropriate at the end of each year an amount sufficient to restore the fund to its original amount, provided that the appropriation in any year is not to exceed $500,000. Each of the companies has similarly made an initial appropriation based upon its annual payroll and undertaken to restore it by annual appropriations, and also to credit interest as in the case of this company.

The aggregate initial appropriations for these funds by all the companies, including The Western Union Telegraph Company and the Western Electric Company, amounted to $10,845,000.

The underlying motive in the plan was to secure the younger employees, who were intending to make their life-work in the service of the Bell System, against the ordinary contingencies during the period when it is impossible to provide against them by the exercise of the usual thrift and economy; and to give such employees freedom from anxiety either for their own welfare or that of those dependent upon them.

The following announcement of the plan was made, and very favorably received:

To the Employees of the Western Union Telegraph Company, Western Electric Company and the Bell Telephone System:

The new plan of benefits for disability due to accidents or sickness, of insurance and of pensions, goes into effect with the new year.

Nearly 200,000 men and women who are now giving their best years to the telephone and telegraph service of the country, will henceforth be assured of assistance in the exigencies of life, for which not all are able to provide, and will also be assured of a provision for their declining years.

It is but natural that every employee should desire to assume the normal responsibilities of life and to surround himself and those dependent upon him with the things that make life complete and enjoyable. Unforeseen happenings may make these responsibilities heavy burdens, and whatever may be put aside for the day of misfortune must in the beginning be small and accumulated slowly. A realization that obligations must be met in times of misfortune, as well as in times of prosperity, has made the need of something beside merely an old age pension appear absolutely vital.

Employers buy and employees sell service. Perfect service is only to be found when fidelity and loyalty are reciprocal in employer and employee. It is this relationship that brings satisfaction and success to both.

The intent and purpose of the employer in establishing a plan of benefits, is to give tangible expression to the reciprocity which means faithful and loyal service on the part of the employee, with protection from all the ordinary misfortunes to which he is liable; reciprocity which means mutual regard for one another's interest and welfare.

This is justice, and without justice and sympathetic interest we cannot hope to do a thoroughly good piece of work.

The American Telephone and Telegraph Company, which centralizes the Associated Companies into one system, with one policy for universal service, has considered the interests of all workers and has made a comprehensive plan possible. It is the administrative clearing house and the underwriter of the necessary reserve fund, upon which a general plan must depend.

One illustrative instance of the exercise of these functions has been the unifying of the various interests so that any employee may aspire to work anywhere in the country with uninterrupted benefits, and any company can obtain any man it needs, without prejudice to his welfare.

In behalf of the management of the American Telephone and Telegraph Company, the Western Union Telegraph and

the Western Electric Companies, let me say that we have a personal interest in our public service, a personal interest in our employees and a personal interest in our common country. It is our hope that what we have already accomplished has helped the men and women of the Bell System to become happier and better American citizens, and it is our New Year's wish that what has been planned for the future will contribute to their constantly increasing happiness and betterment.

Address by Mr. VAIL at the Commencement Exercises of the Graduating Classes of Lyndon Institute and Lyndon School of Agriculture, Lyndon Center, Vermont, June, 1913.

GRADUATES: This is more to you than a school commencement; it is to you who are starting out to contend with stern realities the real commencement of life.

So far, your work has been with the history, the theories, and the experiences of others. Now you must come up against concrete conditions and through your own experience find out the real value of what you have learned, learn how best to utilize it and how to make it produce for you results; in other words, you will make your own history and get your own experiences.

You probably have lots of ideals, you are doubtless strong in hope and faith, but as you go along many of your ideals will be shattered and many of your hopes will be dampened and you will at times require all of your persistence and faith to keep from utter discouragement.

It is from your failures and your disappointments, if rightly used, that you will get your valuable experience. It is by overcoming and rising above them that you will achieve your successes.

Lincoln once said to the effect, that intelligent perseverance only would accomplish great results. Nothing truer was ever said, and if you will take it to your hearts, think well what it means, analyze it with intelligence, apply it conscientiously, you need have no fear of your future. Intelligence in all things is necessary to success, and your success will be in the measure and to the extent that your plans, ambitions, hopes, and particularly your labor and your actions are controlled and directed by intelligence and common sense.

And in this connection, I want to speak of labor. We hear much of the dignity of labor, the nobility of labor, that the laborer is worthy of his hire, that labor is entitled to what it produces.

Labor performed in a shiftless, unthinking, unintelligent, instinctive way is neither dignified or noble and never is profitable. The only thing that makes labor profitable, dignified or

noble is the intelligence that is used in directing it, and that intelligence which directs it may be either your own or that of others, and to the extent that it is yours, you will get the full value that is produced by both your labor and your intelligence, and in the extent that it is the intelligence of others which directs your labor, you must share with the others the value of what is produced.

Do not confound labor directed by intelligence with expert or skilled labor, which may be performed in a wasteful, unintelligent, perfunctory or instinctive way. Expert or skilled labor, when working on the separate units of a large structure or on a large organization must be directed by a supervising intelligence that the separate units may be brought, each into its proper place, with as little indirection or loss of effort as possible.

Intelligent labor or intelligent direction or organization of labor is that which enables you or others to produce greater results with less, or at the least the same amount of labor than it would otherwise produce, and the one whose intelligence brings about such results is entitled to and should get a share of the savings or the increased results.

You can't get something for nothing, you can't live by your wits and feel comfortable or respectable — any gain at another's loss will react on you. All the great and permanent gain in this world come through constructive work, creating new values to old things by making them better and more useful, by creating new things of value to the world, or by the organization of those forces which bring about these results. This applies as closely to the farm as any other purpose or vocation in life.

I will repeat here in substance what I have often said before — First: determine what you want to do, then acquire an understanding of all that is necessary to accomplish it most profitably and efficiently, then go about the doing of it in an orderly and effective way. By knowing what you want to do in the advance of the doing there is no waste effort or lost work, and you will find in this the most effective offset for the high cost of living that has yet been devised.

Observe; keep your eyes open; when you see a farmer with a neat looking farm, sleek, well-fed cattle, a good horse, nice comfortable carriage, clean front yard and good garden, just watch how he does it and if you can catch him at work, for that

kind of a farmer has lots of time to read and visit and take such recreation from his labor as every man should take, you will find he works effectively, thinks out and plans his work, does not dawdle but works when he does work. He directs and drives his work, his work doesn't direct and drive him. He believes that a stitch in time saves nine. He doesn't wait for the door or gate to break itself down for want of a nail or a stone to drive it. Remember that it doesn't take any longer, if as long, to do a piece of work when it should be done than it will take to do it after it should have been done, and besides when done in time it is much more effective.

The best kept house is that of a housewife who never seems to be busy or in a hurry. If you want anything done promptly, go to a busy man.

Be forehanded, to use an old-fashioned expression, and unless it is in the legitimate conduct of your business, don't make use of credit and never use your credit in any business that you are not thoroughly familiar with and thoroughly understand,— if you are bound to speculate make it a cash transaction. It doesn't take any longer to earn a dollar before you spend it than it does to earn it after it is spent, and besides if you have it in hand you are apt to spend it more wisely. Wait for luxuries and even comforts until you can pay for them and you avoid the discomforts of the future pay day. Over-expansion of individual credits is what produces bankruptcy and panics. No power on earth can produce either when credit is kept within legitimate and reasonable bounds.

We have been speaking of intelligence. Don't fall into the mistake of forming your own opinion of your own intelligence or capacity — let others do that. It is only in politics that your own claims to your own greatness are taken seriously and where promises will be taken sooner than a good record. In real life it is reputation that obtains confidence for you, and reputation is based on performance not on promise.

Be jealous of your reputation. You may sometimes even after the exercise of the best efforts be unfortunate, but if you have good reputation you can soon get on your feet, but don't get into the habit of being unfortunate. It is not often that misfortune is persistent without a cause, and when there is cause beyond your control a good reputation will stand you in great assistance.

Don't depend too much on others. People get tired when called on too much.

The strongest pull and the heaviest push in this world is that which you yourself create. Remember if others have push or pull it is because of some force they exert through some reputation they have created. Observe — see how they obtained it and get one for yourself. Be selfishly independent of, but kindly helpful to others and you cannot help but enjoy life. Deliberate and with careful consideration choose your vocation in life and then stick to it. The other man's job looks easier, but it isn't. Don't be all the time thinking you would rather do this or would rather do something else. You know Bret Harte said once, or rather one of his characters did, that he had noticed that people didn't generally get their " d'rathers." I might " d'rather " be standing on the platform in a graduating class listening to the good-natured advice of some old man, but the wishing wouldn't do me any good. So I will wish you good luck and everything that is good in this world, and I would be willing to guarantee it to you if you will be as earnest in your work as I am in my words to you.

To parents and all: We have a school or schools here which should be in every way acceptable to all of you. We have the trustees, the educators, the people, the pupils and the children. But endowments, trustees, educators, parents, children, each working by themselves indifferent to each other, cannot make a successful school.

Mutual support and confidence — co-operation — teamwork on the part of all and respectful subordination on the part of the pupils only can make a good school. If you will only realize this and act in accordance with it we will have a school or schools to be proud of.

To the Pupils and Children — it is upon you — it is upon the graduates that the school sends forth, that the future reputation of the school rests. Your future standing in the community or in your business or your profession will be largely based upon the work that you are doing here or in other schools; remember this when tempted to neglect opportunity, to infringe discipline, to obstruct or embarrass the working of the school.

Don't fall into the error of thinking that in these days there is no opportunity — there is more now than ever. Look at the list of names that control or are interested in the great construc-

tive work of the world, those who have accomplished something, and you will find ninety-nine or more of every hundred started at the bottom rung of the ladder and unaided except by their ability, enterprise, persistency, climbed up from rung to rung to their present position. I have to do with many thousands of young people starting life, and it would astonish you to see the quickness with which the to-be successful attract attention to themselves. Bear in mind the words, attract attention. The to-be successful ones attract attention — it is never necessary to have attention called to them.

Have proper respect for your position, whatever it may be or wherever it is. We are all of us units in the social structure, and each in his or her own particular position an important unit. If each fills that position, accepting all its responsibilities, and fulfilling all its requirements, not disturbing all around with unrest or dissatisfaction, being ever ready to move into other positions as opportunity and conditions make it possible or desirable, all will go well and each will have done his duty to the state, the family, and to himself.

An article by Mr. VAIL in "Atlantic Monthly," March, 1913.

PUBLIC UTILITIES AND PUBLIC POLICY.

THERE are so many points common to all utilities and service companies that it is difficult to differentiate their relations to the public. The understanding of the relations, or mutual obligations, toward each other, and of the mutual dependence upon each other, of the public and the corporation, has so radically changed within the recent past, that any discussion which did not also take into consideration the causes influencing and underlying these changes would be futile. We shall first try to establish a few fundamental principles common to all.

I.

1. There are but few utilities which have no alternative or substitute. The alternative or substitute will generally have been less convenient, comfortable, or efficacious, and, consequently, less desirable to the user or consumer; but, in the absence of a better, it answered the purpose and was cheaper, and at the time was regarded as the ultimate possibility in the way of comfort, convenience, and luxury. An instance is lighting: electric light has gas as an alternative, gas has burning oils, burning oils have candles. While, for a given amount of light, the alternative may be more expensive, yet as it was used there was large economy and it was entirely satisfactory.

2. No utility can sell its service or its commodity at a price greater than its value, in comfort or convenience, if not in actual money, to the purchaser or consumer; and the price and quality of service or commodity must be so regulated that enough can be sold to produce net revenue sufficient to pay a fair return upon the cost of the plant, and of the organization and establishing of the business.

3. Net revenue can be produced in two ways; by a large percentage of profit on a small business, or a small percentage of profit on a large business. Population, potential business, social and business conditions, generally decide which course will be followed; but with a large population with large poten-

tialities, the experience of all industrial and utility enterprises has been that it adds to the permanency and undisturbed enjoyment of a business, as well as to the profits, if the prices are put at such a point as will create a maximum consumption at a small percentage of profit.

4. Uniform rates for public service must lead to a combination covering a large and diversified territory. No utility is so situated that the same unit of service can be delivered at the same cost over all sections, nor are there in the same system of utilities any two sections in which service can be produced or delivered at the same cost, if each section is charged with its proportion of all costs.

Uniform rates are based on average costs and must be as excessive and unreasonable under certain conditions as they are inadequate and ridiculous under other conditions. When both sets of conditions are under one operation or in one combination, the average applies, and it is a benefit in that it gives equal facilities to all at reasonable prices. When, however, one utility or combination has all the favorable conditions while the other has all the unfavorable,— or if a so-called competitor should be allowed to supply under the favorable conditions and avoid the unfavorable ones,— rank injustice is done in the one case, while undue benefits are granted in the other. In the one case there are great profits and large dividends; in the other bankruptcy and receiverships, for which the only remedy would be rates for service varied according to conditions, or a combination of all conditions under one operating combination. As an instance,— a gas company could furnish gas to a limited part of the community it serves at a price which would not pay cost of distribution in other sections.

A trunk line of railroad, if it did not have to support its distributing and collecting branches, could be run at a profit at rates which would not pay the crews of the trains on the branch lines. There are, to-day, railroad systems, through rich, well-settled, highly developed sections, which are enormously profitable, while others in less prosperous, or less fully developed, sections of the same states are in a receiver's hands because of uniform rates. The average cost of one system is less than the uniform rate, while the average cost of the other system is higher. A uniform rate is an advantage to the com-

munity as a whole, in that it gives to all equal facilities, as near as may be, at a uniform cost; it is equitable in that the highly developed centres are dependent on the country as a whole, and, therefore, should contribute toward this policy of equal facilities at uniform cost; but it is inequitable if, without remedy, any utility is obliged to furnish service below cost at uniform rates established on an average cost which includes utilities more favorably located.

The inevitable conclusion is, therefore, that if uniform rates are to prevail in any utility system, that system must tend to combination and to a single system or monopoly, if you please, if a highly developed, highly efficient, and progressive utility is to be maintained.

5. Where competition in any field is carried on at a reasonable profit it may be the result of agreement express or implied, or it may be that observation or experience of the cost, and destruction of aggressive competition, lead to the exercise of a reasonable restraint in the method and efforts of all to increase business and maintain profits. So long as business is above normal or is even normal, it is easy for competitors to maintain prices or to observe agreements; but when business is subnormal and hard to obtain, while at the same time expenses are constant, charges are continuous, and business at or below cost is better than none, no agreement or understanding, express or implied, without penalty, will be long observed.

6. Competition, so called, in any enterprises carried on at unreasonable profits is, without question, always the result of some understanding or agreement implied or expressed. Unreasonable profits are bound sooner or later to introduce new conditions and new competitors in any field, whether stationary or growing. It is this that has given rise to the belief in the great virtues of competition.

Competition is induced by many causes: by a desire to meet and share an increasing demand for, or consumption of, any commodity or service at normal profits; or to obtain a share of a business in which profits are very attractive and tempting; or to share in an increasing business with excessive profits. The object may be to create a permanent, continuing, and profitable business, and to obtain, at reasonable prices, a fair share of the going or growing business; or to create by destruc-

tive and aggressive tactics such a situation as will force a settlement by purchase, combination, or an understanding of some kind, with an established business; or to promote a business upon the reputation and success of others and sell it to innocent investors upon misleading statements, either willful or mistaken.

The vicious acts associated with aggressive competition are responsible for much, if not all, of the present antagonism in the public mind to business, particularly to large business. These vices are the necessary accompaniment of the methods of destructive competition. The reason for the public's encouragement of such competition lies in the belief that from it they will derive some benefit. In the long run, however, the public as a whole has never benefited by destructive competition.

No business can be conducted permanently without some margin over and above the operating expenses, which must include ample maintenance of its plant at the highest "going-concern" standard; while any business can be conducted for an indefinite period, at an apparent profit, at the cost of its plant or its capital depreciation, so long as they last, and after that for some time on receivers' certificates. There may be a temporary benefit to the consumer from unprofitable prices, but in the end prices must necessarily be restored or increased to recoup the losses of the cut prices, and to pay the charges on capital invested in unnecessary duplication, if such capital is not to be absolutely lost to the investor.

It must not be forgotten that, in competition of this kind, whether in the field of industrials or of utilities, the start is with small business and between small businesses; the big combination or the big business is a combination for offensive and defensive purposes, and is to be likened to the survival of the strongest, if not the fittest. Business and production must be on a large scale commensurate with the consumption and the new methods of production, which to produce at all must produce by the thousands. Large business or large production means a large aggregate profit from a small percentage of profit, while small business or small production must mean large percentage of profit or small and unsatisfactory compensation to the producer, or both. There is not one act, good or bad, wrong or right, that is charged to big business, that did not originate

with, and does not still exist, in small business; while big business has one weakness inherent in its condition which small business has not, and that is notoriety and publicity. Big business is in the glare of sunlight while the smaller business is more or less in the shade. Big business is more impersonal as to its proprietorship or its ownership, or is centred about a few of those prominently connected with it; while its widespread body of small proprietors or partners — that is, the shareholders — have no association with it in the minds of the public, and, as a rule, are indifferent to all that is going on so long as dividends are maintained.

The settlements of competitive wars always affect the public unfavorably, not only toward the ones engaged, but toward all other industrial or utility enterprises. When prices are restored, even to a normal and reasonable basis, they are in constant contrast with the cut price of competitive war, and the consumer is constantly reminded of the differences and resents them; why, it is hard to say, for there is no reason why the public should suspect that some individuals of the public engage in this aggressive competition for any other than a selfish purpose, or for any other benefit than their own; nor is there any reason why it should be expected that these disastrous competitions would be carried on beyond the point which the competitors believed best for their own interests, or beyond the point where the purpose of the competition has been accomplished.

When those engaged in the competitive warfare end it with profit, that profit is more or less flaunted in the faces of the public and is a constant offense; on the other hand, the losses made in the unsuccessful competitions are soon forgotten. If the losses of the unsuccessful promoters of enterprises, worthy and unworthy, or of competitive wars, or the losses made by speculators and gamblers, were as much talked about and as well known, or as much in evidence, as the occasional gains, the speculator or undesirable promoter would find fewer contributors or followers, and competition would be confined to rational and commendable ends, and governed by a decent self-restraint; or, if those who did benefit temporarily by aggressive competition also felt the resultant losses, there would be less encouragement of that kind of competition, and a better feeling on the part of the public toward those industries or utilities

which were trying to operate a business in a legitimate manner and at a reasonable profit.

Another popular belief is that it is due to competition that prices and charges have been permanently reduced. Competition may have been a slight stimulant, but permanently reduced prices are brought about by the protection which encourages the inventor to create and develop labor-and-time-saving machines and new and improved methods and devices; by the desire to gain the profits which reward the study of the wishes, needs, comforts, and luxuries of the world, for the purpose of bettering the existing ones or creating new ones; by the initiative and enterprise which introduced the improved processes and methods; by the introduction of machinery operated by ordinary labor at high wages, to take the place of highly skilled labor at comparatively low wages; by the great increase in the number of purchasers or consumers, and by the increase in the average purchasing power of each individual; by the development of markets of such magnitude that large sums could be devoted to the introduction of machinery, processes, and methods which cut producing-cost and enabled a large aggregate profit to be realized on large production and large scales at low prices and small percentage of profit. Whether the consumers created the producers or the producers the consumers, whether the developing market produced the improvements which increased production or whether the improvements produced the market, is difficult to determine, but one thing is sure — that the business organization of any community is so dependent upon the community that sooner or later any effect, whether for good or for bad, is bound to be felt over the whole.

II.

It must be admitted that regulation and control by commission has become a permanent feature of our economic policy, particularly as to utilities. That being so, it is essential for the well-being of the community that such regulation and control should be effective, equitable, acceptable to the public, and final. There must be absolute confidence on the part of the public in its constituted commissions, and the utilities must have confidence in their fair intent and equity. To deserve this confidence, the members of the commissions must be of high order, free from prejudice or political favoritism or bias; and not only

competent, but determined to render their decisions on the showing of facts without regard to popular clamor on the one side or corporate pressure on the other. To get all this, there must be permanency and lapse of time sufficient to enable an accumulation of practice, experience, and precedent, and a thorough co-operation between the public, the commissions, and the corporations, with confidence, deference, and dependence, and absolute frankness on every side.

Corporations should be allowed freedom from undue restraint or restriction on operations, so long as good service is rendered at reasonable prices — prices which will allow the best wages for the best service, provide for the maintenance, depreciation, and reconstruction of the plant, pay all fixed charges and a fair return on the investment, and a profit commensurate to the risk and chances peculiar to, and the ability required to establish and operate, the undertaking. If discussions of unsupported assertions and biased and misleading statements and distorted facts, no matter where made or by whom, are to prejudice the public or force the commissions to resort to expedients, indirect methods, half-way measures, or to evasions in the performance of their duties, the old conditions of trick and strategem and "anything-is-fair-in-war" methods to gain personal ends will soon be restored in worse shape than before.

It will take time and much self-restraint on the part of all concerned to bring this happy result about, and while it is being accomplished and the readjustment is taking place, the public should not in their impatient desire to get quick results allow the destruction or deterioration of those heretofore thriving enterprises which have done, and are doing, so much for the public development, even if for a time some inequalities or irregularities due to the changing conditions continue. The fact that some corporations have not as yet quite got on to the new order of things, together with the fact that the public, fully realizing its power, has not as yet learned that proper restrictions, regulation, and control, can secure all that is wanted, or all that is to be desired, and all that can be got, or that conservation is better than destruction, is largely the cause of the present unsettled and unsatisfactory conditions. The relations between the public and the corporations have not fully adjusted themselves to that nicety of balance which is possible, and which will give each of them all that either is entitled to, or could get,

while at the same time preserving the prosperity and the rights of each.

This desired and happy consummation of the struggle, for it is a struggle, will only come with education, with the realization, on the part of the public, of the fact that economic and natural laws are above all statutory laws and cannot be disregarded if good results are to be obtained; that the prosperity of all results from general individual prosperity; that prosperous and solvent communities can only exist where they are served by prosperous and solvent utilities; and on the part of the corporation, that permanent success not *only can* be, but *can only be* obtained through equitable and legitimate efforts and procedure.

If, under these conditions rightfully administered, this country cannot secure and maintain the most sufficient, efficient, and effective service of all utilities, there must be something inherently wrong in government regulation and control; and if government cannot effectively regulate and control through its commissions and its laws, then how much less effectively could it operate through government officials.

Competition — excepting that kind which is rather "participation" than "competition," and operates under agreement as to prices or territory; that kind which provides for the extension or development of the country, and is conducted on the principle of maintaining high quality and fair prices — can only exist where there are abuses, either in the way of unreasonable profits or of excessive capitalization; and where control and regulation are effective, these abuses cannot exist or continue. Consequently competition and control and regulation do not go together, and if a mistaken public opinion demands competition in established fields of "sufficient" and "efficient" service given under control and regulation, the result will be duplication of plant, for which the general public must sooner or later pay either in the loss of capital invested, or in higher charges necessary to pay returns on the capital invested in the duplicated plant. The losers, as we said above, may not lose to the same individuals, but whatever is lost to individuals is lost to society and sooner or later affects the individual.

III.

All utilities are dependent not only upon the public for support, in that they must have customers for their service, but upon the public good-will and favor, in that, from the public or its representatives, they must have franchises or permits under which they can operate. The old and proper idea of franchise put the public on the basis of a partner, in a partnership between the public, the capital, the invention or utility, and the individual. The public furnished consumption and, of course, the license to serve or the franchise to furnish something that it, the public, presumably wanted. The individual furnished the initiative, the energy, and managing ability; the capital employed was essential to development and installation; the invention or utility was something which to be successful must be of some public benefit. The intent or theory was that each should get its fair share of the benefits: the promoters and inventors, upon whose initiative, enterprise, and risk, something of great public benefit was introduced, profits in money; the public, something to their material advantage, in comfort or well-being. If this condition could have been established and maintained in a well-balanced relation to each of the partners, the present state of mind on the part of the public toward utilities would never have existed.

As pertinent to and having a direct bearing on questions of franchise, attention is called to the following facts:

1. At the beginning, every public utility or public service was started as an improvement upon something, some method, or some practice — and was a luxury. The greater the real benefit, or the greater the service, of the utility to the public, the quicker its adoption and the more rapid its assimilation into the daily habits and life of the people. The quickness with which it changed from a luxury or convenience to a necessity was a direct measure of its advantage to the community; while at the same time, and in the same proportion, the chances of competition increased, created, as it were, by the desire of those who always depend on the enterprise of others for their initiative to secure a share of the material advantages, to reap where others have sown.

2. The public have received through utilities as much benefit in money, and in comfort, convenience, and well-being — if

these could be measured in money — as the inventors and promoters have received in profits; while the enhancement of values, or the unearned increment, caused by the introduction of utilities has far exceeded all the profits from all the utilities, allowing them to be as great as the most liberal estimates of the restrictionists would have them. The money profits from these enterprises are concentrated on one individual or on a group, while the intangible values of comfort and well-being and convenience, and the unearned increment, attach to the general public and are lost in, or mingled with, general conditions; therefore one attracts continued attention and causes envy, while the other is taken as a matter of right.

The increase in population, the wide distribution of wealth, not only created tremendous possibilities in old established but dormant utilities, but created a great demand for new ones. Promoters of new enterprises and speculators in old enterprises became active. Franchises were in demand on any terms and conditions. Promises were made which no one expected to fulfill or was expected to fulfill, and enterprises were launched which the promoters knew, or should have known, would not pay. The partners in these enterprises, other than the public, in their eagerness to realize profits in advance of the actual development, and in their eagerness to capitalize prospects and hopes, and even unwarranted promises, in advance of establishing any public benefits, took advantage of this, and more attention was paid to speculative combinations, promotions, and dealings than to the wants and service of the public. This soon produced a feeling on the part of the public furnishing the permit to serve, on the one hand, and the consumers who afforded the profit, on the other hand, that the other partners were getting more than their share and getting it first, and that in some way they had been giving away or sacrificing something of great value.

The methods employed in these transactions, the acts performed, and the results sought for and obtained were no different from those employed in all speculative and in many competitive businesses,— no worse, no better,— but there was a difference: the utility must get a permit or franchise, which the industrial does not need; the public as a body politic has also a control over the plant installation and operation of public service and public utilities, which it does not possess over indus-

trials. This association between the public as consumer, and the public which gave the franchise, apparently did not occur to the other partners.

The fact that the same public were masters of the situation, in that they constituted the body politic, did not find any lodgment in the minds of those who controlled utilities; nor did the public, on its part, fully realize this relation and its power until the realization was forced upon it by an aroused and indignant public opinion seeking for redress and protection. Regarding only the existing conditions, forgetting and disregarding what the conditions were before the utilities were introduced, forgetting that there was ever any initial enterprise or risk in the introduction of these utilities or in the operation of these franchises, disregarding the benefits following the introduction of these utilities, the public mind furnished a ready field for biased and selfish opinion. Luxuries were fast becoming necessities; ridiculously low prices, made for services rendered in the heat of competitive war, developed a tendency in the public to demand the impossible in the way of permanent rates and prices; and a desire began to develop to get all possible for as little as possible. In this frame of mind the public awakened to a realization of its great strength, through the right of regulation and control, through the control of franchise without which any utility plant already established was useless and worthless, and through its power as a body politic, a power which, if uncontrolled by sober common sense, or used without discrimination, would destroy every utility, and in the destruction would also involve both the prosperity and well-being of the community.

Public prosperity is largely dependent upon good service of all kinds, not only within but without. The inter-connecting interests of individuals within a community, and of communities with one another, is like an endless chain, each link or unit depending on the strength and reliability of the whole, and the effective worth of the whole depending on each link. Good or bad movements in economic matters do not produce immediate effects, but because the effects are not immediate they are none the less certain to come. If the causes which have produced prosperity are ignored, if economic laws are disregarded, and experiments in new ideas are enforced without trial, the resulting trouble will again, as it has in the past, cause unfortunate

results, which will in time bring about reform, but the damage and destruction done will never be restored.

Unless the public is reasonable in the use of its new-found power, and exercises it justly and equitably, but rigidly and consistently, all remaining confidence will be destroyed, and prosperity will cease; for, unless utilities can be invested in with certainty and security, investment will cease, and growth and development must surely be checked. These utilities, and those dependent upon them, are by far the largest purchasers and consumers of the products of the earth and the factory; and a very large proportion of this consumption is due to normal or above-normal activity in the improvement, extension, and development of these utilities, and to the greater activity in every line of industry or production which accompanies these activities. Activity of extension and delevolpment means full consumption of all products and commodities, good wages, and full employment for all. Sub-normal, normal, or above-normal activity means the difference between shops half filled with work, full of work, or worked over time.

Production is governed by the demands of consumption; large sums of money are spent annually by producers to obtain new markets, enlarge old ones, and even to obtain the customers of their rivals. A greater market can be made at less cost by a slight change of policy in some directions toward some utilities. A little liberality in treatment, a little let-up in restrictions, when accompanied by demand for increased facilities, will make a tremendous difference in the activity in improvement, extension, and development, and in the accompanying purchasing power, direct and indirect, of the public utility and service corporations and those dependent upon them.

Do not think that, because at the moment we have a spurt in the business conditions, we are out of trouble. This spurt, if one may so call it, is the result of the bad conditions, and is but a symptom which foretells worse conditions unless guarded against.

The present conditions are due to many causes — curtailed production in the past, exhausted stocks of all kinds of manufactured commodities or goods, accumulation of purchasing ability on the part of the primary producer, because of good crops and good prices, and the steady normal development of the country,

which has overtaken the over-expansion of a few years ago in all lines of industry.

Unless timely precaution is taken, there will be the same congestion, the same inability on the part of all utilities, particularly transportation, to meet the current demands made upon them, and the same direct and indirect losses because of delay or the extra cost to provide against delay, the same premium for immediate delivery, and the same vexations because conditions are such that what is wanted cannot be got when it is wanted.

Under rational and effective control and regulation there can be no danger to the public.

Governments are established for the conservation of individual and public interest, and the protection of individual and public rights. Wise, equitable, rational regulation and control come well within these duties, and well within the capability of rightly and honestly organized government.

Big crops and abundant money are of no benefit unless there is full consumption of the one and good demand for the other, and it is only through activity that these can come.

IV.

The relation of the telephone system to the public is unique in that there is no other public utility or public service which occupies quite the same personal relation to the public that the telephone does; and in this country the relationship has acquired additional importance as a public necessity owing to the development of the service, the use made of it, and the dependence upon it by the public in its business and social relations.

This importance is not only in the local exchange service, but in the dependence upon a quick and reliable service to all points within speaking radius. This dependence is not a mere accident or development, nor is it merely incidental to the service; it is the result of a thoroughly considered endeavor to create a business by first providing dependable facilities.

In the early days of the telephone, one of the sub-officials of a company made a protest against the expenditure of a considerable sum in improving and rebuilding a certain inferior toll-line connecting adjacent towns, on the ground that the business was not sufficient to support the existing line. The answer to his protest was that it could not be expected that business would be

developed upon unreliable and inefficient facilities and service; that unless telephone service could be depended upon at all times, it would only be used in an emergency or as a last resort; therefore it was necessary that efficiency and reliability should be established before large business could be expected; that the only question to be considered before establishing service was — whether there was a population with a potential business.

This is the policy which controlled the development of the Bell Telephone system in America, and is the reason for its present development.

The telephone system, however, has not been created without its setbacks, its faults, and its grievous mistakes; and if the experience and knowledge obtained from those mistakes is ingrafted in the present policy of the Bell system, and they are not repeated, too much emphasis should not be laid upon those ancient and abandoned faults, and the memory should not be too much exercised to recall them from oblivion.

As one reason, but no excuse, for those mistakes, it must be remembered that the telephone was born in an era when it was generally thought that corporations were masters of the public. It is not at all likely from the present attitude of the public that that mistake will ever be repeated.

The telephone was born when it was the popular idea that an electrician was the man who put up the electric call-bells, when electrical engineers, as at present understood, did not exist; and, except in the workshops of a few self-developed working electricians of ingenuity and imagination, working on its practical application to industrial development, the science of electricity was studied only in college laboratories; and there, as a rule, for purely scientific purposes.

Patents were still held in respect by the general public, if not by the speculative promoter and infringer; and the inventor of something new and useful was still regarded as the world's benefactor, and as entitled to some acknowledgment; and if he did not get it during the life of his patent, it was sometimes extended.

Never in the same period of the history of the world has there been such development of any branch of science as there has been in electricity in the less than four decades in which electrical communication, and the industrial application of electricity, have been brought from a period of almost nothingness

to the development of 1912; from a period of conjecture and theory to that of an exact science; from the experimental stage to be one of the great industrial forces in the world, perhaps the greatest.

When the telephone was first introduced, the plant was simple, comparatively inexpensive, and correspondingly inefficient in comparison to what it is now; but wonderful beyond comprehension or comparison to what had been. The apparatus consisted of modifications and adaptations of apparatus designed for other purposes; all the equipment and plant for exchange purposes had to be invented and developed. The first use of the telephone was on private lines connecting two establishments, or generally the office and factory of the same establishment, the idea of the exchange being adapted from the connecting of telegraph lines together at a central office to put different stations into direct communication with each other. The telephone exchange was of slow growth, and difficult to exploit at first; there was nothing known in public service to use as an illustration, and in itself it was difficult of demonstration because the only possible demonstration *was by itself, before itself existed;* until a number of people were connected with an exchange, there could be no service.

The advantages, though slowly appreciated at first, brought a faster growth than any one anticipated, and both advantages and growth have probably gone far beyond the most optimistic estimates of any, excepting possibly a few, who were regarded as dreamy enthusiasts. When the advantage of the telephone service was once recognized it became surrounded by a halo, and many of those who were engaged in its development were literally carried off their practical business feet, and lost their business heads. Most of the promoters in the field were young men who were working on enthusiasm instead of capital, and with that peculiar energy which only comes to those who dream dreams. This condition existed until decay, depreciation, obsolescence confronted the operating companies, with no provision or reserve to prevent them. Decaying, depreciated plant, central-office equipment and apparatus, and subscribers' stations of every conceivable pattern and kind were the rule. Conversation was interfered with by the extraneous noises on the single wire which formed the then telephone circuit and which, like the antenna of the wireless telegraph, caught every electrical

disturbance in the air, from that caused by the aurora borealis to that caused by the electric car and telegraph currents. Meanwhile, the development of the art had been steadily and rapidly progressing, and in many central-office switchboards there was "junk" at one end, and at the other the latest improvement known. Can it be wondered at that the service left much to be desired, and that the public was anything but satisfied?

Just about the time when many of the local companies found themselves in a position where reconstruction of plant, or destruction of business, was facing them, and no provision made for it, came that unprecedented period of almost unheralded cumulative prosperity throughout the country. The Western farmer who had been struggling with the low prices of overproduction and undeveloped consumption, found that consumption had overtaken production, and that favorable seasons and large demands made good markets for his produce and filled his pockets with money. Industrial workers found full employment at full wages and still indulged in some of the reasonable economies of life. Those people who in the not far-past days of overdue interest and notes and mortgages looked upon banks as places to avoid, or upon rapidly diminishing deposits in savings banks with dread of the future, found themselves with abundant and ready money. What a field for the promoter, and what an advantage was taken of it! Thousands, millions, even hundreds of millions, of these accumulations and savings went into all sorts of industrial and public service and utility schemes. Competing gas companies, water works, interurban railroads, local tramways, telephone enterprises, were inaugurated in great numbers.

The old Bell telephone companies, or those of them with capital all issued and no reserves, and with an antiquated plant which required all the earnings for current expenses and ever-increasing maintenance and current repairs, found themselves opposed by new up-to-date plants giving a service which could not be given by the old plants, and at prices which only a new plant paying no attention to depreciation or depreciation reserves could give even temporarily; prices which were not intended to be the basis of a permanent and continuing business, but were made on any basis that would get franchises and subscribers and thus enable the promoters to sell securities.

What wonder if, in some localities, the Bell service and the Bell companies became a by-word and an offense.

It would have been a bad day for the Bell interests but for the courage and optimism of the then head of the system, who came in at about the time when everything was at its worst. Recognizing the conditions, and also the cure for, and the necessities of, the conditions, he procured and poured millions upon millions of money into these local companies, rehabilitating and reorganizing them, creating a new system by rebuilding and newly building exchanges and connecting them by thousands of miles of toll and long-distance lines. The result was that the Bell system was once more in a position not only to give as good service as could be given, but to give a universal service such as could not be given by any other system and was not attempted by the independents. While this was being done the opposition plants were beginning to learn that maintenance, reconstruction, obsolescence were not negligible quantities, and the investing public that the promises and prophecies upon which their money had been obtained were wrong and misleading; and also it was demonstrated that while isolated exchanges, operated and controlled independently, could give good local service, they could not satisfy the public as against a system which made each exchange, in fact each telephone station, the centre of a system over which conversation could be had in every direction to the utmost talking distance. Had the opposition or independent telephone movement taken a lesson from the mistakes of the Bell and profited by its experience and adopted its policy of intercommunication, the story might be different from what it is, but the opportunity has passed, never to return. Yet the lessons to be learned from this experience have as yet not been thoroughly assimilated or appreciated by the public, and this history is given to show what underlies whatever differences there are between the public and the operating telephone companies.

The telephone service may still be called an undeveloped service. Because the instruments at the subscribers' stations are not materially or noticeably changed from time to time, is no indication that the art is at a standstill. Probably the actual transmitter and receiver are about as highly developed as they ever will be; but the mechanism of the central office, the appliances to get rid of extraneous troubles — in these days of high

potentials in electric currents in transmission, transportation, and the industrial arts, to say nothing of the wireless! — are continually changing, so much so that one familiar with the art five years ago would find a field almost unknown to him and newly developed to-day. Hundreds of the brightest minds devoted to research, development, and improvement, are steadily and constantly eliminating some fault, improving some method or process, overcoming some obstacle to good service. There is a continuous evolution in a field with a limitless horizon, but the evolution is so steady and constant as to be almost unnoticed. To realize it, one has only to compare the actual service and the radius of communication with what actually existed ten years ago, and that is impossible to the most impartial.

The public, however, has begun to appreciate and believe that the telephone service is a "natural monopoly;" that any telephone exchange must give universal service — from every exchange and every subscriber as a centre in every direction to the farthest talking limits; that one telephone system is sufficient, and more than one a nuisance; that a telephone conversation cannot be transferred from one system to another and therefore that every one desiring service must be connected with the same system; that the telephone service as carried on by the Bell system is one of that class which has no alternative and no substitute. The vital interest of the public in the service must also be recognized, and whatever is necessary to insure to the public full and complete service must be done, and done in such a way as will bring "efficient" and "sufficient" service within the reach of the whole public having any possible use for it.

The telephone service as now understood and demanded, in this country, depends on uniform development of all sections, and close and sufficient connection, with uniform operation, under common control, between them. The question of the profitableness of each separate unit of the system, whether exchange or connecting lines, cannot be considered. The system must be considered as a whole, administered and developed as a whole, and as a whole it must yield proper return, regardless of the returns of this or that locality so long as the development of the locality is of advantage to the system as a whole.

This is a source of both weakness and strength to the Bell system. The weakness lies in the fact that an opposition exchange can locate itself in the congested centre of business and,

at a low rate, give a purely local service, within that section at a price which the system giving universal service over extended areas, profitable and unprofitable, cannot meet. To those who want a purely limited service in some sections, this appeals. There are but few in such sections who do not want more than a limited local service, and consequently if they have the purely local service they must also have the service of the more extended system. This is the source of strength to the Bell system, which carried it through those days of reconstruction in the face of the vigorous independent movement.

The practice of the Bell system is founded on the following statement of policy: To develop the possibilities of the service and to give the best possible service; to anticipate all the reasonable demands of the public as to service, either as to quality, quantity or extent; to distribute the charges for such service in such a manner as will make it possible for every one to be connected who will add to the value of the service to others; to collect gross revenue only sufficient to pay a fair dividend on the capital invested, after paying the fairest possible wages for the best service, after providing sufficiently for the maintenance and reconstruction of the plant, whether from decay or depreciation or from obsolescence. This is best shown by the distribution of the gross earnings of the Bell system.

The average gross earnings in 1911, per exchange station, for exchange service, toll, and long-distance service, was $39.83, just under $40; of this 50 per cent., or $20, was paid for salary and wages; 5 per cent., or $2, was paid for taxes; 20 per cent., or $8, for maintenance and miscellaneous; 6 per cent., or $2.40, was set aside for depreciation and obsolescence reserves; 19 per cent., or $7.60, for dividends, interest, etc. The average cost of the plant per exchange station for 1911 was $141, that is, the average returns upon plant cost were 5.4 per cent.; or about the return which can be secured from first-class investments with ample security.

In conclusion, in this short discussion an attempt has been made to give what appears to be the proper solution of the telephone service, and to show what a telephone system should be. The question is, how best can the ideal be obtained? There seems to be no question, judging from experience, that the present way — private management and ownership, subordinated to public interests and under rational control and regulation by national, state, or municipal bodies — is the best.

"Mutual Relations and Interests of the Bell System and the Public," a Statement by Mr. VAIL, as President of the American Telephone and Telegraph Company, August, 1913.

MUTUAL RELATIONS AND INTERESTS OF THE BELL SYSTEM AND THE PUBLIC.

THE suit brought by the United States questioning the purchase of certain telephone properties in the northwest, as well as the pending Interstate Commerce Commission telephone investigation, have caused many inquiries. Without taking up anything going to the merits of these proceedings, it has seemed to us proper to state generally what has been our policy and purpose in the conduct of our business.

We have found, or thought that we had, that our interests were best served when the public interests were best served; and we believe that such success as we have had has been because our business has been conducted on these lines.

We believe that our company has an interest as vital as that of the public in the proper administration of the problems of electrical inter-communication. The success and prosperity of our company depend upon a solution of these problems which shall be sound from both the standpoint of the company and the public which it serves.

Following our own best judgment, supplemented by the best obtainable advice, we have endeavored to do what would best serve the public interest; wherever possible our plans have been disclosed to the public in advance, and what has been done in carrying them out has been along ordinary business lines, with the implied, and generally, with the expressed approval, authorization or consent of the municipal and state authorities directly interested. Our effort has been not only to obey the law but to avoid everything which might even have the appearance of an attempt at evasion.

Our business methods and policy, and practically all of the details as to the transaction of our business are matters of common knowledge and are, and for many years have been, well known to the government. We will willingly furnish the government any additional information which is in our possession or under our control, and will cordially co-operate with it in

obtaining such further information as it may require. Every possible assistance will be given by us to the courts in their effort to determine whether our policy is or has been inimical to the public interest. We desire that anything wrong be corrected; we will voluntarily rectify any wrong that may be pointed out to us; and, so far as it may be determined that our policy or any act under it is against the public interest, we will promptly conform to such determination.

We believe that if each of our exchanges were made an independent unit and if each connecting line were put under a separate control, the effect upon the telephone service of the country would be a condition so intolerable that the public would refuse to submit to it and would immediately require such physical connection and common control of these various units as would amalgamate them into a single system. Physical connection in the case of telephone or telegraph does not mean transfer of messages from one line to the other. It means such a connection as will permit one person to have the actual possession of the particular line of communication from one end of it to the other and this can only be given efficiently by exchange systems and connecting lines under a common control; and that is what the Bell System is.

In this connection, and for general information, we will restate the policy which controlled the building up of the Bell System, and our belief as to what a telephone system should be, and what are its relations to the public.

We believe in and were the first to advocate state or government control and regulation of public utilities; that this control or regulation should be by permanent quasi-judicial bodies, acting after thorough investigation and governed by the equities of each case; and that this control or regulation beyond requiring the greatest efficiency and economy, should not interfere with management or operation. We believe that these bodies, if they are to be permanent, effective and of public benefit, should be thoroughly representative; they should be of such character and should so conduct their investigations and deliberations as to command such respect from both the public and the corporations that both will without question accept their conclusions.

We believe that the public would in this way get all the advantages and avoid all the manifest disadvantages of public ownership.

We believe that centers of business and population exist for the convenience of the public as a whole and that no such center can prosper without sufficient and efficient means of intercourse with other centers and tributary territories; that such means can only be afforded by prosperous utility and service companies and that fair rates are essential to prosperous companies. We do not believe that any public either desires or can obtain, nor can any service or utility furnish, permanent and efficient service at less than cost, including capital charges. We believe that ultimately the public either directly or indirectly pays the losses involved in the efforts to furnish such service at less than its fair cost, either through the loss of the capital involved, the losses incident to poor service or the necessary increase in charges required to pay for duplication of capital.

We believe that the highest commercial value of the telephone service depends on its completeness — on the extent and comprehensiveness of the facilities for inter-communication, not only between individuals but between centers of population; that no isolated section can be considered independently of any other section or of the whole; that rates must be so adjusted as to make it possible to obtain the maximum development by making it possible for everyone to be connected who will add to the value of the system, thus giving the greatest value to the greatest number; that the inter-dependence of the telephone service and the value of complete and universal inter-communication justify and require some services partly at the expense of the whole for the benefit of the whole.

We believe that this highest commercial value can only be attained by one system under one common control and that it cannot be given by independent systems unless they are operated under agreements which result in one common control and one common interest, in effect making them a single system.

We believe that rates should be so adjusted as to afford the company sufficient revenue to pay such wages and compensation as will secure the most efficient service; to maintain the very highest and most advanced standards of plant and apparatus, to carry on such scientific and experimental research and inventions as to apparatus and methods as to insure the highest stand-

ards, and to carry to reserve and depreciation such amounts as will enable the company at any time to replace old plant and old methods with new plant and new methods as fast as they may be developed and found to be to the advantage of the service. We believe that in addition, such fair charges should be paid upon the investment in plant as will enable the company at any time to obtain money necessary to provide the plant required to meet the continuing demands of the public; and in order that waste and duplication of effort may be avoided and uniformity of purpose and common control be enforced, that there should be a centralized general administration in close communication with and having general authority over the whole on matters common to all or matters of general policy.

We believe that any surplus beyond that necessary to equalize dividends on a fair basis should be used by the company for the benefit of the public and should be inalienable for any other purpose, and should be either invested in revenue-earning plant until necessary to substitute plant which may become inadequate or obsolete, or should be used to make the service cheaper or better.

We believe that under proper governmental control and regulation the profits from promotion or operation allowed to be distributed should not be so large as to warrant or tempt complete duplication of plant and organization, with its duplication of its capital charges and its organization, operating maintenance and depreciation expenses; and we do not believe that utilities giving at fair rates and efficient and sufficiently comprehensive universal service should be subject to limited competition, not giving such service. Competition which ignores the obligation to furnish a complete and comprehensive service is not competition, is not for the benefit of the public in that it does not reach the whole public interested.

If, therefore, complete duplication, with its dual exchange connection and dual bills for service, is a prerequisite to complete competition, government control and regulation cannot go hand in hand with competition.

We believe that the record of the Bell System will be accepted by the public as fully in accord with these declarations. Consistent adherence to this policy has given the public of the United States the best, most comprehensive and cheapest tele-

phone service in the world and made the Bell standards the standards of all nations.

To remove any possible excuse for misapprehension on account of the many misleading statements which have been circulated as to the alleged unnecessary and over-capitalization and excessive charges of the Bell System, the following statistics are given. Except where stated, the figures are for the Bell System; that is, the American Telephone and Telegraph, and its Associated Companies.

The entire Bell System on June 30, 1913, had outstanding in the hands of the public obligations (*i. e.,* notes, open accounts, bonds, and shares) to the par value of $776,000,000.

The book value of the total tangible assets, which is considerably less than their replacement value, amounted to $960,000,000. Many appraisals of property included in these assets have been made, and most of them under the direction of public authorities. In no case has the value as it stands on the books failed to be sustained, and in most cases it has been very largely exceeded.

The total dividends and interest paid during the year 1912 amounted to only 6.1 per cent. on the average of its outstanding obligations, and to less than 5 per cent. on the average value of its assets.

The actual cash which has been paid into the treasury of the American Telephone and Telegraph Company on account of the capital obligations now outstanding amounts to $22,000,000 more than the par of such outstanding obligations.

The Associated Companies collected from the public and paid back in taxes over $10,000,000 during the year 1912.

The steadily increasing necessities of the public not only for additional but for new telephone service can only be met by new construction, involving capital outlay. To meet these demands during the six and one-half years from 1907 to June, 1913, inclusive, the increase in telephone plant was as follows: Toll line wire increased from 1,460,000 miles to 2,242,000 miles; exchange wire increased from 6,000,000 miles to 13,000,000; the number of exchange stations increased from 2,730,000 to 5,200,000; the number of stations of independent companies connected with the Bell System increased from 343,000 to 2,620,000. The number of independent companies connected with the Bell System is about 25,000. The number of em-

ployees in the Bell System, not including the employees of connected companies, on December 31, 1912, was 141,000.

During this same period the number of shareholders of the American Telephone and Telegraph Company, not including either the associated or connected companies, increased from 17,000 to about 54,000. About 47,000 shareholders hold less than 100 shares each; 6,500 shareholders hold from 100 to 1,000 shares each; 347 shareholders hold from 1,000 to 5,000 shares each, while there are only 16 shareholders of 5,000 shares or over in their own right. A majority of the shareholders are women.

What the Bell Organization Has Done.

For the Public —

It has practically annihilated the handicaps of time and distance in business and social activities and brought 7,000,000 offices and homes into speaking connection with one another through the Bell System. This has not been done by any other system or in any other country.

From 1895 to 1913 it has decreased the average exchange rate per telephone 60 per cent., while the average service rendered or the number of telephone stations in the average exchange has been multiplied by five and one-half.

It has increased the distance for practical telephone speaking from less than 100 miles in 1885 to more than 2,000 miles in 1913. This has resulted from the improvement of methods and apparatus by the experimental and research departments.

Through its relations with the Western Union Telegraph it has given the public improved telegraph service, day and night telegraph letters, daily and week-end cable letters and has reduced rates for plain language deferred messages.

It has increased the radius for delivery of telegraph and cable messages and through telephone connection it has given every one night and day telegraph service.

For the Employee —

It has set up a decent living wage for work performed under sanitary and comfortable conditions and has provided for sickness, disability, injury, old age and death in a broader spirit than has yet been done by any corporation or government.

An article by Mr. VAIL on "The Making of the Successful Business Man," in "Youth's Companion," September, 1913.

THE MAKING OF SUCCESSFUL MEN.

THE term "business" has no narrow or restricted meaning. It is the doing of things; it is the effective use of accumulations of study, experience, and observation; it applies alike to any trade, profession, pursuit, calling, or occupation. The agriculturist, the artist, the teacher, the literary man, as well as the commercial man and the so-called "captain of industry," all are business men. Business is the byplay, the action of life; it is that which brings into high relief and prominence the pursuits, and makes available the accomplishment, of any individual.

The writer of books who, while allowing himself to be exploited and exhibited round the country, was deploring the commercialism of the American people, was doing business; he was engaged in the very commercialism that he pretended to despise.

Ordinarily the business man is considered to be a commercial man — a trader, or collector and distributor of commodities, a banker, or dealer in exchange and securities. Usually the term is associated in our minds with more or less success.

The making of a good business man, in the narrowest sense of the term, the foundation upon which his career is to be built, must be the same in all respects as that of every good and useful man in our social organization. There is only one set of principles for every man who is to get the best out of life for himself, or to be of the greatest service to others.

THE PIONEERS OF CIVILIZATION.

HONESTY.

In certain ages and countries, a measure of opprobrium was connected with the term business, and the business man or trader held an inferior social position as the result of certain unpraiseworthy methods and acts of the traders of those days and coun-

tries; but notwithstanding this, all the pioneer paths of the civilization of the world have been staked out by those same traders, whose selfish desires led them to take great risks and open unknown regions to trade and the civilizing agencies that followed. Selfishness for personal advantage, and self-sacrifice for advantage to others, have worked together as the pioneers of all civilization.

Both exchange of commodities and exchange of thought make for the comfort, happiness, and higher enjoyment of mankind; and it is the selfish desire for gain and fame that increases business activity and brings all parts of the world into closer communication. Inter-communication and interchange are productive of civilization.

With all the higher characteristics and greater benefits of business, it has its questionable side and its questionable practices. It has been, and is, and always will be, engaged in by some persons of doubtful character; anything that tends to good can be perverted and made to pander to the selfish desires and inconsiderate greed of others. While this is to be deplored, and to be minimized as far as possible, we must never forget that the resultant good of all business activity far overshadows the evil that must be incidental to it.

If every member of society could be taught both self-respect, and respect for the rights of others; if he could learn to be self-maintaining, to exercise the best that is in him, to recognize conditions that are consequent upon natural laws, and not rebel against them, to recognize conditions essential to our social organization, to shape them for their legitimate purpose, and not countenance any perversion of them for the selfish purpose or greed of others — there would soon result a state as nearly ideal as is possible in this life.

It is the character of the mass of individuals that determines the character of the social world, of which each man is a part. No great social wrong or evil can thrive in any community without the indifference, if not the acquiescence and active participation, of most of the individuals that constitute that community. *Les maisons font la ville, mais les citoyens font la cité.*

In the making of a business man the personality of the individual must be considered. There has been too much of the idea that every boy is a possible President, that every soldier carries a general's baton in his knapsack. Every boy is far from being

a possible President, and every soldier is not a possible general. Men are very unevenly endowed by nature, both physically and mentally. It is upon their inherited capacity in any direction that their possibilities depend, and upon the training and education they receive that their "probabilities" depend. The result of every man's life is at best the difference between his assets and his liabilities, the balance between his favorable and unfavorable natural endowments, as affected by training, education, or preparation. All favorable qualities or natural gifts can be strengthened, and all unfavorable ones, if not minimized or completely absorbed, can be subordinated. Everything depends upon the proper appreciation, by the man himself or by others, of his possiblities, and upon the highest development of them, through proper training or education. The only limits to any man's achievements are his natural endowments as they may be developed, but fortunately for the world and for the individual, there is in the pyramid of our great social organization a place for every man, one in which he shall be at his best both for himself and for others. Each place in that pyramid is as important to the social organization as any other, and for each place the right man is essential.

Judging the Man.

ACCURACY.

Under general conditions, all that a man receives depends upon himself. He can be helped or shoved into a position, but he must hold that position by his own efforts. If he fails, it is because the estimate made of his capacity or of his possibilities has been wrong, and the impossible has been attempted, or because those qualities that work for good have been weakened by inaction and repression, and negative qualities have become strengthened by indulgence or lack of control. Although in the individual it is easy to distinguish the extremes of good or bad, it is difficult to determine just where those extremes blend. In almost every case judgment is bound to be tempered and biased by the personal equation of both the observed and the observer. Self-recognition is the more difficult, influenced as it must be by temperament and by personal characteristics.

There are many men who have made one success — and never another. The failure to make any other has been due to per-

sonal indulgence, or neglect to employ the essential means to successful accomplishment that were employed in the earlier efforts.

Success and Failure.

PUNCTUALITY.

In the making of a business man, it is wise to consider the meaning of success and failure. There are many failures in the eyes of the world that are far from being failures, and there are a great many successes that are not recognized.

Too much of the tendency of modern education is toward inculcating the idea that success in life is to achieve great fame, great prominence or notoriety, to accomplish great undertakings, or accumulate great riches. Unusual development and achievement in some one of these lines is the necessary accompaniment of marked progress, of great prosperity, or of a high civilization; yet it is within bounds to say that none of these in themselves bring real enjoyment, happiness, and contentment.

The strain of accomplishing large things is likely to deaden all the finer senses; the strain of holding large things is likely to preclude enjoyment through the senses that remain quick. Real enjoyment of things or conditions in life is in inverse ratio to the care, anxiety or obligations that accompany them.

Man is truly a social being. It is not in extravagant conceits, constant change, novelty, and excitement that happiness and contentment lie, but rather in the quiet simplicity of life and in the companionship that can only exist between those possessed of more or less the same average of qualities, between those who can find enjoyment in the same things.

In order to enjoy life, a man must repress inordinate ambition and cultivate contentment, but he must not sacrifice a worthy ambition to develop within proper bounds all his best capabilities and power for usefulness.

In the making of a business man, the foundation to be laid is the same, whatever the final calling or pursuit. Every pursuit or calling, with its various branches and divisions, is as many-sided as humanity itself, and offers the individual opportunities to employ his peculiar gifts to the best advantage.

The personal inclination, so often considered as a guide to one's choice in an education or vocation, has usually little or no value. As a rule, it is the result of early environment. There is always a period in a boy's life when he wants to be a policeman or an engineer. Those historical inclinations in youth that are said to have controlled the future of so many great men are often the "recollection after the fact." The only effect of a strong personal inclination is its influence on one's industry or its excuse for lack of effort.

As pertinent to this question of inclination, it must be remembered that the underlying and governing factor in growth or development is either self-control or the subordination of one's self to others and to conditions. The measure of success is governed by capacity for self-control or capacity for subordination to conditions or to the control of others.

After self-control, the most important elements are directness of purpose and honesty, and a thorough realization of one's responsibility for every act, and of one's accountability for the result of every act.

The lack of self-restraint or self-control is, in its influence on individual life, far worse than any inherited vice or taint. Nothing else is so destructive of all that goes to make success. Many of the essential lessons and good habits are best acquired at the mother's knee. Through the exercise of firmness, gentleness, and consistency from the beginning, they can be acquired unconsciously and without any of the suffering that comes through the discipline necessary to conquer settled habits. The child who is allowed to indulge his whims for this or that thing is being severely handicapped in his future struggle for success.

Give a boy an elementary education, a training and foundation, and he will do all the rest. Influence he will make for himself; the push and pull that so many depend upon, he will himself create.

In response to an article that went the round of the papers about the difficulty of finding men for positions of leadership, hundreds of letters were received. Many of the writers were serious and earnest, and showed a desire to rise above an environment that seemed to be hopeless. Others, full of conceit,

desired to step into a position of leadership without experience of any kind, confident that they possessed all the necessary qualifications. Some of them offered to eat their letters or pay some absurd wager if they did not succeed. Others ranted on the theory that all employers were slave-drivers, and that no one had a chance without money and influence; still others deplored the lack of opportunity, but mentioned the numerous positions of trust they had occupied that, for some unrevealed reason, they were not able to retain. In a word, they nearly all expected to be pushed into position and kept there by brute force.

Only a few of the answers gave any indication of a capacity to appreciate what a position of leadership means, or what it requires.

Business leadership requires, first of all, natural capacity, then the training and experience that come only from a long and successful struggle with all kinds of environment and obstacles, and, lastly, some successful experience under full responsibility.

In the making of a business man, and in the course of a business life, there are practices to be cultivated, things to be learned and habits to be formed that are most helpful to success. These are the most important of them:

Concentration upon and application to the work in hand, to the exclusion, for the time being, of all other work.

Definiteness of purpose and thoroughness in deciding on a pursuit, and in doing and learning all that is necessary to be done or known for its accomplishment.

Observation, or the habit of noticing little things — instinctive recognition of anything wrong, or out of place. This in incidental to orderly habits, or the result of them. General deductions from single incidents should never be made. One incident may be accidental; many similar incidents come from a common cause.

Foresight and precaution; there never was a successful leader who did not continue all precautions until the moment of success.

Self-confidence, without overconfidence or offensive egotism; it should rest on a thorough knowledge of what is to be done, or on experience in the doing, or on both.

Respect for the unknown; in every undertaking there are difficulties that only a familiar and practical acquaintance can reveal.

Respect for the opinions of others.

Deliberation over new ideas. Many thoughts that are seemingly wonderful lose their apparent value when slept over, or exposed to impartial criticism.

Attention without interruption to any one who is at all entitled to be heard. Cultivate the mind in many directions. To know intelligently about many things is always valuable to a business man.

Reciprocity in all the affairs of life. It is only by reciprocity that permanent success can be gained. Every exchange should benefit both sides.

Those who feel discouraged by hard conditions should remember that most successful men have started under discouraging conditions.

Address by Mr. VAIL at the Opening of the Annual Conference of the Bell Telephone System in New York, October, 1913.

Foreword.

IT was not the purpose either to print or circulate this paper. It is intended not as a pessimistic forecast, but a view from one standpoint of the questions and problems before all public service and public utility companies.

There is no serious menace to the position of any utility, except that menace which comes from indifference on the part of the trustees and managers of the properties to the drift which has taken place in the education of the public. The public have been educated entirely by those whose entire capital is in exciting class prejudice and class feeling. Mismanagement and unprincipled promotion and combination have furnished the agitators with some material, which freely coupled with misstatements, misinformation and misinterpretation of rightful things, apparently sustained by utopian theories of those who have never had any practical touch with affairs, have produced deplorable results. Honest managers and promoters, too busy with their own affairs, paid little or no attention to these things, and did not realize the inevitable until it was too late.

The great bulk of the public are honest and will act honestly, according to their lights.

The only thing to bring about a millennium is to be as active in giving correct information, and in upsetting of heresies and delusions, as others have been in cultivating them. Everything is in favor of the side of common sense and individual rights, because of the continued and persistent passing of the individual to higher intellectual and property conditions.

The principal object of this paper was to point out the necessity of education.

ADDRESS.

My estimation of the importance of this meeting is best evidenced in that I shall read to you some of the ideas and suggestions which your discussion should follow.

I wish, first, to voice my regret, which I know will be shared by all of you, that we are not to be favored at this meeting with the advice and counsel of our old-time companion and friend, Edward J. Hall. It is not necessary for me to recount what Mr. Hall has done for the telephone development of this country. You all know it better than I, for you worked with him and under him those twenty arduous years during which I was absent from the business, in which so much took place, and in which were formulated and established many of the wise policies which are now controlling the business. Let us all make a fervent wish that Mr. Hall may again be restored to our companionship and counsel, and be spared to his telephonic as well as personal family for many years.

I propose to confine myself to the few things which we must guard against and prepare for, as much as we guard against and prepare for complete obsolescence or destruction. We are passing through a recurrence of primeval ideas; the whys and wherefores of this recurrence we will not discuss at length, for it is not only a large and involved, but a dangerous, question. I only refer to it because it is necessary to know the cause of that which we are to guard against or of which we are to undertake the cure. There is, however, in connection with our business, one thing that we must never forget or treat lightly; that is, in the history of the world, never have private rights had any real strength when either real or assumed public rights were in question. All private rights are based upon that protection afforded by the customs and conventions of our social organization, and could not exist without that protection and without public acquiescence. So long as common sense rules, and we are governed by those conventions which experience has shown produce the best results for both the community and the individual, and we by our conduct deserve protection, we may hope for that protection which is set forth in our constitution; but, if and when common sense is overthrown and the past has no lesson, our personal rights will not amount to much if they come in conflict with public greed or selfishness, or with public preju-

dice. For this reason and these reasons, and for the preservation of society such as we can live under, it is necessary that we subordinate our personal and selfish desires to what is best for all, and keep alive and in the minds of the public the necessity of this subordination to social and business conventions, and bring the extreme idealists and theorists back to practical common sense.

By giving your careful thought and consideration to these and some other most important matters, this meeting can be made a more effective one than any we have yet had. In the past we have been dealing with rapidly expanding, confusing and changing conditions. While we are by no means at the end of expansion or changes, or even confusion, yet our road or path into the future is more clearly marked out. We know better toward what we are drifting, if you will allow me to call it drift — instead of propulsion — which has governed our past progress. We get a better view of the objective end of these problems of wire transmission and intercommunication. This end is far away, and in many ways as greatly beyond those which now exist as the present is beyond those which existed when the first idea of a world, nation, or state system was formulated by the early pioneers in the business. Not many of you who are present can, from his own experience, know of those times, but your association with others who knew has made it familiar to you.

All industrials, particularly utilities, are face to face with problems, the solution of which will largely determine the future of the business; they are, in the last resort, subject to a control and regulation far stronger than that exercised by commissions or by legislators, that influence and power that makes and unmakes legislators and judges; the influence and power of public desire and public selfishness, which, if not regulated or controlled, will lead to chaos and disaster.

The only regulation or control for this is that common sense which, directed by education and observation, and rightfully administered and regulated, will conserve the interests of all.

One of the large problems is that of increased expenses, largely in the cost of labor and material. Some industries can take care of their increase by increased charges for the service or commodity they give or produce. Utility companies are not, however, in this class except to a limited extent.

Any decrease in the percentage of surplus over fixed charges and dividends in the net from operation must be prevented. It is not enough that the amount of surplus over reasonable and fair dividends be maintained, it is better that the percentage of surplus be maintained. The standing of our securities depends on this, and upon the standing of our securities depends the possibility of raising, at any and all times, the necessary capital for the improvements and extensions to which we are obligated. In assuming the burden and responsibility of providing a universal service, we assumed all its obligations, and the one comprehensive obligation is that we must do it, and do it in a satisfactory manner.

Surplus can be maintained in several ways, other than by that decreased cost which comes from improvement and better methods. One, by increase of revenue by raising prices where they are too low, which, in most cases, will be a slow and unsatisfactory method to the public and will meet with strong opposition, and can only come with the better education of the public to the interests of both themselves and of the companies. Another way, and one of great importance, and one which demands your most serious consideration in connection with your estimates for future work, is through betterment of the average revenue per unit which can come from a closer relation between our commercial and operating departments and by a closer study and better balance of the different rates and classes of business. Another way is by a decrease in capital charges — a considerable saving in investment in property, with its capital charges, large depreciation and inevitable obsolescence, which could be made in the amount of buried capital in terminals; this installation cost which in other utilities is paid by the customer is one of the impositions which custom has imposed upon all for the benefit of the few.

Decreased expense does not necessarily mean cut in wages or salaries, or decreased maintenance, depreciation or obsolescence, but — what is better — it means increased efficiency, improved methods, better system and organization, and very close observation to see that waste and extravagance are eliminated.

I am afraid that our necessity of providing for future growth and expansion, economically, by construction in advance of actual requirements, has, to a certain extent, led to the perma-

nent and extravagant use of space in buildings and of plant facilities which were provided for the coming business and the new business not provided for by the curtailed and more economical use of these facilities but again by new construction. I think possibly that in this direction we shall find a very responsive field.

The immediate future is bound to be a very critical period, in that the public mind is in an unsettled condition towards all utilities.

The present attitude of the public towards all utility corporations has been largely created by the past attitude of corporations towards the public by assuming to be and acting as if they were masters of the situation. The public are awakening to the fact that they, the public, are the masters of the situation, that the utilities have their plant " in situ," fixed and immovable, dependent upon public consent to operate, and, without that consent, of small liquidating value relative to its value as a going concern or its cost of creation.

There is no doubt in my mind that the public, by that I mean the majority, are inclined to be fair. Some of the perverted ideas of the public grow out of the very fact that utilities have been of so much advantage and benefit that they have become incorporated into the daily necessities of the community, without a realizing sense on the part of the public as to how they were, or by whom, initiated or developed; some were the result of the almost universal ignorance and self-deception which almost always exists among pioneers of any business as to depreciation, obsolescence and cost of operation, because of which charges were made and services furnished on a basis which, apparently remunerative with new plant, was ridiculously inadequate when improved facilities, extensions and increase of service given, and depreciation and obsolescence, had to be reckoned with.

The influence of all this on the public mind has never been overcome. Much of the present disturbance and misunderstanding grows out of the very benefits derived by the public from that initiative and that enterprise which not only introduced new utilities, but revived old utilities, and increased their service and benefits by the substitution of new ideas, scientific methods, high organization, for old ideas, old-fashioned and

traditional methods and haphazard organization. While fortunes have been made by some of those who promoted this work, and some still larger ones by manipulation and combination, yet the fortunes made, even if the largest estimates are accepted, represent almost an infinitesimal part of the actual money savings and money advantages to the great public, without any consideration of the indirect savings and advantages in time, comfort and convenience.

The public not only accepted all these benefits almost without thanks, but were taught to and do believe that they all resulted or were derived from some " special privilege " bestowed by the public upon these individuals and corporations, and that every gain or profit to the individual or corporation was something belonging to and taken away from the public. The public disregarded entirely the fact that personal initiative and enterprise were by far the greatest factors in converting what had been luxuries to be indulged in by the few into services for daily use and within the reach of all. It may have been that it was not so much the doing of these things and the profits made, as the manner in some instances of doing and making, that created this public opinion and prejudice.

Honest development and fair methods were accompanied by competitive fights, while promotions, stock manipulations, capitalization and realization of phantom profits by selling to innocent and deluded ignorant investors; promises made and inducements held out in return for these " special privileges," by irresponsible, speculative promoters who, when that inevitable failure to produce results came, laid it to the unscrupulous acts of their more successful competitors.

This was the education to the public, and no effort was made to counteract it or to show the public that all the enterprises were not conducted in the same shady manner and for the same selfish purpose. When unwholesome promotion and destructive competition which followed had exhausted itself, and efforts were made to rehabilitate enterprise, bad effect was produced by the positive and even aggressive attitude of opposition taken by public service and utility corporations to any regulation or control; to the public desire that their operations should be carried on in some accord with public wishes or desires or views; by the prediction of disasters which would follow any restriction or control, but which never came. There was too much resist-

ance and opposition to honest investigation or reasonable control and regulation. To be sure, few anticipated that improvement, new methods, apparatus and organization could or would continue to produce the wonderful results that were produced; but the public did not, nor does it now, know why the disasters predicted did not come. The public can be brought to realize that which is easy of comprehension when the facts are known — that the increased trainload, made possible by heavier permanent way, larger equipment, and the greatly increased traffic, reduced the cost per ton per mile and consequently made freight rates possible which were honestly said to be impossible but a few years ago.

The improvements which did come came so gradually, quietly and without apparent disturbance, as to be almost unappreciable; and it is not to be wondered at that the efforts to produce them were not recognized. The reason we look with envy on the other fellow's job is because we do not see the labor and secret worry and sleepless nights which he has. In our own business, consider the great improvement in transmission in our service; who realizes the work and thought of which it is the product? So far as the public is concerned, the instruments employed are the same. They do not know of the frequent obsolescence and entire change in central office equipments, if they even realize that there must be central offices and central office equipment. The public know that there is a telephone operator, but as a rule they never think that there is more than one. They know that there is a wire running to the central office, but they don't think of the involved mass of wires, the thousands of delicate connections, the acres of switchboards, with their "made like a watch" mechanism, or the vistas of operators with the phantasmagoria of active arms and hands in the operating room. You all have had experience in taking outsiders into a telephone central office. Have you ever taken one who was not almost overwhelmed by the immensity and complexity that he saw for the first time?

Does anyone expect some of our own people realize the work, thought, study and experiment, which have enabled our engineers to avoid the destruction to the telephone service threatened by the installations of power transmission and transportation currents? Larger freight and passenger cars, heavier and more powerful engines, improvements and rebuilding of permanent

way, terminals and stations — these they can see. The improvements in the automobile they are familiar with from daily contact; but the great work that is being done and the continued fight that is being made against the annihilation of the extremely delicate and easily destroyed or influenced telephone current, let alone the efforts and work that are being carried on for its improvement, are entirely unknown to the general public — that public upon which we are dependent for good will and even for our continued existence.

How many of our patrons understand why weather conditions or abnormal demands break down our service? How many appreciate that an electrical or atmospheric storm, of the existence of which they are not aware, destroys their service, or that a line of poles through the branches of trees which cannot be trimmed means cross-talk, noisy wires and bad service to a whole community at times? How many know that you cannot speak or telegraph as far and as easily through a cable as by overhead wires? How many subscribers know that a line "busy" means more work and trouble to the operator than a connection made? How many know or think that the large user who objects to paying an equitable charge for his service relative to the charges for others, or to pay for more than one line when the operator must give the "busy" signal to half his incoming calls, or when a party line subscriber hogs the line, is getting his service at their expense? Because we give them good service three hundred and sixty-four days and twenty-three hours in the year, they are intolerant of bad service one moment even. Do you not think that, if we would take them a little more into our confidence and tell them about these things, we could get a little more consideration?

There has been, and is being, some effort made, but not enough, to make them understand these things; and until the public does understand, and until the public mind is given an opportunity to fully comprehend what has been done, what is being done, and the possibilities of what may be done, public service and utility corporations will not have easy times. With such an uninformed field to work in, and under such conditions, is it any wonder that the demagogues not only get the ears, but influence the minds of the public?

Do you fully realize and does the public know why and how the line of possible improvement and the line of existing con-

ditions are getting closer and closer? Show them that the margin for continued improvement is steadily diminishing, and that the time has already come with many utilities, and is fast approaching for all, when improved methods, increased service, or new impositions on the company, will mean greatly increased costs, with no margin to provide for them unless created by increased charges. The only way to correct this misunderstanding or lack of knowledge is by publicity and full disclosure.

The largest opportunity to educate the public, or rather to make them familiar with real conditions and real facts, is afforded now through our public commissions of control and regulation. Another effective way is by making every effort to correct wrong or erroneous impressions wherever and whenever they appear, give such immediate attention and correction as will prevent them from spreading or becoming fixed, or at least remove any excuse for repetition by giving correct information.

In our own organization, how many employees or even higher officials realize that criticism to the public about officials or conditions not in their own immediate department, and about which they cannot possibly know all, is bad education for the public and only productive of trouble? Criticize and find fault with each other, but to each other. We must stand by and for each other in everything that is right, and when anything is really not right, lend a friendly hand to make it so.

The only policy to govern this publicity is that whatever is said or told should be absolutely correct, and that no material fact, even if unfavorable but bearing upon the subject, should be held back. When we see misstatements, make it certain that those making them have correct facts. This will not only tend to stop the making of them, but will lessen the influence of them by decreasing the number of the misinformed, and any excuse for misstatements. Attempted concealment of material facts cannot but be harmful in the end, for, in these days of investigation, concealment can be but temporary.

Make the public understand that any course of action must always be determined by actually existing conditions, qualified only by such future conditions as are plainly in sight, and that any judgment of past action must be based on conditions existing at the time of action, and on results that necessarily must follow such conditions.

A very common but honest and mistaken fad is, that reduction in charges brings increased net because of increased business. The public should be educated to realize, that increased business can only produce increased profits where there is a potential volume of business to develop, and when the charges are based on the cost, and the profit on the volume of business.

It is also necessary that the public should be made to realize that there is a point beyond which every improvement in or increase of service, any new taxes or other imposts, means additional cost and additional charge. While many of the things which are misunderstood by the public are as plain as A B C to us, and even are known to many of those who make up the public, yet they are not known to the great majority which decide these things, and whose interest is always to decide them against us. Without constant reiteration, statements have little effect either on those who do not know, or on the bearing, the inaction and the indifference of those who do know, and have no educational value whatever.

Remember: once reading or once hearing never educates. It is only constant repetition and frequent seeing that makes lasting, effective impression on the mind. Remember that education comes more readily through the eye than through hearing or reading. Let the public see some of the daily workings and understand them.

One of the most important things in connection with this education — important enough to be dealt with alone — is to make a campaign for increased respect in the attitude of the public toward the public service commissions. The greater respect in which these bodies are held by the public, the abler will be the men who will serve, and the greater the benefit they can be to the public, and the greater protection they can be to the public service corporations. No man is too large, no standard too high, for these commissions.

Until the time comes when the decision of these bodies can be fully accepted by all — even though they are not fully acceptable to all — they will fall short of the purpose of their being. It is for us, in co-operation with all others interested, to aid in bringing this about.

A large part of our problem will be solved when the public can be brought to a full understanding that there is a mutual

dependence between the public and the public service corporations, that public prosperity depends upon the utilities that bring them and keep them in contact with each other and with their social and commercial centers, and make life in large centers possible or tolerable, and, that the more nearly perfect in efficiency and sufficiency the utilities serving them are, the more prosperity, comfort and convenience they will enjoy. When the public realize that it is as much of a "special privilege" for a farm to be within reach of a railroad as it is for the railroad to run by the farm — that the difference in value between farms or house lots depends very largely upon the facility of communication or supply of the conveniences afforded by public utility companies — public opinion will be different. It will realize that it is these public utilities — that make possible, and maintain as well as sustain, these large aggregations of people — which create value; that without these facilities the aggregations could not, and the value would not, exist.

There is no reason why the public have not as much right to that increased value or increment, sometimes termed unearned increment, that comes from concentration of the public or growth of communities, as the public have to the profits of utility or public service companies, and particularly to those profits below a reasonable charge. Confiscation of the profits of public service companies is only the first step of the taking of unearned increment.

Social and commercial development more often follows the development of facilities than precedes it. You think all these facts simple and self-evident, but how many of the public upon which we are dependent, believe them, or, if they believe them, admit and act on that belief?

If the public could only be brought to realize that there is a mutual interdependence which is as vital to the one as to the other, much would be done to solve our troublesome questions.

Reading a book printed in 1825 upon the future and development of railroads, I came across this passage:

> "The benefits resulting to commerce from a cheap and expeditious communication between one place and another, for the conveyance of goods, being so very evident, needs no comment. The discussion has been carried on, and admitted by every political economist. In a manufactur-

ing and commercial nation the facility of transporting goods from the place where the raw material is produced, either to the customer directly, or to the manufacturer, and from thence to the consumer, is not only a subject of essential importance, but next to the value of being able to manufacture cheap, and in a superior manner, enables us not only to carry on a successful competition with foreigners, but also to support a pre-eminence in the market, and constitutes almost the whole support of commerce. If the importance of facilitating commerce required illustration, every political economist, who has written on the subject, may be quoted in support of it."

As I have said, the great cause of the public attitude is the ignorance of the public as to actual conditions. I do not mean the ignorance of the ignorant, but the ignorance of the educated people.

The prevailing fallacy is that somewhere in the coffers of every utility company there are immense reserves accumulated from exorbitant charges, which can be drawn upon by the public as a whole in the way of taxes, special imposts, percentage on gross revenue, and, as individuals, by reduced rates and all kinds of special indulgences, privileges, installations, changes of location, and the thousand other exactions demanded by the selfish subscriber. The public do not realize that when they are getting some additional service without additional charge, the cost is being paid in some way, and that in the end it is being paid by the public and that each individual of the public must in some way share in that payment. Although a corporation may even be paying no dividends, there is the idea that in some way, which it is entirely unnecessary to set out, these secret reserves are being drawn upon to enrich the shareholders and officials.

The reason for this fallacy is, that notwithstanding all these exactions, the utility company seems to flourish even under these exactions. We know that many utility corporations serving large territories are hardly self-supporting. We understand that the reason all service companies are not in the hands of receivers is because of the improvement in methods, apparatus, organization, which have reduced cost as fast or faster than

these exactions increased the charges on revenue; but does the public — our masters, our judges — know or understand?

Persistent, absolutely correct, and often-repeated explanation of all these and the thousand other things that the public are mistaken about, is the only way to change their views and attitude. It is a curious fact, and indicative of the peculiar working of the human mind, that some of the most unreasonable people that any one public utility has to deal with are the officials of some other public utility who are most intolerant as to others even when themselves needing the most charity. Are any of you in this category?

Take our 4½ per cent. payment from Associated Companies. Because it has been called rental of telephones by inheritance from the original rental system, many of our own people had to be convinced that it was a perfectly defendable charge. Can you blame the public or members of the public commissions for thinking it a species of graft on the public, until they are made to realize that the vast and expensive organization is at work, not only during office hours, but during all working hours, and oftentimes into restless hours at night when brain should have quiet and repose instead of being troubled with fantasy and dreams?

Educate the public. It is you who must do it.

There is one more thought which I wish to emphasize and that is this: The ideal system of intercommunication is one that utilizes every possibility; our present system does not. Whether we can ever bring it about, depends very largely upon you, gentlemen, and your associates. If you can impress upon the country at large, and the public, the fact that we can give the public better service than could be obtained under government ownership, and that a monopoly does not necessarily mean public disadvantage, the time will come.

Before we can accomplish our plans for a universal wire system, the public mind must be thoroughly imbued with its economies and advantages. Step by step, we must approach the objective, not only each step definitely affording some distinct advantage, but also the process by which the advantage was gained or obtained must be part of the public advantage and knowledge.

The public must understand that waste by non-utilization and waste by duplication is waste, and what that waste amounts to, before they will consent to the perfect wire system.

About government ownership to avoid monopoly. The public must be made to realize that there is as yet no such thing as economical government administration; that low cost in all government-operated utilities is, as a rule, due to lack of quality, or to the fact that the deficits of operation are being supplied out of the public treasury; that the whole public is being taxed for the benefit of the few. When this is done, the only people to deal with are those who want to benefit through political graft. This is not the fault of any particular government, but the fault of the organization of all governments. Government organization is for a special political purpose, and must be adapted to that purpose. Operating organizations are, and must be, absolutely different and are difficult to build up; successful ones result only from direction interested in the results. Enterprise and progressiveness may be found in a government department, efficiency sometimes, but economy or regard for time, never.

There are some absolutely necessary things to life, health and reasonable convenience that the public as a whole should maintain for all; but railroads and telephones and telegraphs do not come within this category, although water supply, highways and letter post may. The post-office and the telegraph are more often compared and put in the same category, as being proper for government operation. If the government operation of the telegraph was put on the same basis as operation of the post, do you realize that the government would simply collect and deliver the messages, and that the transmission, the carrying, would still be performed by the utility corporation, by the telegraph company?

The Post-Office Department does not carry a pound of mail from post-office to post-office, except upon transportation facilities not even controlled by the government, but by private carriers. Except in a very few isolated cases, the government even has no voice in the making of the schedule for the arrival and departure of the mails. The Post-Office Department does not own or directly maintain a single post-office building in the United States, and I think the same may be said of England.

It is impossible to discuss intelligently the recently promulgated scheme of government ownership or operation of wire systems which seems to be of disputed parentage. Some of the proposed methods which are published would be an insult to decency and justice, and a violation of the very laws, the lack of interpretation of which causes so much of the uncertainty and consequent disturbance now existing, and cannot have any basis or foundation. One thing we do know, and that is, if the government buys our property at anything like a fair value based on any estimate that could be sustained, our shareholders are amply protected; and that, if the government goes into competition with us on any plan suggested, or on any basis which any government official would suggest, or would be empowered and provided with funds to carry out, our business would be in very little danger. Repetition of such competition as that which we passed through during the past twenty years, and which has failed, is impossible even by the government. Even the treasury of the United States would not have met the expenditures which were made in that competition.

I thank you, gentlemen, for your attention, and trust that your deliberations will be helpful to you, and through you, to the business in which we have so much interest, and faith and enjoyment; and above all, gentlemen, remember that it is the meeting and overcoming of troubles and difficulties that bring out our latent ability, and that the very existence of these troubles and difficulties affords us our opportunities.

From the Annual Report of Mr. VAIL as President of the American Telephone and Telegraph Company, March, 1914.

Government Ownership and Operation.

THE report for 1911 contains the following declarations:

"We believe that our Company has a most vital interest in, and that our future success and prosperity depend upon the working out of the telephone and telegraph problem in a way that meets with the approval of the public as a whole."

"We believe that we are working this problem out on the broad lines of the greatest benefit to the public. . . ."

"As a corollary to this — we recognize a 'responsibility' and 'accountability' to the public on our part, which is something different from and something more than the obligation of other public service companies not so closely interwoven with the daily life of the whole community."

That we have followed our declarations and fully recognized these obligations is evidenced by the fact that the Bell System has for efficiency, progressiveness, improvement and development become the standard for the whole world. The policy upon which it has been developed and the results accomplished are the strongest reasons put forth for government operation, and the only ones except those debatable ones of the superiority of government efficiency and economy of operation.

Our opposition to government operation and ownership is not based on pecuniary, partisan, prejudiced or personal reasons. It is because of our interest in the upbuilding of a great public utility and its preservation. Our declaration quoted above is as much part of our policy as is the making of our dividends. We feel our obligation to the general public as strongly as to our investing public or to our own personal interests.

We believe that the efficient operation of every utility is necessary to the public, and we do not believe that any service efficient, progressive and permanent can be given by companies not making fair profits. No community can afford to be served by unprofitable or bankrupt companies which are bound to give inefficient, unprogressive service.

Prosperity follows trade and trade follows the line of least resistance. Efficient facilities have more to do with serving trade than any other single factor.

We are opposed to government ownership not on account of our property for we know that our property cannot be confiscated, and cannot be taken except for its just value.

We know that if our property is ever taken by the government it will be found to be in the very best possible condition of that of a going concern, and that any valuation, that will stand, will yield much more than the present market value of our shares.

We are opposed to government ownership because we know that no government-owned telephone system in the world is giving as *cheap* and *efficient* service as the American public is getting from all its telephone companies. We do not believe that our government would be any exception to the rule.

Government Purchase.

The public has been much interested, and the shareholders in telephone and telegraph properties much concerned, about a report said to have been submitted to Congress by the Postmaster-General, advocating and recommending the acquisition by the government of the wire systems of the United States.

This common impression is wrong. The Postmaster-General has made no report or recommendation. A special committee of post-office officials, designated by the Postmaster-General for the purpose of gathering information, had prepared some more or less relevant material. Upon a request from the Senate for the information that had been collected, the Postmaster-General forwarded the findings of this committee *without comment.* It is not a departmental report; it is merely the personal conclusions of three minor officials of the Post-Office Department.

The statistics and statements of fact are much the same as, and appear to have been collated in connection with, those gathered by the advocates of government ownership in Congress. Because of errors in their compilation and failure to take into account materially dissimilar conditions affecting comparisons, these statistics have little or no real value; and because of their many mistaken and misleading statements, conclusions predicated upon them are erroneous and misleading and necessarily

unsafe. This criticism would have been unnecessary had more care been used in gathering the information, situations more analogous to each other been selected for comparison, and a little scrutiny been given to the sources.

It is interesting to note, however, that the investigators reached the conclusion that the telephone and telegraph business should constitute one system, using the wires in common — that the services were complementary. This was the contention of the Bell System, and the policy which it was attempting to carry out.

The report says:

" Unquestionably from the engineering viewpoint the attitude of the Bell Companies is proper, for it is very necessary in the interest of the most efficient service that the entire telephone network be under one management.

" The study of this subject has disclosed that the telegraph and telephone systems of the country are so inextricably *allied* that any consideration of one must necessarily include the other."

The introduction of bills for government ownership and operation is far from its accomplishment; this has been repeatedly done for many years past, some of them strongly favored by the heads of the Post-Office Department. If the government takes over any utility it will only be done after thorough consideration and examination and prolonged discussion, and if determined upon, *there is not at all likely to be either confiscation or destruction of existing systems.*

The recommendation of one of the advocates of government ownership to take over the telephone toll and long-distance lines, equip them for telegraph purposes and enter into a destructive competition with the existing telegraph companies for the purpose of destroying their market value and enabling the government to purchase at a low price, is so utterly at variance with any possible standard of public or private or commercial honor that it would seem as if the very suggestion would be repudiated.

Shareholders Should Not Be Induced to Part with Their Holdings.

The proprietors of the American Telephone and Telegraph Company should rest quietly and not be scared or frightened into sacrifices of their securities.

Whether government purchase be ultimately decided upon or not the property is well worth more than the market price of its securities. This is not mere assertion, it is an established fact. Friendly and unfriendly appraisals of the various properties have been made; in no instance has the appraised value been placed below the book value, while in most instances it has been placed in excess.

This excess in value will continue so long as public utilities are allowed to earn fair returns on the value of their property or on their investments. The present distribution of profits by the American Telephone and Telegraph Company and associated companies averaging 6.05 per cent. on the par of their outstanding securities or less than 5 per cent. on the book value of their property (which as above stated is less than the actual value) cannot be criticised as unreasonably high.

The charge is freely made that the stock of the American Telephone and Telegraph Company is watered. In another part of this report it is shown that "for the $344,616,300 capital stock, $369,136,414 has been paid into the treasury of the Company." Mr. Lewis, the principal congressional advocate of government ownership, frankly says:

"Be it said for the Bell System that it is the one great corporation in our country that has not issued tons of counterfeit capital. Its stock and bonds to-day represent the actual contributions of its shareholders in money to a great common enterprise, and we will not have that unfortunate circumstance to deal with in the valuation of their properties."

Rights of Property Owners.

Those advocating government ownership say "that private claims or rights of owners (*i. e.,* shareholders) of the existing systems *will not be allowed to stand in the way.*" It is neither contention nor resistance for the thousands of owners to claim "just compensation" based upon a fair valuation; the guaran-

teed rights of all give them that protection. Just compensation means that it must be "just" and represent full value of the property; this contention is very clearly upheld in the following extract from a United State Supreme Court decision in a case where it was claimed that just value meant full value of the property, including franchises:

"The language used in the Fifth Amendment in respect to this matter is happily chosen. The entire amendment is a series of negations, denials of right or power in the government, the last, the one in point here, being 'Nor shall private property be taken for public use without just compensation.' The noun 'compensation,' standing by itself, carries the idea of an equivalent. Thus we speak of damages by way of compensation, or compensatory damages, as distinguished from punitive or exemplary damages, the former being the equivalent for the injury done, and the latter imposed by way of punishment. So that if the adjective 'just' had been omitted, and the provision was simply that property should not be taken without compensation, the natural import of the language would be that the compensation should be the equivalent of the property. *And this is made emphatic by the adjective 'just.' There can, in view of the combination of those two words, be no doubt that the compensation must be a full and perfect equivalent for the property taken.* And this just compensation, it will be noticed, is for the property, and not to the owner. Every other clause in this Fifth Amendment is personal. 'No person shall be held to answer for a capital, or otherwise infamous crime,' etc. Instead of continuing that form of statement, and saying that no person shall be deprived of his property without just compensation, the personal element is left out, and the 'just compensation' is to be a *full equivalent* for the property taken. This excludes the taking into account as an element in the compensation any supposed benefit that the owner may receive in common with all from the public uses to which his private property is appropriated, and leaves it to stand as a declaration *that no private property shall be appropriated to public uses unless a full and exact equivalent for it be returned to the owner.*"

It is neither contention nor resistance to defend the properties against mistaken assertions, freely made, "that the plants are rubbish and the securities represent little value." Values are

not to be determined that way; such assertions cannot change cold facts. Sixteen millions of miles of wire, mostly copper, on poles or in cables and underground ducts, with the station and central office equipment of nearly five and one-half millions of telephone exchange stations, all in good physical condition, are not rubbish and do represent value. The addition of over 460,000 telephone stations during the past year could not have been made without expenditure, and represents legitimate increase, not inflation of capital.

The final adjudication of a lower value than claimed for the private telephone plant in Great Britain has no bearing on the value of the Bell System. The private companies of England were operated under a limited license; it was known years in advance that the licenses would not be renewed and that the government would purchase the plants. The government and the owners could not agree as to expenditures upon the plants to be made prior to the purchase to keep them in any up-to-date condition; consequently as little was done as possible. This was a period of rapid improvement in telephone exchange equipment. The outside plant was largely overhead on buildings. To make it modern the old equipment and plant had to be largely replaced. The companies were paid 100 per cent. on the investment.

An appraisal of our properties upon the basis of the English valuation would give a result largely in excess of our present outstanding capitalization.

Government Ownership and Operation: Is It to Be Self-Supporting?

Should government operation be self-sustaining in its full significance, entirely maintained and operated out of its own revenue, or should such properties be operated at a charge on general revenue at the cost of the whole public for the benefit of a part? Should they be regulated as to *efficiency* and *sufficiency* as private utilities are regulated, or should each department or utility regulate itself? If utilities are to be subsidized, that is, maintained entirely or in part out of public revenue for the benefit of the users, then the tendency toward government ownership is strong. There may be some things which should be made free and convenient for the whole public even at the expense of the

public revenues, but the telegraph and telephone are not of them.

The power or right of the government to own and operate utilities need not be discussed. If such power is to be exercised it becomes of the greatest importance that a right decision, based on an exhaustive study and a thorough understanding of facts, conditions and possible results, should be reached.

The greatest embarrassment in dealing with many public or quasi-public questions is the difficulty of establishing a clear understanding unaffected by prejudice or partisanship; of offsetting erroneous impressions, created by mistaken or misleading statements and disputable and controvertible statistics, particularly when such statements are made by those who have the public ear.

Dickens said, when a parliamentary reporter: "Night after night I record predictions that never come true, professions that are never fulfilled, explanations that are only meant to mystify." It was so then, is now and probably ever will be the same.

Government-Operated Telephone and Telegraph Systems.

A thorough study of all available reports and official information on the operations of government-owned and operated telephones and telegraphs shows that while in some countries the post-office proper pays a revenue, the combined telegraph and telephone are without exception operated at a deficit. Every telephone system in the world adopts the Bell System as a standard, uses the Bell operating methods and either uses the Bell apparatus or copies it; yet there is not one that gives an approximation to the facilities that the Bell System gives the public, or gives as good or as cheap service on the same basis of accounting, franchise conditions, and wages paid.

In England, where the post-office pays a very handsome net revenue, its telegraphs show a relatively much larger deficit, while the revenues and ordinary expenses of the telephone operations show a small balance, excluding, however, depreciation and obsolescence which have not yet become fully determined but which cannot be ignored.

These deficits are not the result of a definite policy to give a cheap service to individuals at the cost of all, but are due to errors in management such as underestimates of values and cost of new construction; disregard of maintenance, depreciation and particularly of obsolescence; impossible theories of operation, and a mistaken policy founded on *promises, prophecies and assertions exactly the same in character as those now being used to bring about government ownership in this country,* and upon a failure to understand and appreciate the advantages of private as distinguished from government organization. The fallacies urged in Parliament to induce the government acquisition of the British telegraph system years ago are the arguments used by the advocates of government ownership and operation to-day.

Functions of Government.

The functions of government and the causes of its being are *"Control"* and *"Regulation"*— control of the individual and regulation of the community so far as is necessary to secure the enjoyment of life, liberty and happiness by all, and "control" or "regulation" of anything that might in any way become a menace to the social organization or to its individual members.

To the extent that anything *is a necessity* in its absolute sense to the enjoyment of life and health — the absence of which would endanger the community as a whole — it is a proper function of the government either to provide it or to see that it is so provided as to bring it within the reach of every individual member of society; even to provide it for all at the cost of the general revenue.

To the extent that anything of a utilitarian nature is adopted by or assimilated into the habits of the public and contributes to their comfort, convenience, or even generally to their profit, it should become an object of *sufficient government regulation to prevent the public convenience being made the cause of private exaction;* the distinction between what should be furnished in whole or in part by the government and what should be regulated by the government being whether *the necessity is absolute* and the thing indispensable to the life, health and well-being of the individual and consequently of the community, or whether it be something contributing to or even important, but

not indispensable, to the comfort, convenience and profit of the community or of the individual.

A sufficient supply of potable water available to all is a necessity. The street car, the electric light, the telephone or telegraph are conveniences of the highest importance but are not necessities in the foregoing sense.

The control, and later the operation, of the mails and posts, for the interchange and dissemination of intelligence — letters, books, periodicals — have by general acceptance become a proper governmental function. The conveyance of packages and parcels has by custom been included with the mails.

Government Operation vs. Government Regulation.

The step from government control and regulation to government ownership and operation is radical and fundamental; one which absolutely changes the character of government organization and functions. In this country there is no organization or function of the government that in any sense approaches ownership or operation in the real, large way.

There are no sound reasons given or real advantages promised for government ownership and operation which do not apply to or cannot be secured by government regulation. Most of the "advantages" promised and arguments used are purely hypothetical, theoretical and uncertain; they are not vindicated by the experience either of this or of any other country.

Governments have in the past taken over or constructed and operated all kinds of utilities where political, national or strategic exigency made it necessary. Such operations, other than those to meet national crises, have properly been confined, wholly or in part, to such as were of a national character and where the risks and uncertainties or magnitude placed such operations beyond private initiative, enterprise and capital.

There is, however, no reason for government ownership and operation where private initiative and enterprise are not only competent to develop, but have actually developed, these utilities to the fullest extent. The government never has taken the initiative in the introduction of any new and untried utilities, nor any interest in them except so far as it has encouraged their development in private hands through the provisions of the "patent," "copyright" and "trademark" laws; and there is

no reason why it should unless such utilities have become of such general use that their regulation is necessary.

The general stock arguments put forth for government ownership and operation are:

Extension of benefits to a larger public;

Abolition of selfish exploitation;

Control of monopoly;

Pecuniary advantages to the public through lower cost and consequently lower charges;

Greater efficiency;

Saving to general public rewards of private initiative.

Selfish Exploitation.

Private enterprise is rightly said to be based on personal interest. There is no doubt as to this, but incentive to achievement along individual lines could not be suppressed without great detriment to the community at large. What would be the result if government restrictions reduced the reward or profit on initiative and enterprise to that of certain and secure business ventures? Where would be the incentive to assume risk and uncertainty, or the larger profit necessary to recoup the individual and the community for the unsuccessful ventures?

The pecuniary reward to those who take the initiative and the risks of new enterprises must correspond to the labor and to the risk, but this reward cannot exceed the advantage to the public using the service, for the user must get in service, in some way at least, the equivalent of its cost to him. Private initiative, invention, enterprise, risk, spurred on by the incentive of reward, have changed the face of the world, and the resulting unearned increment largely constitutes the wealth of nations; without it many of the great scientific industrial developments would have remained scientific curiosities, even if they had been evolved at all.

Monopoly.

The general tendency in this country is to the "one system" idea of public utilities under regulation. Everyone knows the evil of duplication, no one wants two gas, water or electric lighting systems, and there is a general acquiescence in the "single system" in each community. In no one of the utilities except the telephone, and the street cars to a slight degree, but for a

very different cause, does the fact whether A, B or C residing in the same community is on the same or different "systems" make the slightest difference as to service, nor does it matter whether systems in different communities are connected or not.

With the telephone exchange the question of those connected is vital; your service depends upon one system connecting all telephone subscribers in the same community and upon all communities being connected with each other.

A telegraph system reaching all telegraphic points avoids physical transfers from one system to another, with the incidental delays and obstructions to good service.

Telephone and telegraph systems operated under common control can avoid duplication by making use of the same wires.

For practicability of management, economy of operation or efficiency of service there should be one combined telephone and telegraph system. This has been the Bell contention and this is the conclusion reached by the post-office committee and by congressional advocates of government ownership, who say in substance that the *telephone and telegraph should constitute one system and that a monopoly.*

Government regulation can effectually curb "monopoly" and "selfish exploitation" and make them useful without destroying them, by subordinating them to the public for the public advantage. Government ownership and operation would destroy individual initiative; they would create monopoly and increase and strengthen its evils by placing it in the control of officials and servants, responsible only to themselves as a political party, and parts of the organization which made or unmade the chief executives.

Operation and Regulation.

Operation, economical and efficient, requires high organization continuously maintained, superior methods and efficient service. There must be supervision by able executives assisted by experts, all of long experience as executives as well as in the particular industry. They must have large discretionary powers, assume responsibility, and have undisputed directive authority over subordinates. It is purely administrative and executive in its nature.

There is a very narrow margin between efficient, economical operation and waste. It is possible to have efficiency accompanied by waste, but never possible to have efficiency without responsible organization and the individual initiative, watchfulness and continuing interest which only accompany permanency and expectation of reward.

Regulation is in the nature of a review, consideration, determination. It is judicial and advisory, not administrative or executive; a commission of regulation is analogous to a board of direction representing the public as well as the corporation, having no other object than the conservation and protection of the interests of all.

Operation is a methodical action upon lines of a determined policy, requiring expert knowledge, experience, training, and individual interest.

Regulation is common-sense, intelligent review and decision, based on presentation and examination of facts and conditions.

Government Operation and Efficiency.

Theoretically there may be no reason why government operation should not be as economical and efficient as private operation, but actual constructive performance runs up against actual conditions and tangible difficulties which only experience shows how, and responsibility develops the ability, to deal with.

Departmental officers taken from walks of life affording neither experience nor knowledge of the duties and responsibilities they are to assume, are expected to perform the various duties of their departments and also to incidentally look after their political obligations. As a rule their training better fits them for advocates than for executives, for judicial positions or as commissioners of regulation than directors of operation.

Every new head of a department is of necessity a reformer; his average incumbency is less than four years; there is seldom any continuity of departmental policy, and never any continuity of departmental staff. The important assistants come and go with the head. A review of the operations of his department shows much that could be changed to advantage; to eliminate all that is unsatisfactory and bring about effective results under the conditions and in the time available is impossible for the ablest. He starts in finding an incomplete attempt at accomplishment

along a certain line of policy, and goes out leaving an uncompleted attempt along a different line of policy. The inevitable tendency is towards promise, not performance.

The departments are run by the minor officials and the clerical force who under ordinary conditions are permanent. The officials have no responsibility in the selection of and little directive control over their subordinates. There is a premium on that *finished mediocrity* which leaves much to be desired and furnishes nothing upon which to base effective reprimand, enforce discipline, or cause for removal. Lack of responsibility is a handicap in the development of men; lack of accountability is a handicap on thorough efficiency; lack of opportunity is a handicap on initiative and enterprise.

A full average of the minor heads and clerks would normally have capacity, initiative, enterprise and ambition. If any one of them develops extraordinary efficiency, initiative or enterprise, he is either elbowed out of the way as disturbing the quiet, complacent habitude of the organization, or, if sufficiently masterful, develops to a point where he can go no farther, and is soon taken up by outside organizations. The higher positions, honorable as they may be, are not sufficiently compensated and do not afford the permanent and remunerative positions to be had in private enterprises for similar occupations and ability.

In European countries, where even the minor office holders and government employees have a certain official distinction which also attaches to their families, there is something higher than the mere remuneration, something that does not attach to private occupation, and is not attached to government subordinate positions in this country.

Government administration is more or less a game of politics, and while with government operation it may sometimes be possible to have efficiency, it will always be impossible to have economy.

Comparisons Between the United States and European Telephone and Telegraph Situation.

Opposed to actual conditions and experience, statistics, theories, promises, prophecies go for naught, no matter how carefully they have been prepared or thought out or how strong and good the faith and intentions.

There is government operation on a large scale in Europe. In the larger states of Europe commercial conditions are more similar to those of the United States than elsewhere; in Great Britain, particularly, racial commercial and social characteristics are more in common. Why New Zealand experience should be put forth so prominently as a reason for government operation is difficult to understand. It is a fringe of people on a narrow circumference of the islands. It is a country of recent settlement and many social experiments. It has one-thirtieth the area and one-hundredth the population and a debt already equal to one-third of that of the United States. If the so-called advantages of government operation are the cause of the debt, the United States wants none of it.

The government-owned European telephone plants, notwithstanding the low price of foreign labor, are carried at a much higher cost than those of the Bell System and yet every one of them uses the Bell System as a model. The book value of the plant of the Bell System *per station* is less than 60 per cent. that of Belgium; less than 75 per cent. that of Austria; about 85 per cent. that of Germany, Great Britain and Switzerland: and all of them government owned.

The capital account of the post-office telegraph system of Great Britain, upon which interest is charged against telegraph revenue, is about $54,000,000. The amount admitted to have been spent in the plant is about $85,000,000. The admitted cost of the post-office telegraph, including deficits in operation but without interest on such deficits, is about $150,000,000.

The mileage of telegraph wires is a little under 320,000 miles. Based on interest-paying capital, the cost per mile of wire is $167; on actual cost of the plant, $267. The Western Union carries its plant at $98 per mile of wire. The telegraph plants of the world, mostly government owned and operated except in the United States and Canada, are estimated at $130 per mile of wire.

One reason given for higher cost per mile of wire in Europe was the cost of copper wire. The day this was written copper was the same price "spot cash" in Paris that it was "thirty days" in New York, a difference of about seven cents per one hundred pounds.

It is also stated that telephone rates are higher in the United States.

The policy of the Bell System is that the value of a telephone service is in direct proportion to its "universality" and "dependability;" that is, to the certainty of reaching promptly by telephone the greatest number of people. *This policy, which has been the strength of the Bell System and the cause of whatever supremacy in the telephone field it has, is now being made the strongest argument for government ownership and operation, ignoring the fact that the Bell System has extended or popularized its service to an extent far beyond that of any government system in the world.*

The Bell System makes rates for such kinds or classes of service as may be desired by, and will be acceptable to, each and every possible user. In this way it has made it possible for, and to the advantage of, every person to be connected with the exchange system who would add to the value of the service to others. The government could not do more even by giving free service.

There are higher individual rates for larger individual service in the United States than in other countries, but there are relatively much larger individual users of the service. There are also rates as low as or lower than in other countries. There is every economic reason why large users of the telephone in their own business and for their own profit should pay for service according to use. If this policy is to be abandoned, low rates cannot be made for the small user.

The soundness of any policy, the "efficiency" and "sufficiency" and the reasonableness of charges for the use of any utility, are ultimately determined by the degree of its adoption by the public. In the United States there are 9.7 stations to each 100 population, more than double that of any other country, nearly six times that of Great Britain, over thirteen times that of France, more than four times that of Switzerland. There are nearly 2,500,000 telephones in rural habitations in the United States, nearly one to every two strictly rural habitations. It is probable that more houses are connected by telephone in the United States than are reached by rural delivery. The telephone goes to the house; the rural free delivery only to the nearest crossroads for a good proportion of the houses.

NOTE: The rural habitation of the United States Census includes villages of less than 2,500 population. The rural habitation in the telephone sense means segregated houses only.

That the Bell rates as a whole are reasonable and not excessive and are as popular as the rates of any government owned plants is also shown by the telephone exchange revenue per station, which in the United States is but $30.45 against $32.63 for Great Britain.

The average wages paid to the Bell operators are double the lowest and about equal to the highest rates paid by those in Europe.

The following is an extract from the report of the Postmaster-General of Great Britain:

"Telephones. The telephone revenue for the year *including the value of the service rendered to other departments* [*i. e.,* constructive revenue. Italics ours] was £5,785,701, an increase of £2,822,965. The telephone expenditure including payments in redemption of capital was £5,395,627, an increase of £2,652,987. The balance was £390,074."

The Bell System paid in taxes over $11,000,000, 5 per cent of the gross revenue in 1913. If the English government telephone had paid this, it would have reduced the so-called surplus to £100,000. No allowance is made for depreciation and obsolescence which in itself is a large percentage of operating costs in the telephone operation and must come out of revenue or out of plant.

It is claimed that telephone toll and long-distance charges of the Bell System are excessive as compared with government owned plants of Europe. This is not the fact if the service given is considered. The *charge* for the *immediate* service which is the ordinary service given by the Bell System is higher than for the *ordinary* service, which is a *deferred* service, given by those systems, but it is not higher than their charge for *immediate service;* where *immediate* service is given, if at all, it is from two to three times that for ordinary.

The use of any service determines its profitable value to the user. The average toll revenue per exchange station of the Bell System is $11.35; that of the British system is $6.46.

The possible use of toll lines based upon the number of minutes in the twenty-four hours is used as an argument for reduction in rates. Comparison is also made between toll-line and freight ton-mile rates. Telephone service is congested in the active hours of the day, and is very irregular. There are rush

hours, and peaks of load. The telephone conversation requires the exclusive use of the telephone circuit for the time of conversation.

A telephone circuit from New York to Chicago costs $250,000. If it were used every five-minute interval of the ten active hours of the day, there could be only 120 conversations. As a matter of fact, it is not in use one-third of those intervals.

On a railroad from New York to Chicago trains of passengers and freight follow in rapid succession. What would freight or passenger rates be if only one train could be upon the whole line at one time? Yet that would afford a more proper basis of comparison.

In the Bell System the toll and exchange service is immediate; that is, the customer is given service when he calls for it and not put on a waiting list and made to await his turn. Sufficient operating facilities are provided for all the *normal peaks* of load. The foreign government-owned plants used for comparison only provide facilities for the *average* load. Customers must await their turn, which during certain times of the day means hours, not minutes. *Such deferred service, causing an even and continuous load during active hours, more than quadruples the possible service which can be given by operators and plant.*

Deferred service bears to profitable operation of the telephone the relation of the " strap-hanger " or " stander " to transportation service, but with this difference: the " strap-hanger " or " stander " is getting some return for his discomfort, he is getting to his destination, that is, accomplishing his object. The deferred-service telephone user while waiting is not getting anything or anywhere; he is sacrificing his time and possibly jeopardizing the purpose for which he wants the connection.

Even at the higher wages paid in this country a deferred or waiting telephone service, more satisfactory and more dependable than the foreign service, could be given at rates more or less equal to the foreign rates for such service, notwithstanding that the companies here must pay capital charges, including dividends, all administration expenses, taxes and other charges. Deferred service is not given because our public demands a better service.

That the service in Great Britain and elsewhere in Europe is vastly inferior to that of the Bell System is conceded almost

without exception by both Americans and Europeans who have had an opportunity to make an intelligent comparison.

Telegraph Rates.

The words in the address and signature are counted and charged for in Europe, and sent free in the United States. The wages paid operators in the United States are double those paid in Europe. If these differences are considered, the telegraph rates in Europe for *short distances are little, if any, less* than in the United States, while for *long distances* the rates in Europe are *decidedly higher.*

In England, where the conditions are most favorable for telegraph operation, with its concentrated population and business, short distances and large traffic between centers, cheap labor, untaxed franchises and rights of way, and all the highly praised advantages of post-office joint operation, the telegraph is operated at an acknowledged deficit.

Extract from the report of the Postmaster-General of Great Britain, 1912–1913:

"Telegraphs. The telegraph revenue of the year *including the value of services rendered other departments* was £3,167,410 an increase of £19,705, and the telegraph expenditure including the interest on the capital £10,867,644 expended in the purchase of the telegraphs was £4,124,976, a decrease of £309,897 upon the previous year. The net deficit was thus £957,566 or £329,602 less than last year."

Note: Value of service rendered other departments is purely constructive revenue, *i. e.*, in other words, padding. Italics ours.

And the expenditure does not represent any charge upon something over £20,000,000 which has been expended on the telegraph service since its acquisition by the government.

The Western Union, to cover the widely extended territory of the United States, with distances seven or eight times as great as the distances in England, has to maintain, to do a little over twice the business, a wire mileage five times as great, and transmit its messages an average of four times the distance.

The Western Union pays taxes, maintains its plant out of revnue, pays double the wages to its employees, and pays dividends.

The acknowledged expenditure of the British telegraph of £4,125,000 as against a revenue of £3,170,000, a part of which is fictitious revenue, makes an admitted cost of four dollars for every three dollars of telegraph revenue. If to the acknowledged expense should be added interest on the £20,000,000 of non-recognized expenditure and the franchise and direct taxes lost to the public, the cost to the government for every message sent *was nearly twice what it received.*

These figures are official and can be verified from the various reports of the Postmaster-General.

Telephone Rates, Competitive and Non-Competitive.

It is claimed by the advocates of government ownership that the Bell rates are excessive where there is no competition, and have been unduly raised after competition ceased.

Of 93 places of 10,000 population or over where opposition ceased prior to 1913, not including any places where the Bell exchanges were sold to the opposition, in 80 there was either no change in rates, no increase to be made within three years, or rates were decreased. Rates were increased in but 13 places.

It has been generally conceded by commissions of regulation that after the merger of two opposition exchanges higher rates were proper.

Competitive or opposition exchanges were built and rates fixed on the theory that the Bell rates were excessive. For a few years, while the plant was new, apparent profits were made on low rates, but after maintenance of old plant and reconstruction on account of depreciation and obsolescence had to be met, exchanges as a rule operating under competitive rates ceased paying dividends and even interest, and many came to financial disaster. With the exception of a few limited exchanges in selected or favorable territory operated by the owners, no exchanges operating on so-called competitive rates are giving satisfactory results to their owners, and few if any but would like to liquidate if it could be done at not too great a loss.

The percentage of *reduction in rates* made because of the improvement in methods of operating and improvement of equipment and apparatus *was greater in Bell exchanges* which had *no opposition* than the reduction made in exchanges which *had opposition.*

Bell rates are generally higher than the opposition rates in places where there are opposition exchanges.

That the Bell rates are not excessive should be acknowledged, for as before stated the Bell companies as a whole are paying an average of but 6 per cent. on their outstanding securities and less than 5 per cent. on a conservative value of their property, and are paying to the communities in which they operate nearly $11,000,000 in the way of local taxation.

Departmental Efficiency.

Post-office and its organization: is it adapted to take over the telephone and telegraph?

Can the same efficiency and economy be expected under government ownership?

Various committees — congressional and departmental — have investigated the administration and operation of government departments in recent years. Without exception the reports found that the organization and administration of our national departments and bureaus and other various enterprises were extravagant, wasteful and inefficient. That there was duplication of effort and work not only between the different departments but between the different bureaus of the same department. That large economies in expenditures could be made, and greater efficiency could be had. This is not criticism from outside sources but from inside.

Is there anyone who doubts that if the Post-Office Department had the organization, the management that many of the large private industrials have, it would be possible to give at least the present efficiency and at a much less cost of operation?

The post-office is not an organized operating entity. There is no organization such as charaterizes a large industrial or commercial enterprise. It is made up of a large number of independent, separate assemblages, co-ordinated and made co-operative by certain rules and regulations. The duties are confined to collecting, assorting and distributing the mails from and to the public in localities, and dispatching them from post-office to post-office. The transportation and conveyance of the mails from and to and between post-offices are by facilities owned and operated by private companies whose conveyance and transportation of the mails are but an incident to larger business. Even

over the hours of dispatch or the time of transit the department has either no, or at best a limited, control. The Post-Office Department has only to maintain a balance between appropriation and expenditure, none to maintain between revenue and expenditures, which constitutes the only check on waste and extravagance; it has no problems of finance, except to get appropriations; no concern about surplus revenues to meet taxes, interest charges, dividends. It has no plant and there is no provision to be made for inevitable maintenance, construction and re-construction and obsolescence out of revenue. There are no pension, sickness and disability provisions for its employees. The property, considering the size of its operations, is negligible in amount. There are no problems of organization methods and systems, no engineering and technical problems, none of the thousand and one problems and perplexities arising in the operation of a transportation system, compared with which the operation of the mail service is simplicity simplified.

As to the efficiency, the general consensus of expressed opinion is that there is much to be desired in the service.

When the night and the day letters were inaugurated by the Western Union, failure was prophesied, because an "overnight" mail reached or should reach full 60 per cent. of the total population of the United States. Yet many millions of these telegraph letters are dispatched.

The success of the parcels post has been set up as a reason for the government operation of the telephone and telegraph. Why it should be is hard to understand. The two services have nothing in common and are in no way comparable.

The parcels post is not in any sense a new service; it has merely increased the volume of the mails by removing some limitations as to size and weight of packages mailed, and making some reduction in rates of postage for merchandise. There has been no change in the organization or in the workings of the post-office but merely an increase in the number and the work of the lower grade clerical force. There is no doubt that the parcel post is popular and meets some real demands based on real wants, but sufficient time has not elapsed and conditions have not been sufficiently adjusted to determine whether it will be profitable or whether the service will be entirely satisfactory in *certainty, security and promptness.*

There may be, as stated by the advocates of government operation who should know, 64,000 offices including branch offices and stations. The inference this statement carries is that 64,000 different places have post-offices; but on July 1, 1913, according to the report of the Postmaster-General, there were only 58,000 postmasters. There are about 58,000 places which have post-offices, as against over 70,000 places reached by telephone toll lines of the Bell System. If we should count branch offices and pay stations the number would be largely increased. From most of these places telegrams can be sent *at all hours of the day or night.*

The postmasters of over 50,000 of these offices are paid a commission on the receipts, which amounts to an average of about $285 per annum; this is their entire compensation, and is inclusive of office rent, heat, light and all services. Nearly everyone is familiar with this type of country offices, and can judge of the possibility of a general telegraph and telephone business receiving the attention absolutely necessary to an efficient service. It would not be a question of capacity; the experiment would be disastrous principally because the postmasters are not fitted by experience or training for the telegraph or telephone business, but also because it would be secondary to their grocery-dry goods-notion shop, their principal business. In the larger cities and towns, how many of the post-offices, even in leased or government buildings, have room for a telephone or telegraph office and for the necessary equipment?

Making Telegraph Out of Telephone Lines.

Upon whose estimate or experience is based the "negligible cost" of superimposing the telegraph on the telephone and equipping the circuits with telegraph instruments, and the taking over of the interurban and long-distance lines, divorcing them as to common control from the exchange system, putting them into these post-offices, and equipping them to do all the telegraph business? It is impossible of performance at any cost. The interurban toll lines and the exchange trunk lines and their equipments are necessarily so interwoven and used so interchangeably that it would be next to impossible to segregate them. While it is perfectly feasible to use wires for both telephone and telegraph service, and either the telephone circuit or

the telegraph circuit could be looped into any office, the arrangement and distribution of the lines for both purposes must be under common control, and that the telephone. The manipulation of the lines is a telephonic proposition, not a telegraphic. The only practicable way for the post-office to use the telephone lines for telegraphic service would be to lease the telegraph rights, much as the Post-Office Department now uses the railroad facilities for the mails. No other separated operation or control of the same wires for telegraph and telephone services would be practicable from either standpoint.

Western Union.

Under the understanding with the Department of Justice this company's holdings of the Western Union stock had to be disposed of. While that company was in good condition and would undoubtedly increase its dividend to four per cent. for the current year, yet the agitation for government ownership and competition made a very unfavorable market which would not improve so long as there was some $30,000,000 of stock to be distributed and absorbed. Under all conditions the price obtained, $60 per share, was good, and was fully as much as it was thought it would be possible to obtain during any period likely to be allowed for its disposal.

The loss to the company is considerable, but the public has been greatly benefited by the connection. In order to make the fact of the absolute disposal of the stock beyond question by an extended distribution, and also to give to the Western Union shareholders the opportunity of acquiring it, the sale was conditioned upon its being offered to the other shareholders and to the employees of the Western Union. The company would have made this offer direct but by so doing it would have taken the chances of a large part not being taken, in which case it would have been impossible for the company to make any favorable sale of the balance. The outright purchase and the distribution proposed established a price and removed the other depressing influences from the market.

The connection between the two systems has beeen conducted on lines of complementary service, each having its distinct office and service to perform, and its distinct organization.

There has been no intermingling of plant. The operation of each company was distinct and the change of ownership of the shares should in no way affect the service or the business of either company.

The American Telephone and Telegraph Company ceases its connection with the Western Union after three years association. During this period as compared with the previous three years the gross revenue of the Western Union increased 45 per cent. Wages to operators, not including cable construction, reconstruction or maintenance wages, were increased 55 per cent.; there was set aside for renovation and reconstruction out of revenue during that period nearly $9,000,000 in excess of the normal expenditures for these purposes; of this sum nearly $2,500,000 could have been and from now on under the new interstate regulation will have to be charged to construction. These abnormal expenditures, it may be reasonably expected, will be completed in less than three years, when the revenues of the company now being expended for those purposes will be available for other use.

The suit of the Western Union and associated companies against the American Telephone and Telegraph Company on the interpretation of the 1879 contract, which has been pending thirty years and which was originally decided in favor of the American Telephone and Telegraph Company, has been finally settled largely according to the contentions of the Western Union and of the amount paid $3,300,000 was paid to the Western Union.

The financial condition of the Western Union, with some $15,000,000 net of liquid assets, never was better.

It has been asserted that destructive competition and unfair methods have been resorted to as against rival telegraph companies. The policy of the Bell System is that destructive competition is an economic waste; that permanence and continuity of good service can only be maintained by profitable operation; that no service can be given at less than cost, but where there is a potential business, unutilized facilities can be made profitable by the introduction of additional services. Adopting this policy, the Western Union introduced at popular rates some new services of vast importance with profit to the company and benefit to the public, and the company had in contemplation

further extensions of facilities of like character. Whether under the changed conditions brought about by the severance of relations between the two companies these expectations can now be fully realized is doubtful.

Conclusions.

Theories are at best only unsatisfactory substitutes for facts established by experience. Only such theories as have stood the test of practical experience may be finally accepted. In a field where experience is abundant, to assert theories contradicted by this experience is to invite disaster.

The policy of the Bell System — *one telephone system — under one control* — has been appropriated as their policy by the advocates of government ownership. They assert the desirability of monopoly as their fundamental premise.

They say the government should *attempt to do* what the world concedes the Bell System *has done.*

The American public has been educated to depend on the most efficient, most extended telephone service in the world. The relative number of the people reached is the largest, and the average cost to each is the lowest of any important system in the world. It will not tolerate less; under private ownership it will not pay more.

The outstanding obligations of the Bell System represent actual money properly invested; its physical plant and property are far in excess of these obligations.

All monopolies should be regulated.

Government ownership would be an unregulated monopoly.

From all wrongs of privately owned utilities, appeals may be taken to state and national commissions and to municipal and legislative bodies; from the wrongs of publicly owned utilities administered through the dominant political party, no effective appeal is possible.

There are fundamental economic laws which make it impossible for either publicly or privately owned utilities to furnish service without being paid from some source what it costs.

All government-operated telephones and telegraphs in the world have *two* sources of revenue — *the payment by those who use* and *the payment of the deficit of operation out of general revenue.*

The *price* of a thing to the *user* is what it *costs him. Part payment as a user* and *part payment as a taxpayer* is fallacious and absurd and the direct cause of waste and extravagance in operation.

All government reports upon government operations disclose wasteful and unscientific methods; it is these facts which justify the announcement by every new public official of the necessity for new and better methods.

The steady reductions in rates made by the Bell System have been made possible by its improvements in methods and apparatus; they are not due to competition. They have been as great without competition as with it.

At most of the so-called "competitive points" — places where there is an opposition system — the Bell rates are higher than the opposition rates.

No monopoly or great combination in any industry or utility open to competition can be maintained except at a profit so small as to discourage competition. Small profits are a benefit to the public both directly in the price and indirectly by increasing the employment of labor.

That "decrease in price will increase profits" is fallacious and causes much misunderstanding if stated without qualification.

Wherever there is a potential market "decrease in price will increase output;" increased output will, to a certain extent, decrease cost.

A proper adjustment of the relations between cost, price and output will increase aggregate profits.

The development of telephone uses, and the decrease of cost through continued improvement in equipment and methods of operation and service, have opened up the potential market for telephones in the United States as it has been in no other country — sixty-five per cent. of the world's telephones are in the United States.

Regulation by commissions of high standing composed of individuals of ability and integrity, and good impartial judgment, is the greatest protection to the public interests as against private exactions that ever was devised; its effectiveness depends upon "the standing with the public of the Commission as a whole and the Commissioners as individuals."

Unless commissions have the confidence and respect of the public, unless their decisions are accepted by all even if not entirely acceptable to all, unless they mete out exact justice to corporations as well as to the public by decisions characterized by thorough investigation and impartial conclusions, the value of these commissions to the public will be destroyed and regulation by commission will in time be destructive of public service as well as of public morals.

Individuals, public or private, may obtain temporary notoriety by unjust demands and unjust attacks on public utility companies, but no permanent reputation can be made, nor can any permanent public advantage be gained.

"Telephone Achievements," a Statement by Mr. VAIL as President of the American Telephone and Telegraph Company, March, 1914.

TELEPHONE ACHIEVEMENTS.

IN no line of human endeavor has the inventive brain of the scientist contributed more to the world's progress than by the creation of the art of telephony, of which the Bell System is the embodiment.

When the telephone was born, nothing analogous to telephone service as we now know it existed. There was no tradition to guide, no experience to follow.

The system, the apparatus, the methods — an entire new art had to be created. The art of electrical engineering did not exist. The Bell pioneers, recognizing that success depended upon the highest engineering and technical skill, at once organized an experimental and research department, which is now directed by a staff of over 550 engineers and scientists, including former professors, post-graduate students, scientific investigators — the graduates of over 70 universities.

From its foundation the company has continuously developed the art. New improvements in telephones, switchboards, lines, cables, have followed one another with remarkable rapidity.

While each successive type of apparatus to the superficial observer suggested similarity, each step in the evolution marked a decided improvement. These changes, this evolution, have not only been continuous, but are continuing. Substantially all of the plant now in use, including telephones, switchboards, cables and wires, has been constructed, renewed or reconstructed in the past ten years.

Particularly in switchboards have the changes been so radical that installations costing in the aggregate millions have frequently been discarded after only a few years of use.

Since 1877 there have been introduced 53 types and styles of receivers and 73 types and styles of transmitters. Of the 12,000,000 telephone receivers and transmitters owned by the Bell Company January 1, 1914, none were in use prior to 1902, while the average age is less than five years.

Within ten years we have expended for construction and reconstruction an amount more than equal to the present book value of our entire plant.

Long-distance and underground transmission was the most formidable scientific problem confronting the telephone experts.

The retarding effect of the earth on the telephone current often impaired conversation through one mile underground as much as through 100 miles overhead. Overhead conversation had its distinct limitations.

No possible improvement in the telephone transmitter could of itself solve these difficulties.

The solution was only found in the cumulative effect of improvements, great and small, in telephone, transmitter, line, cable, switchboard, and every other piece of apparatus or plant required in the transmission of speech.

While the limit of commercial overhead talking had increased from strictly local to over 1,000 miles as early as 1893, it was not until 1905 that conversation could be had over long-distance circuits of which as much as 20 miles was in underground cables. By 1906 underground talking distance had increased to 90 miles. By 1912 it was possible to talk underground from New York to Washington.

It was then that the construction of underground conduits from Boston to Washington was determined upon — not that it was expected to get a through underground talk between those places, but in case of storm or blizzard, to utilize intermediate sections in connection with the overhead.

Our persistent study and incessant experimentation have produced results more remarkable still.

We have perfected cables, apparatus and methods that have overcome obstacles heretofore regarded as insuperable both to long-distance overhead and underground conversation.

Underground conversation is now possible between Boston and Washington, four times the length of the longest European underground line. This enabled the Bell System in the recent great storm, so destructive on land and sea, to maintain communication for the public between all the principal points on the Atlantic seaboard.

Telephone communication is established between New York and Denver, is potentially possible between all points in the

United States, and by 1915 will be an accomplished fact between New York and San Francisco.

In our use of methods or apparatus, we are committed to no one system. We own, control or have the right to use inventions necessary to operate any system recognized or accepted as the most efficient. The Bell System must always recognize, and in its selection must always be governed by the necessities of a national service, with its complex requirements, which is infinitely more exacting than local or limited service.

These achievements represent vast expenditures of money and immense concentration of effort which have been justified by results of immeasurable benefit to the public. No local company unaided could bear the financial or scientific burden of this work. Such results are possible only through a centralized general staff, avoiding wasteful duplication of effort, working out problems common to all, for the benefit of all.

The pioneers of the Bell System recognized that telephone service as they saw it, was in the broadest sense a public utility; that upon them rested a public obligation to give the best possible service at the most reasonable rates consistent with risk, investment and the continued improvement and maintenance of the property.

Without this expenditure of millions and concentration of effort, the telephone art as it exists could not have been developed.

What we have done in working out these great problems in the past should be accepted as a guarantee of what we will do in the future.

Address by Mr. VAIL before the New England Federation for Rural Progress, at Boston, March, 1914, as reported by the Boston *Post*.

TRANSPORTATION AS A FACTOR IN NEW ENGLAND'S AGRICULTURAL FUTURE.

WE are, all of us, interested in the rural progress of New England, and we must, more or less, all of us be a part of and identified with it.

There are great possibilities along many lines when we consider all of New England as one — each locality or section having special features. What we must do is to ascertain what these special features are, and what is necessary to make them grow and develop to their fullest purpose and advantage.

There are limitations on some lines here in New England, but in what country are there not limitations? On the other hand, there are lines along which New England is pre-eminent. We must discriminate and select those which present the fewest obstacles and the lease resistance.

Rural life has changed much since that traditional life in the country when it was up with the sun and one continuous round of chores, and duties in the house as well as in the barn and in the field until the sun was down; when the roads were few and often very bad in the summer and impassable in the winter; shut off from communication and intercourse a good part of the time, with hard food and hard work, there were a good many reasons why youth sought different environments.

MODERN COMFORTS.

These conditions have disappeared; the facilities of communication, the telephone, rural free delivery, good roads, have made neighbors of those who only saw each other on occasions or by special effort.

The modern farmhouse has the comforts that the city house of fifty years ago did not have. Farm work with its mechanical aids is becoming more nearly as agreeable, and much less confining, than any shop or factory work — while with modern methods and fair prices, it has become as remunerative as any

other occupation where a man earns only that which comes from his own labor.

There is one advantage over any other labor at the present time; you get the full results of special efforts or special intelligence when applied to your own labor. And still another advantage, the growing goes on when you take a run into the village, or visit your neighbors, on a rainy day, providing your visits are not so often as to run into neglect.

Life More Agreeable.

In the house, with its comfortable furnishings, life is much more agreeable. The farm, when the work of preparing a big hearty meal for the hungry, hard-working man whose place is now taken by machinery, and the milking of the cows, and the care of the milk, cream and churning of the butter, besides the make, as well as the patching of all the clothes, was quite different from the present time.

Intercommunication is the advance agent of civilization, and good roads and good railroads are necessities to the development, to the progress and prosperity of our country. New England with its distant and narrow valleys and its sparsely settled country is more hard to serve than the broad fields of the West. It costs more to build, and the traffic is less. To be properly served, it must be in connection with a big system. The little feeding roads cannot support themselves alone without the exorbitant tariffs, and such tariffs will hinder progress. We want uniform tariffs in New England, and uniform tariffs can only come from combination where the main trunk lines will support the tributaries.

Where traffic will not support or warrant the building of a line, you cannot get it unless it is a part of a system which will get a profit from the through haul.

Address by Mr. VAIL at the Commencement Exercises of the Graduating Classes of Lyndon Institute and Lyndon School of Agriculture, Lyndon Center, Vermont, June, 1914.

YOU are now about to take up the great problems of life under your own guidance and direction, and upon your own responsibility. Heretofore you have had guidance, direction, and assistance, but no real responsibility, and while you have increased learning you have acquired no real experience or absolute knowledge.

It will be your own actions, and the experience and knowledge gained from them, that will mould you and make for you, your place as active, responsible members of society. Experience, your greatest teacher, will be a costly one unless you act with caution and forethought.

Every act, small or great, will have some influence on your future; it will have its part in the formation of your character; be careful, therefore, that each act is a rightful act, and one that will be part in the formation, for you, of a good and worthy character and reputation.

A permanent or desirable reputation is slow in coming, but once gained, while it may be temporarily obscured by misunderstanding, or misconstruction, or mistaken knowledge of your acts, no thoroughly good reputation, based on character, and on actions which have been guided by correct principles can ever be permanently destroyed except by yourself.

As you go through life you will need the assistance, credit and the confidence of your fellowmen. Credit and confidence is based on reputation, and on the cumulative influence of your acts far more than it is upon any other asset you may have. Credit, confidence, and intelligent productive labor, together with co-operation, create prosperity, both of the individual and the community.

You will also be called on to assist others. Never ask another to do for you anything that you are not ready to do for him under similar circumstances.

In your daily life and intercourse with others always have proper regard for courtesy, orderly appearance and the conventional laws of society. Conventions are the unwritten laws of society, the result of untold ages of experience and are laws of

personal action for the personal comfort and convenience of the individual both as an individual and as a member of society.

Disregard of conventions, lack of courtesy, disorderly appearance, disagreeable bearing towards others and breach of good manners may attract attention, and when backed by extraordinary ability get you a notoriety and a questionable reputation, but can never afford you real satisfaction.

Personal appearance and bearing are good letters of introduction; they will get you a hearing, or opportunity which you otherwise could not get.

Among the very few things which are the very " fundamentals " of success and happiness, perhaps the first is contentment and a determination not only to do your best, but to make the best of everything.

Not that thriftless, shiftless, senseless contentment that is satisfied with anything; but that healthy contentment that only comes after a consciousness that you have brought into action your best ability and applied your best efforts. Morbid discontent is the source of nine-tenths of the unhappiness of this world. In almost any condition or in almost any possession there can be found some good.

It is hard to determine or say where content or satisfaction might dull or lessen effort or ambition; that, each man must settle for himself, but be careful to settle it honestly and not to make it an excuse for inactivity or abandonment of effort.

Acquire the habits of preparation, concentration and application. Whatever you want or have to do, prepare a definite idea of what is to be accomplished, concentrate upon it, and then apply yourself to the doing of it, and do it thoroughly. In this way you will make yourself master of yourself, of your time and work, and will have opened your life to, and have time for, the proper enjoyment of the results of your efforts, as well as to the acceptance of greater opportunities. Dawdling, which is lack of application and concentration, is very ineffective. It consumes your time, accomplishes nothing, and is in every way unsatisfactory to either yourself or to your employers.

Try to do whatever you undertake a little better than you have ever done it before and a little better than anyone else does it. While you cannot always succeed, the effort brings its reward through its influence on your character and the satisfaction afforded you.

No matter what you may undertake, forethought and organization will help you to accomplish it better; this applies as well to your own efforts and your own labor as it does to the management and organization of the labor and effort of thousands.

Ordinary results come from ordinary methods; the great results of the world are the result of that organization and efficiency which produces more with less effort and work than can be produced by ordinary methods.

It is the elimination and utilization of waste, waste effort, waste time and material, the minimizing of destruction and damage, wear and tear, that produce the great results in the industrial world. There is no magic in these accomplishments. The leaders in action or thought are not magicians but steady, persistent workers.

Take two lumbermen. One goes into the woods in advance, looks over the ground, lays out his plan of operation, starts his men in with definite instructions. His operating force is properly balanced so that all are equally employed. Each man knows just what to do; there is no chance or excuse for standing around discussing how and what to do or any waiting for instructions. He sees that everything is properly cared for and kept in good order and repair, and when the season's work is over, properly stored and sheltered for another season, his force is worked no harder, if as hard, and are much better cared for than those not so organized; there is a minimum of waste.

The other neglects all or part of these things. His possible profits are wasted.

The normal prices of all products are based on cost of efficient production plus a profit. The man who does not produce efficiently cuts into his profits; they have been dissipated, wasted without benefiting anyone.

Whichever activity in life you undertake, do not take anything beyond your limitations, natural or acquired, and before undertaking be sure that you have a fair understanding of what you are about to undertake. Do not have over-confidence. Have just enough lack of confidence to recognize that there may be some things you do not know and that you could not accomplish and thus avoid recklessness and failure, but do not lack confidence sufficiently to kill initiative and enterprise.

Recognize and have proper deference and subservience to age, position and larger experience.

Whether it be raising chickens, farming on a large or small scale, or running a manufacturing establishment or a bank, you will need relatively as much preparation for the one as for the other. Without preparation, without a knowledge of all the little obstacles, the concealed difficulties, the peculiar intricacies of any particular work, you will be bound to make a failure.

Be patient and content while you are acquiring this knowledge. It takes time to acquire knowledge, and it is much better to give that time in your younger days, in your formative days, than later.

All the great successes of this world have been made by those who, while acquiring knowledge and experience, have also accumulated by savings at least the greater part of the capital with which to start themselves.

When you have demonstrated your ability to save, and ability to produce good work on a small scale, you will find no difficulty in getting assistance for larger work or extended efforts as fast as caution and good sense will allow you to take it.

Neither ask or expect others to bear the expense of getting your experience and knowledge. Every man's position in this world dates back to the practically unaided efforts of the individual, and, even if part of it comes from his forbears, is only maintained and can only be maintained permanently by the individual efforts of the possessor.

Dependence upon assistance from others is apt to be like putting concentrated fertilizer on the hills of corn planted in very poor soil — it makes a splendid start but a lamentable finish. The soil in which it is planted and the preparation and cultivation makes the crop.

Everything in this life worth having is dependent upon your own efforts, either in the getting or in the maintenance. Learning and experience you cannot inherit.

These truths or rules of guidance which I have laid down are not new or original, they are but the summary of thousands of years of experience. Individuals have varied characteristics and degrees of natural capacity and ability, but within your natural limitations your successes will be measured by the completeness of your understanding and the thoroughness of the application of them to your daily life.

From the Annual Report of Mr. VAIL as President of the American Telephone and Telegraph Company, March, 1915.

Profit Sharing.

PLANS of assistance and encouragement to the employees have for a long time been under consideration by this Company. In fact, this Company was a pioneer in practical welfare work, particularly on those lines which bettered and improved the condition of daily employment and aided the employed through those critical periods impossible to anticipate or prevent, and against which the juniors had not been able to accumulate any provision. Welfare work, pension and sick benefit plan, have demonstrated their practical value. The recent offer of stock at a low price on instalments, of which over 30,000 employees have availed themselves, was intended particularly as an encouragement to saving. As a rule, investment in the common shares of a corporation, subject as they are to market fluctuation and economic disturbance, is not the ideal "one basket" for more or less limited savings, but the dividend record and the average price and present outlook indicate a safe, continuing margin, and in addition the dual relation furthers their interest in their work.

This has been termed by some "profit sharing." It should not be. It is investment, by which the employee becomes also a proprietor, and he occupies the dual relation of proprietor and employee, which if it can be practically worked out to its fullest possibilities, will be ideal.

There has been much discussion over profit sharing without taking into consideration the actual factors which must govern its practical introduction. The conditions which exist in different employments, industries and enterprises are so varied, running from one extreme to another entirely opposite extreme, that nothing like generalization is possible.

On the one extreme there is occasionally an enterprise of which the promoter, through his personality, individual foresight, business acumen and ability to organize both the construction and distribution departments, is enabled to get either a permanent or temporary possession of a field and thus to

create a business and produce a commodity which can be sold at a large advance on cost; is enabled to create a business where a large gross revenue can be obtained upon a small investment of capital; is enabled to create a business where profits constitute a large part of the gross revenue, and is enabled to divide or distribute profits many times the amount of the capital. No one wishes to dispute the right to these profits or lessen the credit of producing or distributing them as he wills, but it is impossible to take this as the foundation for a general profit sharing scheme.

In the middle position are the ordinary industrial or commercial enterprises, requiring large capital investment in plant and machinery and large working capital to carry the business, which present no abnormal advantages except those which accrue to individual initiative and business acumen; where the gross production bears normal relation to capital employed, but where the profits, though unrestricted, are subject to fluctuations of business, are sensitive to economic disturbance and vary greatly from year to year; where efficiency of organization, individual initiative, shrewdness in anticipating market conditions or demands, conservation and utilization of waste, where invention or discovery and advance introduction of novelties, promotion of new enterprises, creation of new fields and improved methods of distribution, influence largely the profits, all of which belong indisputably to the proprietors to divide or share with employees.

On the other extreme is a public utility, where a very large capital relatively to the gross revenue is required; where the operation is controlled and regulated by public authorities; the principle of such control and regulation being fair wages, ample maintenance, proper depreciation, fair return on the actual investment, no provision against expiring franchises, all surplus either returned to the public in the reduction of rates or invested in property against obsolescence and depreciation.

In such enterprises there can be little or no " profit sharing " for either stockholders or employees.

The capital invested must be paid for, in order that new capital in sufficient amount can be obtained as it is needed. The employee, a preferred creditor, must be paid sufficient to get his best services, and his further reward is through increase in

compensation, promotion and security of position for proved efficiency, and a proper consideration for his welfare.

This is the situation of the Bell System. It is to be hoped that there will be many ways of bettering the condition of the employees, by improving still further the conditions under which they work and their position as preferred participants, by aiding and assisting them in their efforts to accumulate, and by helping them to educate themselves up to the highest ideals of life work.

Whatever possibilities the future may develop with respect to profit sharing in regulated public utilities cannot now be safely predicted, but it is clear that the efforts to improve working conditions to higher standards than those now existing even in the Bell System should come first.

Distribution of Revenue and Cost of Capital.

Some analysis of the distribution of revenue in this connection cannot fail to be interesting to the employee, the shareholder and the subscriber, each of whom has a vital interest in the revenue, its distribution and the surplus.

The statistics per employee are as follows:

Average investment in plant per employee		$5,338
Average outstanding securities per employee, upon which charges have to be paid, representing capital invested in plant		4,632
Gross telephone revenue per employee		1,408
Distributed as follows:		
Wages to employees	46.5%	$656
Taxes	5.5%	79
Supplies and expenses	24.0%	337
Net operating revenue	24.0%	336
Net earning are divided as follows:		
Charges paid on capital (which is 5.1% on the capital invested in plant, or 5.9% on the outstanding securities)	$271	
Surplus revenue	65	336

It takes an investment of nearly four dollars to earn one dollar gross revenue. This dollar of gross revenue is divided. Forty-six and one-half cents are paid in wages to employees,

five and one-half cents go for taxes and twenty-four cents go for material and other expenses, a very considerable part of which ultimately goes for wages, leaving as net operating revenue twenty-four cents, of which about twenty cents pay for the use of the four dollars of capital invested. The remaining four cents of surplus revenue are actually expended for plant additions, of which about one-half is for wages.

It will also be interesting to the subscriber to learn what is done with his payment for service.

For the service of the Bell System, not including toll and long-distance service, the average revenue for exchange service per telephone station, which is the only unit, is $29.81. This average revenue of the Bell System is less than the average revenue of any other comprehensive system in the world, and as there are some abnormally large users of the telephone service in this country, more so than in any other country, it follows that by far the greater part of the 5,800,000 Bell owned stations in the Bell System cost the patron for exchange service less than $29.81 per year. For all telephone service, including toll and long-distance, the average revenue per station is $40.20 per year.

The average investment in plant per station, including telephones and long-distance lines, is $152, represented by $132 outstanding capital liabilities, upon which charges are paid. The average gross revenue, for exchange and toll service, of $40.20 per station, is distributed as follows:

Wages to employees, $18.72, or nearly one-half; taxes, $2.26; miscellaneous expenses, light, heat, welfare, material, etc., $9.62. This leaves a net operating revenue of $9.60, of which $7.75 is paid for capital charges, or an average of 5.1 per cent. on the plant investment, or an average of 5.9 per cent. on the outstanding securities, leaving a surplus of $1.85.

A surplus over all expenses and charges is necessary in any enterprise to insure stability and certainty and maintain a position of permanency, particularly any enterprise which is called on to secure large amounts of new capital to provide for rapid increase in amount and extent of service. Such surplus, to insure proper financial support, must be sufficient to absorb, as it were, the sudden fluctuations of business, as no organization can closely adjust its operating expenses to such fluctuations. Changes in dividend rates lead to speculation and

uncertainty, and make the marketing of securities for growth and extension difficult and expensive.

The charges necessary to command investment capital at all times are in exact relation to the confidence in the security of the investment and the certainty that the charges will be paid.

In any enterprise even of small magnitude, capital is as necessary as are employees. Without capital there can be no employment of workers. Without workers there can be no employment of capital. For enterprises requiring as large capital relatively to gross and net earnings as does the telephone service, capital cannot be provided out of revenue nor from any source other than the investor, and then only because it is attracted to the investment. This being so, the question is whether the investment per unit is too great or whether the charges paid on capital are too high. That the investment of the Bell System is actually there, has been certified to and confirmed by many examinations and investigations. That the investment per unit is reasonable is proved by the fact that it is considerably less than that of any other comprehensive system in the world.

Could the money be got for less? Taking the average of all the years, it is not probable that even if procured on government bonds or on government guarantee, it could be obtained in the ernormous amount required, for much less than the utilities as a whole have to pay.

It has been suggested that the government take the property and pay for it in 3 per cent. bonds at par. This establishes nothing. If it can be taken and paid for in 3 per cent. bonds at par, it can be taken and paid for with 2 per cent. or 1 per cent. bonds at par, or even be taken for nothing.

Property can be taken only at *just compensation based on fair valuation.*

The other large items of cost are wages to employees, maintenance and depreciation and taxes. Wages must be sufficient to attract and retain the best service; the wages paid by the Bell System are maintained at that level as far as possible. Proper maintenance and depreciation are necessary; without them good service cannot be given by the best of employees.

The taxes are considerable and appreciable in amount, but the taxes, while increasing the cost of the service, indirectly relieve the public of the payment of them in some other form. The amount of taxes paid by *privately-owned* public utilities

annually in the United States is over $200,000,000. The principle involved in the payment of taxes is that they are levied on corporations and franchises and do not increase the individual tax levy. The subscribers who pay for the telephone service contribute to the taxes which otherwise would be levied on all the property of all the people. It is neither a charge in the sense of the service cost nor would the abatement of taxes be any relief to the public — it would be a relief only to the telephone users.

By whatever means the service is provided, whether by private enterprise or state operation, *it must be paid for in some way. Something cannot be provided for nothing.* The Bell System and the independent telephone movement have both demonstrated that service such as will be accepted even when restricted to local use, cannot be given at less than the average prevailing cost. Sad experience either to the investor, the promoter, or both, has been the consequence wherever this has been claimed or attempted. Service can be maintained at the cost of the plant for a time, but, to repeat, the inevitable experience is, something cannot be given for nothing. In all the government-operated telephones, though the average cost of plant and charges for service per station are greater than in the Bell System, there is the invariable deficit which is paid out of general revenue. No enterprise, government or private, which is obliged to show a proper balance sheet, and obliged to pay full prices for the services rendered by others, can give a service for less than cost of all kinds, and no enterprise not obliged to show a proper balance sheet can exist without being covered with barnacles. Waste and extravagance are bound to follow lack of accountability. Efficiency may be had, but never economy.

Development of the Bell Organization.

In all industrial organization there are two distinct divisions of action, "Administration" and "Operation."

"Administration" is centralized, it is legislative, determinative of general subjects, supervisory and judicial, acts alike for all branches and divisions and may be located apart from the seats of action.

"Operation" is executive. It is the action, the operation supreme as to local questions, but responsible to the central administration. It may be separated into divisions or departments each having operating relations with the other but no lines of authority between them.

In the Bell System the "Administration" is in the American Telephone and Telegraph Company, the central company. The "Operation" is in the associated companies, each operating on defined lines in distinct territory, each in fact an operating division and no more.

This organization is the result of the original plan of development as well as a necessity for operating and legal requirements. Because of state sovereignty, any nation-wide public service corporation, performing intrastate and interstate service which requires co-ordination of effort and co-operation in operation must, for purposes of franchise and state control, be operated through subordinate or associated companies operating under the jurisdiction of each state.

When the telephone was born, electrical science was still in its laboratory swaddling clothes, industrial electricity simply a dream, the electrical engineer as now considered, non-existent. Single-line grounded circuits only were known, and were used for telephone circuits. The current used for electric telephone speaking being the most delicate of all operating currents and the telephone receiver the most delicate of all instruments, the inductive disturbance from atmospheric or artificial electrical currents so interfered with and confused the delicate telephone current that distinct speech was difficult at all times on all outside lines and often quite impossible; the difficulty increasing with distance until speech was impossible.

In the then existing practice of electrical intercommunication it was more economical to use a heavy current for operation than to construct and maintain lines of superior construction. The

telephone current, because of its high inductive quality next to impossible to insulate against, reproduced itself on all lines in close proximity and caused interference. Increased strength of the transmitter current to overcome obstructions increased the interference and, where there was a large concentration of lines, made understandable conversation impossible. If the maximum use of the telephone was to be obtained, there must be large concentration of wires, and to make this possible it was imperative to overcome obstacles and improve the path of the current by quality and character of construction, and by neutralizing the disturbances.

The telephone instruments to be of service must be used in connection with lines equipped with auxiliary and ancillary apparatus of great variety, none of which existed at the time; it had to be originated and created.

There was nothing from which the commercial policy and operating methods could be adapted, nothing by which the usefulness or value of the telephone exchange service could be demonstrated. Its value was in the number of people that could be reached from any one station, and nothing existed by which this value could be shown. All had to be created; there was nothing in practice to guide, nothing in precedent to follow. Never did any invention of such potential importance come on such virgin fields.

The original Bell Company was not an operating company; it owned the telephone patents and leased the telephones.

The lack of confidence, the lack of any belief in the possibilities of the "Yankee toy," so called, made it impossible to create for purposes of development any large organizations with proper financial support. The development had to be made in units of territory of limited area and distance, and by those whose principal capital was belief, courage and persistence, with "everything to make and little to lose." The licenses for exchange service were limited in term and in area. Interconnecting the local exchanges into one intercommunicating system was reserved to the parent Bell Company. The business and the local lines upon which it was developed were left very largely to those who held the licenses.

Development work in any branch of industry or science is full of suggestion; difficulty suggests remedy. The creation of

the telephone service was full of difficulties to overcome and suggestions were abundant and discordant.

In the development of the service in separated, unrelated, uncontrolled units, independent research, investigation, experiment were being carried on in each unit. The manufacturing of operating and experimental apparatus was in workshops where it was but a subordinate part of the output. Each operating company and each workshop was following its own devices. Similar ideas, suggestions, inventions, combinations and experimentations were being tested and tried out, adopted or abandoned, with little reference to the work which was being done or which had been done in the other units or other shops. There was no organized control or systematization of effort, little or no conference or interchange or exchange of ideas, experience or practice. The development both in methods of operation and in apparatus not only lacked uniformity but it was not always on the best lines. Practice was progressing, precedents were being made, but there was little opportunity for the practice of any one to be made the precedent for the others.

There was multiplication of effort, waste and expenditure, unavoidable under the existing conditions, in every branch of the service and in every part of each organization.

With the growing appreciation of the value of the telephone came innumerable claimants, not only to the original invention of the telephone, but to every feature of the auxiliary apparatus. Claims were based on abandoned experiments, undeveloped ideas, misleading interpretations of patent claims, and on the broadened claims of reissued patents.

The mechanical and electrical instrumentalities necessary to give telephone service include all or parts of thousands of inventions. It was necessary that the ownership of, or the right to operate under all these patents should be available for the use of all, and whether developed inside or outside the business should be controlled for the common use of all. The business had to be protected, and those investing their capital, their efforts, their work, their all, were entitled to protection from each other and from the outside.

Because of all these reasons, because of the rapid increase in the amount of capital necessary to establish the business, because of the growing recognition of the importance of co-operation and

uniformity, some organization, some administration which would guarantee protection was necessary.

Protection required expensive legal and expert assistance. The purchase and perfection of inventions required large expenditure and investment of capital. Above all, was necessary complete information and knowledge of the state of the art past and present. There was no accumulation or collection of the knowledge of the past. The knowledge of the practice of the present was not being properly or systematically preserved or collected in available form. To do all these things in any effective way was beyond the resources of any one operating company. To do it in an incomplete manner was worse than useless. In such matters imperfect or incorrect or incomplete knowledge was more dangerous than no knowledge. Mistakes made from such causes involve large losses.

The trouble was common to all. The remedy must also be common to all.

Co-operation was necessary. There must be a bureau or department, a central clearing-house, as it were, with an expert staff covering the technical branches of the business, to which all effort, research, experiment, suggestion, all the crudities of the business could be brought; where they could be thoroughly considered and judged; the worthless, those which lacked novelty or were but recurring ideas, thrown out; good ideas imperfect or unpractical in themselves, perfected or combined with other ideas and made practical. Where a knowledge of all that was going on in all fields of endeavor, where the history of the past and records of the present, could be gathered; where everything in the way of knowledge or information could be made available for the use in the general administration and operation of the business.

The central Bell Company, which had the greatest interest in the future of the telephone business which it controlled through its reserved rights, was the center around which the business necessarily concentrated.

As part of its administration a department was organized which included the operating, technical and patent branches of the business, though which could be collected everything necessary for common use and to which all could come for advice on all matters, and for protection against all outside attacks.

The Bell Company through this department carried on research and experimental work and legal investigation in respect to inventions, and acquired all necessary to the art, or rights to use them. It assumed the conduct of all contests relating to any of these matters, for the benefit and protection of the operating companies.

Peaceful enjoyment in the use of essential apparatus is a necessity of development.

Through the knowledge and information of the state of the art in all its branches; through the information and knowledge of the inventions and patents; through the work of experts in all these branches; through the possession or right to the use of all necessary inventions; through the freedom to develop on the very best lines; the operating Bell Companies are enjoying peaceful operation as against patents and patent litigation, and the Bell System has become the premier and model system of the world. That equity and just consideration to and for others have been the policy in building up this protection is best evidenced by the fact that there has been but one patent or legal contest in that connection for years, and that was where an inventor endeavored, through a broadened claim of a questionable patent, to get control of the common battery switchboard in general use. Had his claim succeeded, it would have cost the companies and the public millions of dollars. It did not succeed.

Through the patents controlled by the Bell System all the essential features of the telephone service now in use could without doubt be controlled, but patents in the hands of the Bell System have not been and are not being used for aggression; they are used only for protection.

Centralized General Administration.

Universal telephone service can be had only through a nation-wide intercommunicating system superimposed upon and connecting local exchange systems. This requires uniformity in operating methods and instrumentalities; it requires co-ordination of effort and co-operation in the highest degree, which can be obtained only through one system, one policy, one centralized administration.

There are as a rule many ways of accomplishing the same object, only one of which is the best. It is only when the supreme test comes that the best and only the best can be used.

Telephone *exchange* service is local, and a satisfactory local service can be obtained through different methods of operation and many varieties of apparatus. For interconnecting service and distant communication uniformity in methods of operation and apparatus is necessary, in fact, imperative. When the first long-distance interconnecting service was established, it could not be used in connection with the then existing exchange service; special lines with special operators had to be provided for those using this service. Now, every exchange line is a long-distance line; every exchange station is the center, for that station, of the entire Bell System.

With the growth, extension and the co-ordinating of the business there arose other grave and important questions common to all. Questions respecting plant, right of way, licenses, public relations; problems of construction and design of fireproof central office buildings, of plant construction and right of way, of underground conduit and cable construction; commercial problems, and studies of the future relating to the direction of growth and increase; relations with other utility companies, particularly those using increasingly high tension currents — all became of the utmost importance to operating purposes. These questions were important from the standpoint of the service. They involved large expenditure for permanent plant. Their proper solution was of the greatest importance to prevent waste through large expenditure in useless plant.

The constant change in apparatus, the increase in complexity of the mechanism and in methods employed cause by far the largest expenditure of capital and revenue in construction and maintenance. To control these changes so that new devices and new improvements could be fitted to the old, and only the special parts affected be wasted or scrapped, required the closest co-operative relations between the operating, experimental and manufacturing branches. The control of the manufacturing branch was necessary. This control and co-operation have reduced obsolescence to a minimum, stopped the scrapping of the entire apparatus, while in old days as was aptly said, "the progress of telephone development was marked by the scrap-heaps."

Financing this rapid development became one of the serious problems. The interdependence of the systems of the various companies was so great that failure to maintain proper service in any one was to the disadvantage of the others as well as to itself. The demands for service from the public increased greatly the aggregate capital necessary. The difficulty at all times for some of the companies to finance themselves, and the impossibility at times for others, made some systematic and comprehensive and co-operative financial system obligatory. If there were no financial relations between the companies, each would have to carry a large margin of idle capital. Through co-operation in financial matters all could be sure of capital to meet all requirements as they arose, one margin of idle capital could be carried for the benefit of all, and advantage could be taken for all of favorable financing conditions existing for any one.

Common interest in all these questions, and their complexity, required that they should be dealt with for all, by an administration common to all, and were the reasons for the extension of the central administration of the American Telephone and Telegraph Company to the whole Bell System. *The staff and the co-operation necessary to produce the results which have been obtained, could have been provided for in no other way.* It is in fact an arrangement by which each company maintains a local administration for local matters only, and all questions common to all, or any one question that may affect any one other company, are for the action of the Centralized General Administration.

For this centralized service, relieving the separated operating companies from the obligation of maintaining anything but an operating organization; for the amortization of the cost and royalties of all the many inventions; for the maintenance of a legal department at all times at the disposal of, and ready to defend, advise or prosecute for all companies, in all administrative matters; for the maintenance and support of the very complete, extensive and effective technical and engineering department; for the rental and care of the telephones themselves; for the financial assistance; for all the service and the benefit of it all, the operating companies contribute 4½ per cent. of their gross revenue. For the " administration " of the

telephone business over this vast country, and for all the benefits that come from a common administration without which vastly greater sums of money would have been expended in operation, vastly greater sums required for construction and vastly greater sums paid for obsolescence; for all the advice and aid in legal and financial matters; for the right to use all inventions necessary and for protection in that right; for all the expenses of administration — after deducting the actual cost of furnishing the telephones and maintaining them at the highest standard — the average contribution by the operating companies to the Centralized General Administration is less than 3 per cent. of their gross receipts.

Development of and Reasons for the Four and One-Half Per Cent.

Originally the telephones owned by the Bell Company were leased for a fixed rental payment for particular purposes. Owning and leasing the telephones instead of selling them insured proper maintenance, proper expert care, and the use uniformly throughout the system of only the highest and latest types, all of which was in the interest of the service and of the reputation of the instrument. Where the instruments are owned by users, expert care is seldom given and obsolete types are continued in use — all inimical to their reputation and detrimental to the service.

The *rental* of the telephones originally covered only their use for a particular purpose. The only obligation of the Bell Company was to protect the licensee in that use.

The gradual assumption by the Bell Company of the expenses in connection with the development as set forth above and including it in the "rental" of the telephones, was entirely voluntary on its part.

The value of an invention is based on its earning power; concentrated service about large centers involves the most difficult and expensive problems; the cost of "Administration" is almost invariably proportionate to the amount of business done, the cost of doing the business, and the extent and importance of that business.

As the centralization of all matters common to all developed into a Central Administration for all, and the protection of the

business was in the business policy and other inventions instead of telephone patents, the rental for instruments was changed to a percentage on the gross revenue, and this percentage was made to include, both the rental of instruments and the contribution of the operating company to the cost of centralized administration. The term rental and royalties of telephones, however, has clung to the payment, much to the confusion and misunderstanding of those who had to deal with it.

Control and Regulation.

Regulation and control by commissions or business courts have, so far as anyone can forecast the future, become a permanent feature of our economic laws. Like all new departures from established practice, it could not be perfect from the start. Practice, experience and evolution on the lines pointed out by practice and experience can make perfection. The few years' experience has brought out prominently both good and bad features, but it has demonstrated that there are great possibilities of good and a strong probability if not a certainty that there can be had through them, a satisfactory solution of the economic problems as well as the correction of such business practices, of inherent badness, as were forcing otherwise conservative and right-seeing and right-believing people into the ranks of the extreme radicals. It has demonstrated that if the progress and development of the past are to be maintained, there must be abundant opportunity for individual initiative as well as individual reward for pioneer work. Too often-repeated investigations and inconsequential hearings waste the time of the officials and the revenues of the corporations. Regulation can be too drastic and interfere too much with operating. Neither economy nor efficiency comes from revolutionary methods. Most if not all of the wonderful claims made by exploiters of new ideas and inventions fail to materialize in the cold light of practical application.

While there is no doubt that the processes of law were sufficient to have corrected all the evils complained of, yet the processes were slow to be invoked, slow in action, and the hearing and final determination too technical to be a guide for action in general matters.

The broader and more general powers of a business court or commission, when once established on their proper basis, will

allow of more generalization, a more satisfactory, practical and less technical hearing, consideration and solution of all questions.

If the public can be brought to realize fully that the problems to be solved by these courts are the most vital of all questions, and to the whole public far more vital and important than any of the questions before the higher courts, then and not until then will these business courts have their proper position in the public mind and be esteemed for their true worth.

To reap the greatest benefit from both courts and judges, they should be of sufficient number to avoid all delay and give each question a prompt hearing and decision. The judges should have a sufficient tenure of office to enable them to become familiar with the questions upon which they have to pass, and with the practice, the precedents and economic laws controlling them.

And above all, if there are to be courts of commerce or commissions then the settlement of all matters which have been referred to such courts by the legislature should be left to them.

Business courts judicially interpreting laws, not enlarging them, acting with absolute independence of, and with equity and business fairness towards all interests but not as advocates of any one interest, supported by the public, will soon bring order and security out of the present uncertainty and be a bulwark against future economic disturbance.

As indicative of one of the conditions which must be cured, it was remarked, in reply to a suggestion that a certain person would make a good public utility commissioner, that he was too big a man for the position. Until everyone realizes, believes and acts on the belief that no man is too big timber for a court of commerce or public service commission, these courts cannot have their proper position in the mind of the public.

It is for the public to combine to encourage, support and sustain all these courts, commissions and the judges and members of commissions, and above all to abandon condemnation of all conclusions when they differ from selfish desires or opinions based on onesided and insufficient information. It is for the public to realize that any particular gain, if at the expense of other interests, is no permanent gain at all, that all business

or public prosperity is based upon each party to any transaction getting some benefit from it.

Considered broadly and generally, the Bell System has no cause for complaint, protest or criticism as to its relations with legislatures, commissions, courts or municipalities. The various associated companies and this Company have been called before those having jurisdiction over their operations to give information and to make answer on many matters, many of them of grave importance. There have been some serious and many frivolous and selfish complaints made which had to be met and which have taken much time and caused large expense to both the investigators and the investigated. With a few notable exceptions from the view-point of the Bell System, right and reason have been the controlling influences in the conclusions reached. There have been fully as large a percentage of satisfactory conclusions arrived at by commissions as would have been in any regular courts of justice. No more could be expected.

The telephone business is peculiar in that it is the last business to feel depression and the first to recover. When other industries have to retrench, retrenchment is possible with the service of the Bell System at command; it is the cheapest assistant or server that can be employed.

While the year's telephone business shows an increase, it is not the normal increase; the circle of industrial conditions is out of balance and there is disturbance, and the telephone business is feeling the effect of it.

Conclusion.

It is a long step from a hardly intelligible telephonic conversation between two rooms, to a perfectly easy, low-voiced conversation between the extremes of our land, East, West, North, South. Remarkable as this is, the progress made during the epoch of which this was the culminating point has been still more remarkable, but so quietly has it all been accomplished that it has been hardly appreciable. During the last ten years more has been done to increase the utility and availability of the telephone service, more has been done to increase its reliability, and greater obstacles have been overcome, than during its whole preceding existence.

What has been accomplished perhaps never will be surpassed, the present contains the germs of the future development. Commercial practicability will be more controlling in the future than technical practicability.

This advance has not been dependent on any one invention, idea or suggestion, but is the result of tens or even hundreds of thousands of little things, each a spadeful, as it were, in filling up or removing the obstacles, and smoothing the paths of progress. Inventions of wondrous analytical subtlety have marked epochs in the progress of the telephone service, but in an art or industry or system made up of many interdependent operations and services; each new idea, no matter how controlling, must be adapted to what already exists to make it serviceable; any great or small invention is only useful when moulded into the mass so that its service becomes an undeterminate part of the service of the whole system.

Any public service system the use of which is interdependent and interconnecting, such as street railway or telephone systems, can only be of the greatest benefit to the public when the extent of the system and the extent of the district of the interdependent communities which it serves are identical. Just so far as the service is divided between a number of separate systems each serving a part, the community is deprived of the best possible service.

In any universal service where all the communities tributary to a central district, are to be served with the central district equally and uniformly, the entire service and the cost of that service must be treated as an entirety and the service for the tributary or subordinate parts of the district must be supplied in part at the cost of the whole; the consideration for it being in the contributory benefits of the subordinate parts, to the whole.

The use of the telephone system from any one station very largely influences the cost of that station. To make a flat or uniform rate for each station is in effect making the small user pay the costs of the service for the large users; and the result of this is to put the service out of the reach of many to whom it would be desirable and whose connection with the system would be of advantage to all others connected with it.

Economic laws cannot be ignored. No matter what the political or commercial or practical requirements may be as to

separate operating companies or divisions, in order to give a general service extending in each direction as far as conversation will go, all must be controlled by one dominating policy, based on the dominating necessities of all.

The service of the Bell System as it stands to-day is the result of organization and system, in which every individual member is a free, active and responsible agent within his own sphere of action and the limitations of his duties. Each individual feels that he is an essential and important part of the whole, and recognizes his obligatory relation towards all other parts and his accountability and responsibility and subordination to the organization of which he is a part.

The organization is based on the principle that while there are local conditions and local requirements as to local operation, there must be one dominating policy and control under which all action will, while moving in its own local sphere independently, move in entire harmony with all and without disturbing the reciprocal relations of any.

It is a combination of individual self-assertion and freedom controlled by subordination to the common good of all.

The position that the Bell System holds with the public is entirely due to the fact that the Bell service has been consistently built upon the policy of creating a service of such great benefit and advantage to the public, and rendered at prices so well within its value to all — so well adapted to the use of all, as well as being a direct pecuniary advantage to each user — that none are too poor to take advantage of it, and none so independent as to get along without it.

To this policy, to this organization, and to every individual member of it belongs the credit of making the Bell System what it is — the premier system of the world and the model after which every universal system throughout the world is built.

To the Directors and Security Holders of the American Telephone and Telegraph Company:

The future of public service enterprises for intercommunication and interchange is something in which you have an indirect interest as members of a great community, and a direct interest in one of the principal enterprises, the telephone. In fact, the question to my mind is so important that the direct interest would be as a member of the community and the indirect as financially interested in one of the enterprises.

There is a condition of disturbance, of economic unsettlement, which cannot continue indefinitely. Either the causes must be removed, or by a period of quiet and freedom from other changes a chance be given for the new conditions to adjust themselves.

Never were the basic conditions of the country better than now for a restoration and continuance of normal conditions. The correction is simple and is pointed out by numerous precedents of the past and by well-established economic laws.

It does seem as if by combined effort of all, right ideas and a right understanding might be brought to bear on the solution of these questions.

While the subject is not strictly pertinent to the annual report of the Company, yet in my opinion it is so important that the note of warning should be sounded.

Public Service.

The most vital of all present economic problems are the relations between the public and public service utilities, particularly those of interchange and intercourse — what constitutes proper regulation and control — what is the best method of securing their proper maintenance and further extension.

Movement is life — intercourse and interchange are the basis of civilization and commerce.

The quantity, quality and convenience of the means of intercommunication determine the prosperity of the community, for on them depend the degree of interchange of thought and of commodity — the degree of civilization and of commerce.

The demand for any production creates its value. The demand depends upon available fields of consumption made accessible and convenient by adequate and efficient facilities of intercourse and interchange.

The United States of to-day, in all its magnificence, has been created — its latent possibilities made tangible, its prosperity maintained, its growth continued — by or because of these means of intercourse and interchange. The maintenance and continued growth of this prosperity will be in a great measure dependent upon the maintenance and continued growth of the utilities which furnish these facilities. All other utilities or industrial or commercial enterprises are subordinate to and dependent upon them.

Until proper relations are established between the public and the public utilities, there cannot be too many repetitions of their importance, no effort should be spared to emphasize it and guide the public to right conclusions. Until some popular misunderstandings are corrected it will be difficult to establish proper relations.

It is the generally accepted belief that utilities are dependent on the public rather than the public dependent on them; while neither could exist without the other, means of intercourse and interchange are the *advance agents.* Competition, control, regulation and legislation have been looked upon as the causes or forces which have enabled or compelled industrial enterprises to improve and extend their service; to increase production; to pay increased wages and taxes; and at the same time to decrease charges for service rendered. While these have been to some

extent a stimulus, the wonderful improvement which has been made has been coincident, and indissolubly connected with the replacement of the old " rule of thumb " methods, by methods of scientific operation. *Investigation, research, and the application of the results to both operation and production have produced " much more " and " much better " from the same or less effort and expenditure, and have obtained valuable products from what had heretofore been wasted; much to the benefit of the worker, the public served, and of those responsible for the work.* There is a lack of consistency in the understanding respecting enterprise and initiative, and the relations between capital and labor, the employer and the employee. There are many ideals and beautiful theories which in time we hope may be realized. But commerce and industry are dependent upon the purchaser and consumer and so long as the human factor of self interest as it now exists controls them in their dealings, so long must the effect of that *same* existing human factor be taken into consideration by commerce and industry in their relations with both producer and the worker.

The situation in the past has been aggravated, public indignation aroused, and public action influenced, by misleading and wilfully mistaken statements of irresponsible demagogues and impractical theorists. There may have been some lack of a sense of reciprocal obligation on the part of some corporations and their servants to the public. There may have been some abuses, but even if the worst that has been asserted was true, they were not of the kind that could have brought about existing conditions, which arise from an imposed reduction in revenue and an imposed increase of expenses. The public in turn has attempted to bring about ideal conditions through the power of control and regulation. This power has resulted in some cases in the impairment and even in the destruction of property rights and of the physical property involved.

Happily, those abuses that existed are passing, and there is evidence of better understanding and appreciation, and more substantial justice on both sides. The public, and particularly those dependent on employment, will soon realize that the wealth of this country does not consist of tangible tokens of value that can be realized upon at will, but that it largely consists of property, or certificates representing property, which has been created by the investment of their savings in these enterprises

of utility and industry. The returns from and the intrinsic value of these enterprises, depend on the activity caused by demand for the products or service produced by the employment of workers. Without that activity, employment ceases, returns disappear and values are dissipated.

Public service enterprises when prosperous are large employers of labor and large purchasers and consumers of all varieties of products and manufactures. Their activity means employment and circulation of money which in turn means further consumption of products and manufactures, and the further employment of labor. Employment means ability to purchase. Ability to purchase means consumption. Consumption means production, and production for which there is a demand means prosperity. Abundant employment makes the worker his own master. He can afford to purchase and consume production. Without employment he is a burden on his savings, his friends or on the community.

It is a great revolving circle of civic and industrial conditions, no beginning, no ending. So long as it is unbroken, so long as each condition is balanced by the others, so long as all changes in conditions are allowed to take place by evolution from old to new, or so long as these changes take place with sufficient deliberation to allow other conditions to become adapted to the changes, so long all will go well and there will be peace, prosperity and progress.

In such times and such conditions everything goes so smoothly that economic life seems commonplace and monotonous; then come the revolutionary changes brought about through those who are too indifferent, careless and unthinking to resist the influence of too radical theorists.

When the balance is broken by these changes, and the relations between the conditions are changed faster than any adjustment between them can take place, then will come disturbance. Continued disturbance is inevitably followed by disaster.

To maintain present conditions only, or even obtain actual though not normal increase, does not mean progress and is not a sound economic position. It is the normal increase that must be had if we are to maintain our relative position and provide for the millions yearly added by new generations and new immigration.

The entire public, working or investing, will all stand by and uphold a control and regulation which will be thorough and effective and at the same time equitable, just and practical. *But has the public ever remained complaisant when it is brought face to face with disturbance, uncertainty and unemployment, caused by too drastic action or too radical legislation upon economic conditions or industrial enterprises?*

Control and Regulation can make unnecessary demands upon the time of those who are responsible for operation; they can become destructive instead of constructive; they can by delay paralyze commerce; they can through the inexperienced in operation impose unnecessary burdens and unnecessary expenditure upon corporations; they can impose or require too many regulations and theories of operation and too many undeveloped experiments in plant and equipment; they can very easily run into operation. Demands of labor for increased wages and shorter hours, and demands of the public for increased service, must be met by increased revenue produced by increased rates. The application of scientific and improved methods to operation produced great results in reduction of expenses because it had an unworked field to start with, but it cannot be expected that the same ratio of progress will be indefinitely maintained. *The irreducible minimum in unit expense has been reached in some industries and soon will be in all.*

A corporation, no more than an individual, can be bound hand and foot and yet be active or give good service.

If too many burdens are put upon corporations, and no relief given them, it will be impossible for them to properly operate or maintain their plants. Poorly constructed, badly maintained and inefficiently operated utilities cannot give good service. Inadequate revenue would make it impossible to meet capital charges. Capital would avoid any enterprise which had to do with public service. Without capital, employment in any large way would cease, extension and improvement would be stopped, values would be destroyed, and the enterprise would become bankrupt.

When service is rendered by starved or bankrupt corporations in the hands of receivers, results must follow which will be disastrous. The indirect losses to the public will be far greater than the direct loss to the investor. Decline in pros-

perity will come to any community dependent upon such corporations. No community with inadequate and inefficient facilities for intercourse and interchange can compete with communities with adequate and efficient facilities.

Bankrupt public service, in time, means bankrupt communities.

It will not then be the mythical money trust or the prominently rich that will have to be dealt with, but it will be the power of the nation, the millions dependent upon their daily employment, whose savings are invested in that which represented progress and prosperity, and who are brought suddenly face to face with destruction of values, loss of savings and unemployment.

Disturbance of Stability and Conditions.

There are three principal creative divisions of industrial enterprises: "Industries producing from the Earth," of which agriculture is the most important —"Manufacturing"— and "Public Service" which is very largely transportation and intercommunication. All other industries or professions are subordinate to or dependent upon, these principal industries; and their rise and decline directly connected with them; they are creative only to the extent that they organize, develop or promote trade and commerce, production and consumption.

Production from the earth is the primary industry, but is dependent upon the broad distribution only to be obtained through means of transportation and other facilities of intercommunication.

Manufacturing is the barometer which indicates the improvement and decline of the conditions of commerce and trade.

"Transportation" and "Intercommunication" are the most important of all in their creative effect. They are the industries upon which depend all interchange and movement, all commerce and trade except that which is purely local. Transportation and intercommunication change local stagnation into world-wide interchange and prosperity. Their relative economic importance as to other industries is many times their relative capital.

During the quarter of a century just past these three principal industries increased about two times and now represent

about $100,000,000,000 of invested capital. This development and this new wealth of $65,000,000,000 in these enterprises alone, was made possible by, and was coincident with the development of transportation.

The capital invested in Public Service and Manufacturing increased during the quarter of the century at the rate of nearly $1,500,000,000 per year; the number of employed increased about 100 per cent. and their yearly compensation over $3,500,000,000 or 130 per cent. In enterprises of transportation and intercommunication the capital increased over $15,000,000,000 or an average of $600,000,000 per year; employees over 175 per cent. with an increase in yearly compensation of $1,350,000,000 or over 200 per cent.

Prior to the quarter century agricultural products were largely in excess of domestic consumption; agriculture in the Atlantic States was suffering. At the end of the period, because of increased employment and purchasing power, the domestic consumption of agricultural products had about overtaken production, which had more than doubled in average yearly value. The agricultural interests of the Atlantic States were rapidly reviving.

The normal employment in the public service and manufacturing industries alone should be at the present time nearly if not quite 12,000,000 with annual earnings of from $7,200,000,000 to $7,500,000,000.

All employment is far below normal. There are fully 2,000,000 unemployed, whose yearly earnings should be at least $1,250,000,000. These unemployed are now living at the expense of their savings, their friends, or the public. If they were employed, normal conditions would be restored, the circle of interdependent conditions would be balanced, prosperity would be restored.

Capital invested in "Transportation" and intercommunication constitutes one-half the combined capital of Public Service and Manufacturing. It is entirely in the form of negotiable securities, while a large part of the other capital is closely held or not readily realized on. Transportation securities have been for years a favorite investment for capital by the small investor, the trustee, the savings bank; by the most conservative in good times and by the wise investors in bad times; *any cause that dis-*

turbs these enterprises disturbs all, both industrially and financially.

The disturbance, uncertainty, and timidity about "Transportation" due to legislative requirements and the increased payments to employees, without any corresponding increase of gross revenue to meet them, have caused increase in expense of operation which can no longer be met by reduction of operating expenses or by scientific methods, for the irreducible minimum has about been reached.

The decrease in the surplus operating revenue has cast doubts upon the safety and certainty of not only the charges on the capital but the capital itself. Except for a few favored lines the safe margin has been so reduced that investors have become frightened.

Extension and improvement of our transportation facilities for which capital is required, are necessary. Money in sufficient quantities or on reasonable terms cannot be obtained. Nothing that can be postponed is being done. Unless soon made, the increasing demands of the country as a "*going*" concern cannot be satisfied, to say nothing of our country as a "*growing*" concern.

If there could be a restoration of conditions which would inspire confidence in their securities sufficient to command the capital with which to begin the expenditure of even a part of the $1,000,000,000 a year needed to put these enterprises in a position to meet the demands of the country both as a "*going*" and as a "*growing*" concern, it would soon restore the normal conditions of employment, expenditure, consumption, production. The circle of industrial conditions would be again balanced, shops and factories would be filled, and instead of the bread line there would be a working line night and morning between places of employment and homes.

During the past quarter century progress was steady and continual, except when the over-sanguine or over-grasping were buying, on credit or small margin, intangible though possible future values, or when attempts were made to improve existing conditions by sudden changes.

The public mind which has been excited and influenced by exaggerated, misleading and mistaken statements of irregularities, realizes that most of them had no foundation in fact. Those

that did exist cannot be repeated; business conscience and public morals, as well as regulatory laws will not permit. Other irregularities will creep in, for where there is abundance produced by labor, there will be many who want a part of it without labor. Take the fetters and restrictions off the employment market, keep a good watch on those who do not want to labor, and punish those who betray confidence. Wealth never will be distributed equally nor always employed wisely, but where it exists in abundance there is always a chance for those who are willing to exchange their labor for some of it.

An Address by Mr. VAIL before the Greater Vermont Association, at Brattleboro, Vermont, May, 1915.

VERMONT.

I AM glad to have again the pleasure of meeting with this Association, and particularly under such pleasant auspices and in this pleasant and beautiful city.

Brattleboro, from the viewpoint of the railroad, I have long known, but all my desire and intentions to visit the city have until now come to nothing.

It is encouraging to know that the local boards of trade are co-operating with the Greater Vermont Association in its endeavor to bring about a Greater Vermont. It can only be done by a united and continuing pull in the right direction — by all working for the common good, and looking at everything from the broad standpoint of the commonwealth, not from the narrow standpoint of either an individual or a single community. The interests of this State as of the world are too broad, too big, too diversified, to be treated in any other than in a broad, big way. Co-operative, united efforts concentrated on particular endeavors can accomplish much for all. Scattered, selfish, individual effort, not centered on a general purpose, can accomplish little for the community however much for the individual, and no individual can greatly or permanently thrive in a stagnant or a decadent community.

Since the last meeting of this body much of great interest has passed. Events which at that time were thought impossible have taken place. The world is convulsed and disturbed by the great struggle which is now going on between the great powers of the Eastern Continent, directly involving all the minor powers and indirectly but vitally the rest of the world. All the teachings of centuries of civilization and of Christianity seem to be wiped out by savage brutality and disregard of humanity, decency, or the common rights of man. Economic conditions are either so changed or so affected, that all observation and all observers are confused and undecided. Our domestic economic conditions, interwoven, interdependent, are so influenced and affected by the foreign conditions that it is impossible to deter-

mine what would have been the effect of the recent legislative and political changes in our national economic policy. All industries and all enterprise not directly helped by the abnormal war conditions are in a state of paralysis, stagnation or hesitation that accompanies uncertainty. Who can forecast what is to come, or what is to be when these abnormal conditions come to an end? All that can be done is to keep everything well in hand, and as events point out a course, act with discretion and with strong effect, and when happenings which outrage our sense of right, such as the most recent terrible one, take place, act not in haste, anger or excitement and ineffectively, but with coolness and full consideration and when we do act, let that action be such as will be effective.

So far as Vermont is concerned, with some few exceptions, everything has been going on fairly well, and conditions are what would have been considered good in times past. Prices and demand for our agricultural and other products have been fairly well sustained.

Vermont, however, is peculiarly and favorably situated, in that its products are such as have a more or less continuous demand, even when economy and curtailment is being practiced by all, and a large percentage of the consumers are living on their savings or the savings or work of others.

All things combine to bring our attention closer to what may be necessary for Vermont's future.

This city is practically the gateway from the South and Southwest, to the whole of the eastern slope of the Green Mountains and to the White Mountain section and to the beautiful valley of the Northern Connecticut.

Travel, trade, intercourse, always follow the path of the least resistance.

What we want is unbroken, uninterrupted communication in all directions both inside our State and connecting our State with the other sections of our country. The improvement of our roads, made through the common sense and foresighted policy of our recent commissioner, our present chief executive, has made them known as the best and most continuously dependable of any in the United States, and fully as good if not better for the purposes than the highways leading to us through other States. We are attracting the motor car tourist, and if we can only convince those working on our highways that a motor car

in difficulty because of bad spots in the road, or because of unsuitable by-passes around places being repaired, is a thing to be assisted and not jeered at and made fun of, and that a little courtesy to those who are attracted to the beauties of our country is not servile subserviency or beneath any person — our State will become one of the most popular and frequented, as it is one of the most attractive resorts of this country. This is not any particular criticism of the methods and manners of our public, but of a few individual cases. We should always remember that one discourtesy in the time of trouble and irritation will counteract the pleasing effect of hundreds of courteous, helpful acts.

If we can only make as much progress with our railroad communication, all will go well. We must have the bumps and jerks, junction connections, lay-overs, the dreaded uncertainty of a missed connection, all eliminated. Much has been done; and much more can be done, if we will only get at a sane view of the situation.

There are a few underlying principles governing public service enterprises which are either not always understood or known, or the importance of them, if known, not fully appreciated.

The public is as much dependent upon our public service enterprises as public service enterprises are dependent upon the public.

In the long run the public can receive no more than it pays for. Proper and sufficient compensation for service is an absolute necessity in order that good service may be demanded and received. When the expenses of a corporation are increased because of increase in wages, cost of material and public demand for improvements, it is necessary to increase the revenue to meet them. It is no longer possible to meet these increased expenses by operating improvements or changes.

A railroad no more than an individual can exist without sufficient income to meet expenses. For a time either can live on accumulated surplus of "money" or "avoirdupois," but that exhausted, a process of slow starvation sets in with only one inevitable end, if continued indefinitely.

I hold no briefs for railroads. Quite the contrary; as a citizen of the State and a part of the State most affected, I am not only interested but have made some attempts to assist in correcting existing irregularities, with unpleasant consequences.

Much of the present feeling toward corporations is based on wrong ideas as to traffic and traffic regulations and the relations between capitalization and operation. It is believed that capitalization, and the manipulation of capital, is the cause of existing difficulties. However much unreasonable capitalization or the manipulation of stocks may be condemned and deplored, one thing must be remembered, and that is, capitalization, honest or dishonest, cannot affect the earnings of the road.

Promoters and so-called financiers may monkey with and manufacture capital, but after all it is more or less like manipulating the cards in a certain game which all over our country is said to be very popular in this State — which every *native-born* Vermonter is supposed to understand, but a game I never have witnessed in the State of Vermont. (Take notice of the words "*native-born Vermonter.*")

Stock manipulation and gambling is as a rule a game at which money changes hands; the public is neither richer nor poorer. Innocent individuals, over-credulous investors who do not purchase through safe channels, or small speculator-gamblers who think they are smarter than those who follow the business for ill-gotten profit and tempt them by so-called "inside information" and "pointers," all these may suffer but the money remains, it only changes hands. Capital or wealth can only be lost to the community as a whole by being invested in enterprises of unprofitable character.

Wealth comes from production and constructive development of useful works that serve the necessities or convenience of the public, or the improvement of methods and the elimination of waste and extravagance in the operation of those already existing, and no one can reasonably object to those who engage in this constructive progressive development having a share in the earned increment to values of property produced in this way. If one can bring great benefits to the community, certainly that one is entitled to a share of such benefits.

The usefulness of a railroad or its importance to any community is determined in a large way by the character of its plant and the facilities it affords, and this in turn depends on its prosperity, on its having a surplus revenue over all necessary expenditure. The existing difficulties are entirely due to the fact that the gross revenue from traffic has, owing to trade con-

ditions, either remained stationary or if it has increased, the increase has not kept pace with the increase of operating expenses.

Revenue is determined by the character of the country which is entirely dependent upon the road, the traffic it affords, and the command of profitable competitive traffic from sections beyond its terminals. Character of its permanent way, equipment and efficiency of operation, wages and cost of material, determine the expense of operation, and the two together determine the surplus. Rates for traffic are in these days almost if not entirely beyond the power of the roads to fix. They are controlled or regulated by state or national commissions or fixed by state legislatures. They are substantially the same for all roads, the good and the bad, the lines of concentrated traffic and the lines of sparse traffic. The particular danger to our roads is that our local traffic is light, and the through traffic is the most aggressively competitive traffic that exists and is contributed by roads beyond the power of the regulation which controls our roads.

To a certain extent wages are beyond the power of any single road to fix. Traffic and living conditions and public sympathy with the laboring man have a large and generally controlling influence in case of disputes. No one objects to the best of wages for the best of service, *but wages and service are so directly related that one must control the other.* If the man rendering the service gets more compensation for the same work, then the service must bring more remuneration — if not, where are the wages paid to come from? If there is an increase in the work performed for the increase of wages, then and then only can wages be increased without increasing cost of service. Improvements in methods, economies in operation, scientific and intelligent organization and operation, have enabled greater service to be obtained by the same or less effort, but the irreducible minimum in this direction has about been reached by railroads.

The prosperity and well-being of a road depends upon its having a reasonable surplus revenue after wages, supplies and other items necessary for the operation and proper maintenance of a road are taken care of. If there is not revenue enough to meet these, there can be no surplus, and if there is no surplus there must be deterioration or starvation. Without dependable surplus the road can neither spend money on proper

maintenance or provide for depreciation, and it has no power or ability to raise capital for improvement or extension.

Without surplus, roads cannot be maintained or improved, for there is neither revenue surplus to be applied to that purpose or to pay for or secure capital.

Unfortunately, in Vermont, except for the through traffic, our railroad traffic is limited, and the very thing which makes our country so beautiful makes difficult construction and costly operation; these, with the distance from fuel, put our railroads in the doubtful column as to the balance of expenses and revenue.

Uniform rates are based on average costs of operation over the whole section to which they apply. With approximately uniform rates, as other connecting and competing roads, our Vermont roads have difficulty in making revenue meet expenses, while the more favorably situated roads with their concentrated traffic and more economical operating possibilities show large surplus. It costs more to build the same road and to operate it per unit of traffic over our mountains or through our upper valleys than it does in the broad lower valleys, where the traffic of course is heavier.

As an example, the St. Johnsbury and Lake Champlain road is expensive to build and to operate. Its traffic is light, yet it is as important to the communities on its lines as the Boston and Albany to its communities. It contributes very largely to the prosperity and well-being of an important section of the State. At uniform rates, or rates the same as those of other roads, the revenue from the traffic on its line would not pay operating expenses, while at the same ratio the traffic it contributes is profitable to the trunk lines. Such a road can only be successfully operated in combination with the lines to which it acts as a feeder, and the greater the system, the more thorough the combination of feeding and distributing lines in territories of sparse traffic with trunk lines, the better the service and the more equitable the distribution of profits.

In fact, it is only through such combination that territories of sparse traffic can get reasonable rates and good service.

The tendency of all wise " railroad system " construction and unbuilding in the past has been to combine the trunk lines with feeding and distributing lines and with extensions into sparse territory, so that the lines of light traffic which collect and

distribute could be supported by the profitable trunk lines of concentrated traffic. This process of combination has been going on for years. The road from White River to Springfield is made up of many originally independent lines. The road from Newport to Boston was built by a number of separate companies. In fact, there were originally in New England many hundreds of separate roads now merged into the three or four big systems.

We do not want to go back to those old conditions. We do not want any more competitive or parallel lines. What we want are roads through sections not now reached, extensions and cross-country connections of those now existing, and what we want is to have our systems so arranged that the richer or more prosperous roads will carry the light traffic roads, so that we will have through trains, through connections and quick transit for both passengers and freight.

This is an important thing for the State of Vermont. It is emphasized by the fact, which I think indisputable, that no railroad or railroad system in the State of Vermont, operated independently, has been continuously prosperous and profitable, except possibly those roads in the Connecticut Valley below White River Junction, which were the tunnel or trunk lines through or over which passed all the traffic from all the feeding, distributing and connecting lines from and through Vermont and beyond.

I am simply calling this to your attention because the question is vital and one that must be met by your Legislature or Railroad Commission, and a proper public understanding is necessary that when they in their wisdom may act it will meet with public approval.

The development of these necessary facilities will enable our produce to reach the markets quickly. Time in transport is of more importance than cheapness to all our agricultural products. All the dairy products are not only perishable, but there is sentiment about freshness in milk and eggs, vegetables, and like produce, which is of great value. To reduce the time one-half on such products, you could afford to pay double the transportation charges.

But there is no use in getting better facilities unless you also use more intelligence, not only in the care of your produce, but in its production.

It is the interdependent, co-operative development of all branches of industry and the extensive improvement and high grade operation of all facilities of intercourse and intercommunication that make communities or countries prosperous and good places to live in.

Freshness in milk, for instance, is entirely dependent upon care in its production and handling. Milk put into the can fresh from the cow, with the animal heat unreduced, rattled over rough roads in a springless wagon to the station, standing exposed for hours to the sun, under conditions which make the original bacterial family in the milk contented and happy, and develop all their productive powers, cannot be expected to sell at the same price as certified milk. Certified milk brings from three to five times the price of ordinary fresh milk.

Why is it that Oregon apples can be sent to our home markets? An Oregon apple is raised in an orchard which is valued away up in the thousands of dollars per acre. It is transported to markets at a cost of five or ten times as much and sells at from three to four times the retail price of an ordinary Vermont apple. Vermont can and does raise as good apples as does Oregon. It can, and in a few instances does, take as good care of them. The Vermont apple can, and those properly cared for do, sell for as much as the Oregon apple. The Vermont apple can and does taste as good as an Oregon apple. That this is so has been demonstrated by a few of our agriculturists. Why not by all?

Vermont can raise strawberries of as good if not better flavor and appearance, as any State in the Union.

Vermont potatoes properly raised and cared for are sought for in the South for seed. Their flavor and quality is as good as the famous potatoes of Colorado or Utah.

The sweet corn of Vermont cannot be surpassed, and hardly equalled.

There is no State in the Union that can equal Vermont dairy products, given the same care and attention.

In fact, in the agricultural possibilities, Vermont is ahead of any State in the Union, as a whole. Other States may have advantages as to specialties.

I have spent the past eight months in the South, from Maryland to Delaware and Florida. I have traveled and observed from train, boat and motor car. It is most wonderful how the

agricultural possibilities of those States are progressing; acres of potatoes, tomatoes, cabbage, celery, lettuce, beans, peas. In Florida I saw land worth little or nothing which when made ready for planting celery, at a cost of less than a few hundreds per acre, was sold readily for a thousand to fifteen hundred per acre. I ate the celery and know that the snappy, crisp celery raised in Vermont soil adapted to its growth, of which there is an abundance in the State, would bring double the price in any market. The climate of Vermont, its short, hot, fast-growing season, gives the fruit and vegetables that belong to the temperate zone a flavor and crispness which you cannot get in a sunny, hot, long season of the tropical or semi-tropical clime.

There is lots of talk and some complaint about the years which are said to be nine months winter and the other three months early spring or late autumn, but don't make any mistake. You do not have nine months tropical summer and three months northern summer. You do not have that long continued oppressive heat that takes all the energy from a man. You can walk through the meadows and woodlands of Vermont in the spring, summer and autumn without getting covered with all sorts of nasty, irritating, vexatious insects which bore into and under your skin before you are aware of it and make your life miserable. You do not have to look out for every step or examine every bush or tree by or under which you walk, or every bunch of fruit you gather or eat, for snakes, tarantulas, scorpions. You do have nice grassy lawns and smooth pastures upon which you can throw yourself to rest or sleep, with perfect safety from vermin or beast.

You can sleep at night and wake in the morning fresh and vigorous.

Without being invidious or making comparisons, each section of our country has its peculiar advantages. We are apt to think of the advantages of the other and only the disadvantages of our own, but after nearly nine months' absence, during which I have traveled thousands of miles through all the seaboard southern States, the advantages of and delight to be found in the climate and scenery of Vermont seems to be greater than ever before.

But you must remember that to get all there is to be gotten, takes effort, intelligent and continued. In Vermont one can live as easily and cheaply as in any other country, except where

one can live like primitive man or an animal, on the fruits and roots that grow naturally, and needs no other covering than that which nature gave him. But if one wants to live as a civilized, intelligent man should, on any scale great or small, it can be done in Vermont with as little effort as in any place in the world.

How are we to reap all these advantages? By learning how to do things properly and then doing them, with care in the doing, care in every little detail from start to finish. *Education as to the aggregate value of infinitesimal things is the prime necessity.*

Unskilled, unintelligent labor is the most abundant and cheapest commodity in the world. The value of labor increases in direct ratio to the skill or intelligence combined with it.

Education is the first necessity to accomplishment, not only education in the particular vocation through or by which the livelihood is gained, but that foundation, that education in the elementary studies which is necessary to build upon if one wants to work intelligently or wants culture and intellectual enjoyment. That is, one must first learn to read understandingly, spell and use the language correctly and clearly, arithmetic enough to solve all the daily problems that come in the ordinary life, geography enough to know where the other parts of one's own country and of the world are — in other words a good old-fashioned academy education. This is a fundamental necessity.

With this, and with such reading as an intelligent people inquisitive after knowledge do, one is equipped to go into any business or prepared to begin a further preparation for any classical, professional, technical or scientific pursuit. The foundation is laid for any movement in any direction, and without this foundation the work, study, or whatever one may do, will lack perfection and completion. With this foundation to work on, more and better can be got with the same or less effort than can be got without that foundation. Without it mortification, failure or deficiency will be met at every turn in any walk of life.

If in addition one can add to this foundation of common school and academic education the preparation that comes from a college course so much the better. But the graduate is apt to receive practical commercial and vocational training from his juniors of less general education. There are many advantages in getting the training in the vocation one is to follow for a

livelihood at as early an age as possible before reaching that age when ignorance is a matter of shame and mortification. The only handicap to the college graduate upon entering industrial or commercial pursuits is that of age. If false pride is set aside the college education is of great benefit. It brings into operation the assimilated knowledge and experience in study. The few years spent in college in acquiring knowledge and the facility of learning, are quickly made up. With the same ability and energy the graduate goes faster and as a rule goes much farther.

Everything that can be said in respect to individual accomplishment or possibilities is controlled, modified or amplified by his inherited or natural ability and his inherited or acquired inclination or disinclination to work, for after all you cannot get far without some sort of ability and you cannot get anything worth having without work.

I am laying particular stress on the academic, high school, or primary or secondary education, because this is a subject which has been much in evidence since the Educational Commission's report has been before the public. Much criticism has been made upon that report as being against the college education.

The Commission took no such ground. It simply found that all past assistance to colleges was voluntary and not obligatory, that Vermont had no money to waste on duplication, and that further aid should be so appropriated and apportioned, as to be effectively used and so applied that whatever was given should be so distributed as to produce the best results, and also to be part of a general scheme of education which commenced with and continued up through the primary and secondary schools. It found that the primary and secondary schools were an obligation upon the State and should be put in such a position as would enable *every* child in the State to receive an education that was substantial and thorough and should include in the last two years of the high school, studies which were preparatory for real life. Fully ninety-five per cent. of our people, of all people in this world, must depend upon their own efforts for a livelihood, and fully ninety-five per cent. of those must follow manual industrial pursuits. In these days of automatic and perfected machinery and ready-made articles for daily use and wear, there is little chance or opportunity for the boy or girl to get the home

drill in the use of his hands that he used to get in the days when much of all that was eaten, used or worn, was of home production and home construction, and when there were none or very few mechanical aids in domestic operations. The boy cannot now get the drilling in the use of his hands and brains even in industrial pursuits that he used to get under the apprenticeship system. Under these changed conditions, without any preliminary training in the use of his hands, the boy goes into a shop, is put on an automatic machine which he can master in a few weeks, gets good wages for a boy, but is learning nothing, and unless he is ambitious and self-sacrificing as to his leisure time or shows some extraordinary genius, he is at sixty no further along than at sixteen. The home life of the girl in the present age of prepared and ready-made food and clothes, with a school life which occupies, with the necessary hours for recreation, about all her waking hours, marries and establishes her home unprepared for its obligations or duties.

It is not therefore unreasonable, nor is it depriving the youth of any chances in life to provide for this essential foundation training for all; that an industrial training more or less extensive should be available for the ninety per cent. who will never go to college. It is not unreasonable to insist that whatever may be appropriated for the higher education should be so appropriated as to best supplement and fit in with the public school system. The industrial training which could be obtained during the last two years of high school will do no damage; it spoils no chances or opportunities; it will enable those who, either wholly or in part, have to provide for themselves, to provide better through their ability to earn more, and if there is still the ambition or desire for higher education, more time can be given to study. Time at that period of life is golden.

The foundations for a greater and better Vermont are to be found in a better and more thorough primary and secondary education for *all* than is to be had by *all* now. It is to be found in thoroughness, intelligent and co-operative effort applied to the doing of whatever can be done.

Farm fewer acres, but farm them better; keep fewer cows, but keep better ones. Diversify your industries. Whatever the work is, look first at the utility of it. Make neighborhood, town or county associations, and engage in the production of some specialties on a large scale. By co-operation and production on a sufficient scale you can make and control your own markets.

Whatever you manufacture or produce in the State, make it at least as good, and as much better than that of any other as you can.

If we can make a greater Vermont it must be through industrial development and the largest of these is from the industrial pursuits connected with the products of the earth. There has been much discussion about the manufacturing development of Vermont. Whatever is done in such direction, and much is possible, must be done along special lines, or along lines which we can manufacture and market in competition with other places. The greater the local development on these lines the greater the demand for the products of the soil and the more remunerative the price. Always remember that when you ship your produce to distant markets for consumption, the price the producer gets is minus the freight, but when the home consumption is greater than the home production the price is plus the freight.

The magnitude of this development depends on that kind of initiative and enterprise which has made the Vermonter so prominent in the development of other sections. The fields outside the State are not so broad, open or virgin as they once were, and there is keen local competition, but if the rising generation of boys is given a thorough foundation in elementary knowledge, a little and a right industrial training, taught how to use his head and hands in conjunction and give his efforts to home development, and can find the girl who has enough education to be a good and interesting companion and enough domesticity and knowledge of home life to be a good wife and make a good comfortable home, it is possible that what has been said about manufacturing in Vermont as differentiated from an industrial Vermont may come true. But development in your purely rural industries, stimulated by the same preparation, will bring the quickest and most certain returns with the least capital, and is within the reach of all.

But you, gentlemen, who are engaged in commercial and professional pursuits, as necessary to the well-being of the community as that of a producer, for you the doctors keep them well, you the ministers and lawyers, keep them straight, or if they do not go straight, set them so; and you merchants and dealers, market their products and collect for them the necessary things from all over the world — you also will well profit

by this greater Vermont in volume of trade and increased demands upon your services. Do not let the dealers or merchants be disturbed if there are co-operative efforts among the farmers to purchase some of their necessary supplies or market some of their produce. Every dollar saved by the farmer must be spent or invested in some way, and the spending and investing will create more business in more lines, with more profit, than you lose in the trade they can do co-operatively.

It is the income from accumulated savings, invested in profitable enterprises and industries from which all waste and extravagance are eliminated, which makes for permanent prosperity in any community, and where prosperity is there is always to be found good business.

Proper support and individual aid is necessary for the work. There must be some agents and officers of such an association who must devote most, if not all, their time to such work. This takes some money, for agents and officials must live and travel, and living, travel, printing, stationery, office and clerk hire cost something.

Such an effort if not sustained by all will soon fall to the ground. We take little or no interest in things that some one else is supporting for us. If we are sharing in the support we feel a proprietary interest. We feel not only that we have a right but an obligation to share in its counsels and its benefits.

So far this Association has not received the support it deserves. It has done good work and won, I believe, the confidence of the thinking and active public of the State. It has established itself as something needed and something practicable. Unless it does receive more support in the future than it has in the past there can be but one result. Our representative must be supported materially as well as by words and good cheer.

You are familiar with what it has done under the heavy handicap it has had and, gentlemen, it is up to you and your friends and the advocates of a Greater Vermont to give this Association such support as will enable those who are devoting their time and energy to its work, to work out its purpose instead of devoting their time, or most of it, to raising funds or worrying as to whether they can meet even the small expenditures with which they have so far managed to get along.

This support should be ample and generous, as the work you desire done is broad and comprehensive.

Address by Mr. VAIL at the Commencement Exercises of the Graduating Classes of Lyndon Institute and Lyndon School of Agriculture, Lyndon Center, Vermont, June, 1915.

GRADUATES: To anyone entering upon that struggle of life, in which results depend entirely upon individual effort and accomplishment, from whatever standpoint the entry is made, all necessary or pertinent advice is contained in a few maxims or aphorisms — the precious crystals of the thought and the experience of untold ages.

There can be little or nothing said that is new, for however presented, or in whatever wording, these few crystals give value to the whole.

What I am saying to-day is but a resetting, a rearrangement, of what I have said, what others have said and what all will say on similar occasions to the end of time.

One of these crystalized thoughts that shines out of the darkness and haze of prehistoric times is: Look well to your foundations.

It matters not whether of character, fortune, prestige, position in life, whatever it may be, the foundations must be properly and thoroughly established, that they may and shall support and carry whatever superstructures may be placed upon them.

Thoroughness is the principal quality in the preparation for, and the upbuilding of the superstructure; the corner-stone should be integrity and the binding material should be unimpeachable character. These are essentials in the upbuilding and support of any lasting, desirable and successful career or structure.

A desirable or successful career can only be one which commands the respect and the approbation of the community, and above all the honest internal approbation and respect of each individual. It cannot be measured with the yard stick of material gain or accumulation, but only by the measure of real internal self-satisfaction and the happiness derived from a wholesome life and from wholesome living; by doing that which is to be done in the best possible manner; by making the best of

everything and turning whatever may come to the best possible advantage.

With honesty of purpose, thorough preparedness, intelligent persistent application, continuity of purpose, in the upbuilding of a career no push or pull is needed except that push and pull which comes from the dynamic force within, and from the inductive force created by it, without.

The idea that in this world there is anything due to anyone without effort is misleading, false and dangerous. There is a living due to everyone in this world, but the collecting must be done by the individual.

Ambition and ambitious effort will not achieve anything beyond that which is due entirely to the quality and character of the effort put forth, nor will ambition, even when backed by effort, achieve all that is strived for. It never has; it never will. The paths of life are strewn with the wrecks caused by selfish unheeding ambition, for ambition and ambitious desire may degenerate into or become covetousness or selfish desire, and the intoxication of desire, the brilliancy of imagination, or the shadow of envy and covetousness, may make it impossible to see the obstacles which are sure to be met or to clearly appreciate the particular limitations with which nature has, to a greater or less extent, *endowed* every individual. The dangerous obstacles are not the ones which can be forseen or forecast and prepared for. It is the unknown and unexpected ones that call upon the resources and reserves of strength, will, tenacity and preparation which all who succeed must possess.

Material success alone never brought that reward of unqualified comfort or satisfaction or contentment. Substantial real happiness in life is made up almost entirely of simple things within the reach of everyone; it depends upon the qualities of mind and habits; it comes from the character of the habit of thought, self-created and self-cultivated; from the habit of choosing the best interpretation of act or word; from the habit of making most of every talent, endowment or opportunity; from making the best of those set-backs and retardations in life which could easily be construed or regarded as misfortunes or disasters. While a fool's paradise may not be desirable or advised, yet even that is better than a purgatory created by

distorted imagination and delusion, more than it is by misfortune.

Cunning, sharpness, trickery, misleading words or acts in business, are but the substitutes for brute force, the successor of the physical prowess of the medieval baron or the highwayman of all times. When the protection of society made force punishable and the power of the community could enforce the penalty, cunning and strategem were substituted, and because cunning and strategem and tricks can and may be of such an undefinable character as keeps them within the letter of the law, it does not justify the use nor does it entirely avoid a penalty; it is bound to be followed by the loss of self-respect and the respect of the community as well as the material losses which are the inevitable ultimate result of such courses of action.

If there is a question of material gain or of self-respect and neighborly approbation, the latter should always be chosen. The best citizen is one who does his full duty towards himself, his family and the community. A really self-respecting citizen, one who does not delude himself, is always a good one.

We hear much about progressiveness, uplift, and higher ideals. Progressiveness is good when subordinated to conservative common sense and practical initiative, but it must not be overlooked that old methods and old ideas were always founded on existing conditions or on existing necessities, and were the outgrowth of existing possibilities.

Before discarding old ideas or old methods, first ascertain, and ascertain conclusively, whether old conditions and old necessities had changed or ought to be changed, whether new possibilities existed, whether or not the supposed imperfections of the old were caused by improper, unintelligent or ignorant use or operation which could be corrected by intelligent understanding and effort, or whether or not adjustments or modifications instead of radical change and destruction would not accomplish all that could be accomplished or desired. *And above all do not undertake to change undesirable methods that are controlled by undesirable conditions, before changing the conditions. Methods will always be governed by conditions.*

Promises and prophecy as to the advantages and performance of new methods, new ideas, new conditions, new and aspiring individuals, are too often based on imagination rather

than experience; their object is too often immediate personal benefit rather than ultimate accomplishment; little or no responsibility is recognized, for much will be forgotten when the time for accountability comes; therefore there is little or no limitation to what may be promised or prophesied and it can be made so flexible as to overcome any suggested objections.

The faults, disadvantages and imperfections of things "existing" are known, experience has revealed them; those of things "new" can only be learned in the same way.

While care must be taken in the adoption and acceptation of new ideas and new methods, there is no excuse for retrogression, stupid "stand-pattedness" or ignorant or obstinate opposition to all that is new. While revolution may be successful, it is always destructive. Evolution will not be so radical, it will be gradual and will not be disorganizing or destructive. Intelligent conservatism, combined with intelligent progression, is what preserves the good and useful and brings all the potentialities of the "new" into active possibilities and final realization.

All that is needed is to keep the "machine" in good repair and condition and under full control when passing blind crossings, corners or turnings, full speed ahead when the way is certain and clear. By so doing the end will be reached about as quickly and with much more certainty unless set back or delayed by the recklessness of others. Do not any of you be the reckless one.

Your first and greatest lesson of life has been learned when your individual action is based upon a thorough understanding and recognition of these truths.

An Address by Mr. VAIL at a Dinner given by the Railroad Commission of California to the National Association of Railway Commissioners, at San Francisco, October, 1915.

SOME OBSERVATIONS ON MODERN TENDENCIES.

IT is indeed a great honor to have been asked to meet with you to-night, and far greater to have been asked to speak to you.

You have in your various official capacities the most momentous problems of the present to consider and to solve. Upon your action will depend not only the continuance and initiation of vast enterprises, but the very existence of vast wealth shared by millions of people. The well-being of all will be greatly increased or greatly diminished by your decisions and your acts.

No solution can be absolute; no human is omniscient; but in the composite wisdom, experience, and common sense of all, there will certainly be found a basis, a course to follow which will maintain such existing conditions as are good without putting the brakes upon progress.

Tonight we will try to state these conditions; to examine the causes which have produced them; and, if possible, to indicate a course of action for the future.

You will hear nothing novel or startling, only statements of fact about which there can be little dispute, and certain precepts, which have stood the test of time.

There never was in our country a stronger, better, underlying basic condition, or one more potential for good than that which exists today. There should be certainty and stability in our economic condition; instead there is uncertainty and doubt.

Instead of a settled and definite course of action there is a chaos of confused and continually changing thought.

As a consequence of perpetual striving for personal aggrandizement rather than for substantial public benefit, clear, well-definied economic, social and political policies are not being proposed for discussion and adoption, but are submerged under all

sorts of fads, fancies and vagaries seriously advanced as cure-alls for every possible condition.

To just what extent this state of affairs will be carried, just what may be the outcome, just how far it will result in the disturbance or disintegration of basic and fundamental principles, is difficult to determine.

There is danger, grave danger, but offsetting this danger is the well-founded hope that when seriously aroused the American people will bring into action that common sense of which they are possessed, and avert catastrophe.

The great majority, so long as they are comfortable, are indifferent to disturbances. When disturbances become so serious as to endanger individual comfort, they arouse themselves, act with intelligence, straighten out affairs, and again sink into repose and soon forget that there was trouble.

While probably there never have been much worse, there have been similar disturbances. Let us make a thorough diagnosis of the disease and try to find the cure.

Controlling Conditions.

In all consideration of economic questions, actually existing conditions should be assumed to control. Past experience is a dependable guide so long as it applies to continuing or similar conditions. There is a tendency to ignore the past and the present, and set up as a basis quasi ideal conditions which have no existence. While ideal conditions are much to be desired, until they are established, the closer we keep in our minds the actual conditions the greater is the possibility of improvement. Obstacles and difficulties cannot be ignored. Reform can only be accomplished by the co-ordinated effort of all, acting upon a correct understanding of real conditions. There is a vast difference of opinion to-day as to what *are* the actualities. There are few mental visions capable of taking that comprehensive view of the whole field, essential to success in social or political reform.

Disputable speculations and assertions as to what is, or what will be — which appeal to human generosity or selfishness — are apt to be more controlling, than any presentation of actualities which may be unpleasant and obstructive. Obstructive

conditions must be overcome by effort, whereas *hypothetical* difficulties can be dissipated by a change in phrasing or by an effort of the imagination. *Promise* can always eclipse *performance.* Performance never will equal irresponsible promise or prediction. Everyone knows the fate of him who tells the first fish story.

The Human Factor.

The past shows us that better social conditions are but evolutions, and have ever closely coincided with material progress. Whether or not material progress is the cause or only a potent influence may be debatable, but history seems to indicate that it is the advance agent.

Individual action is the most unsettling factor of human progress; it fluctuates between the extremes of perfection and imperfection. It is controlled and influenced by habit, education, environment, temperament and passion; always generous and noble when influenced by known suffering it may be absolutely selfish when influenced by material possessions or individual comfort. There is a vast difference in "openness to conviction" of various individuals under similar influences. What course of action individuals will take under any given condition, or any given influence, it is impossible to say.

That one has been right in any matter, is far from conclusive that he may be right in other matters. It is seldom that any individual who has succeeded in one line will succeed in other and dissimilar lines. Confidence in an individual because of some single success has caused many disappointments. There exists a strong tendency to place absolute confidence in some one individual, to make him the repository of confidence, and in social, economic or political matters, that individual is, for his group or his party, the dominant powerful intellect, and to him, individuals dominant in other things, leaders of reputation and experience, subordinate their own personalities; whatever he may advocate is accepted without question. This supremacy may be well deserved and worthy of the following; it may only be some strange fascination or some appeal to imagination. This power may be used for a worthy purpose, which when accomplished is of general benefit, or it may be used for a purpose, too large, involved and complicated for a leader who has

the imagination to conceive great things but not the patience and ability to carry them to accomplishment. Before his followers realize his mistakes he may become so entangled, and he may have so entangled them, that the cause is lost and all have become involved in a maze of disastrous perplexities.

Or, the purpose he advocates may be false in principle, impossible yet plausible; even after his followers have lost confidence and failure is evident, they hesitate and are loath to assert themselves; some will not see, some will be held by a sense of personal loyalty, and some will selfishly hope for some individual benefit.

Greater disaster has been brought about, more characters have been smirched by blind confidence in individuals, than there have ever been through intentional deceit or fraud.

This phase of human character must be taken into account, for it explains many events in life otherwise not possible to understand. These peculiarities account for many fundamental differences of opinion on vital questions upon which each enthusiast thinks that there should be no honest difference and that all are wrong who differ.

There always will be honest differences of opinion and the only way to reach a workable condition of human affairs is by an "understanding" reached through discussion, and a "conclusion" reached through mutual concession. In this way a course of action will be determined in which all can acquiesce and toward which all can work in a spirit of hearty accord for a common purpose. While the conclusions may not be the very best — who can tell? — there is no question but that it will be the best that can be obtained.

Emotional movements are not permanent, nor are they stepping-stones to something better, for they are not based on any mental quality that leads to improvement.

It is easy to say but impossible to prove, what "would have happened." Time settles definite prophetic statements, but "might-have-beens" can never be determined.

All improvements in our social relations must be based upon improvement of environment and habit of the human mind; an evolution through systematic and practical education from existing conditions.

What Are the Influences That Have Been Working for Better or Worse in Our Economic and Social Relations and Conduct?

Within a recent period, no longer than one man's lifetime, tremendous changes have taken place.

When that individual was young, man was self-dependent. With the exception of the "luxuries" the man and the family produced and fashioned nearly every article of individual or household use, and were in a great measure independent of all others. Production and manufacture were by disassociated individual work, mostly by manual labor, or if centralized were in exceedingly small groups. Intercommunication was generally confined to the neighborhood; if extended beyond it was through occasional visits, or semi-occasional letters to which exceptional importance was attached. Intercommunication, intercourse or interchange between separate sections or states was uncommon and between separate nations and continents almost negligible. There were a few centers of trade and commerce. Fully half of the world was substantially unknown.

What has been the change in one "recent man's" lifetime?

Now the great majority are dependent upon others for the comforts, conveniences and necessities of life. Extreme parts of the country are now in closer connection than were neighborhoods; personal intercourse between individuals widely separated are but every day occurrences. The food upon the table is brought from distant lands, seas and forests.

Instead of disassociated manual labor, labor is now centralized in vast establishments where machinery has largely replaced manual labor. On the farm the raw material and produce is exchanged for the necessities of life manufactured elsewhere. The trolley car passes your door, and frequent and swift trains or traveling hotels are convenient for customary journeys between distant towns. For intercommunication the mails are frequent. For immediate communication the telegraph annihilates distance and for social or business conversation, whether with those in an adjoining house or distant city, the telephone makes personal intercourse possible.

The changes in habits, customs and conventions of our social organization have been greater in that "recent man's" life than in any previous thousand years.

Everything or nearly everything which contributed to these new, if not better conditions, were introduced as luxuries, soon became conveniences and almost imperceptibly became necessities.

That which contributed most largely toward these changes, and without which they would be impossible, is "intercommunication" and "transportation."

Intercommunication and transportation, cheap and efficient, has made possible the enjoyment of the world's products in every section and the assembling of raw material from widely separated sections at the most favorable point for manufacture and distribution; it has made possible transactions and intercourse between all parts of the world. It is now easier to arrange matters between individuals widely scattered than formerly between those in the same community. As intercommunication and transportation develops, so develops commerce and society.

What Has Been the Effect of These Changes?

The wealth of our country has been created by and is absolutely dependent upon these facilities; without them it would disappear. "Transportation and intercommunication change local stagnation to world-wide prosperity." Transportation and intercommunication have created, and upon their continuance depend, the populous and prosperous commercial and social centers. All other public services are subordinate to these.

Wherever man lives, in city or country, he is dependent; he must be served.

In the beginning these services were hailed and welcomed as "beneficial advantages;" soon they were regarded as "dependencies" of public favor, and as public dependence upon them increased, they were regarded more from the point of self-interest, and narrow consideration became prominent in all dealings with them.

This attitude was no new characteristic. Society has never allowed that which is necessary to existence to be entirely controlled by private interest. It has always been brought under sufficient control and regulation to prevent extortion or oppression, without destroying the conventional rights of property,

which were additionally safeguarded by its character, its small investment, its adaptability to other purposes.

The construction and equipment of present-day utilities requires large " unrecallable " investment in special plant and equipment which has little or no liquidating value as a going concern of the same nature, and without equitable treatment there must be great loss.

These public services, to obtain the maximum benefit at the minimum cost, necessarily assumed the nature and many of the characteristics of " monopolies." This was made an excuse for the enactment of restraining laws, and made them too frequently the target of misrepresentation and at times of veritable persecution which might be brutally described in the expression " might makes right."

The regrettable trouble, the greatest danger of all *is the lack of a proper recognition of the close interdependent relations between the prosperity of these utilities and the prosperity of the public.*

Reckless methods of promotion, and disregard of public rights by *some* of the *many* connected with these utilities, have antagonized the public and created the idea that the practices of a few were the practices of all. Some of the managers may have given too much consideration to their shareholders and too little to the public, forgetting the mutual interdependence and common interests, but there has been and there is a growing tendency to meet the public in a broad and liberal way. In many of the most marked cases of maladministration and reckless financial management the underlying purpose was to profit through the increase and improvement of facilities, and in nearly every, if not every instance, the public have obtained better, more extended and even cheaper services and facilities.

Much of the public misunderstanding and financial loss to the public has been through new promotions, which under the name of " competition " and the cry of " down with monopoly " duplicated in part existing utilities,— covered only the profitable part of the business,— and did not meet the essential " raison d'être " of a utility, which is, to afford facilities to all. Investment was increased without increasing facilities, and the power of the existing utility to extend service was lessened by dividing the profitable business.

Another and Even Greater Change Has Taken Place in the Conditions Which Control Human Progress in This Country.

During this same period, or one "recent man's" lifetime, the political as well as the economical and social structure has been revolutionized. The so-called democracies in previous periods of the world were in fact nothing but aristocracies.

Our government, organized as a representative republic, had at the beginning many of the elements of an "aristocracy." Those who by birth, education, or acquisition, occupied the leading positions in society had weight and influence in public as well as private affairs. This was but a continuation of the traditions and customs in the colonies and in the countries from which our ancestors came.

The change from an "aristocracy" to a real "democracy" did not take place until those earlier settlers and pioneers who subdued the wilderness, established new communities, and through suffering and privations became a self-reliant independent people, had established such an equality as did not prevail even among the original settlers of this country.

Much that is regrettable could not have happened if the new generations of our own people and the new immigration had found the same undeveloped wilderness to overcome as did the pioneers and advance agents in the settlement of our vast territory.

Instead of a wilderness, there was a settled country and superior conditions with sufficient possibility and potentiality to give abundant opportunity to all, native or foreign born, who had the initiative or the application to take advantage of it, and abundant occupation for those who preferred less, with less exertion, or were willing to be servers rather than leaders. All can now secure with the broadest freedom, material comforts and satisfying environments superior to any that could be had, by any effort, in olden times, or in foreign homes.

The most marked changes have been:

Simple life to complex life.

Disassociated individual effort and small enterprises to centralized co-operative enterprises and aggregated labor. Highly skilled manual labor to automatic machinery.

Apparent corporate irresponsibility dominated by a few individuals, instead of individual responsibility.

Disturbance of relative standards of value of long standing, caused by great discoveries of precious minerals.

The great increase in nominal but not relative wealth of the individual, and a greater distribution of property to the whole public through the changing of the great potential resources of the country into tangible and realizable assets by the restless and resistless energy of the inventor, the dreamer, the optimist, backed by energy, initiative and persistency.

The introduction of new educational standards, which created wider and more envious distinctions between manual and intellectual pursuits, and forced the education of youth along lines which unsettled old ideas without replacing them by something as good or better, disturbing the old belief and faith in self-help and self-dependence, in industry, thrift and accumulation, all of which created in the minds of many, dissatisfaction with their own position and an antagonistic envy toward others more fortunate.

These changes have taken away from the partially educated or incompletely developed mind old and satisfying ideas, and created unrest, dissatisfaction and a gnawing suspicion that there is some magic power which is being used against them.

Millions of immigrants, at home controlled by fear and force, with no voice except that of secret lawless methods, with no realization of any difference between liberty and license, were cut loose from restraint imposed upon them by custom and tradition, and without education or ideas of public obligations were put on a political equality in every respect with those who by experience and generations of education were prepared for all the rights of higher citizenship.

All these discontented forces welded into solid phalanxes of voters led by self-seeking politicians who promise the impossible, have become an influence in the politics of the country that must be reckoned with.

Their relative influences have been increased by the indifference and neglect of civic obligations by representative and leading citizens, some of them all the time, and nearly all of them some of the time, and by the stubborn, unconceding resistance

of impractical enthusiasts and their followers to any movement not of their own suggestion.

If but a small part of the wrong conditions which are believed by the dissatisfied to exist, did exist, the French Reign of Terror would be nothing to what would be possible in this country at any moment.

But in face of these assertions all know that very many of our leaders of thought or industry and of those coming forward to replace them, are but the first or second generation from toilers in the ranks.

Before any permanent change can come, the whole public must be educated up to a full realization of their civic duties and responsibilities, and all must contribute to the solution of civic problems and administration by giving generously of their individual time and effort.

Everything possible should be done to develop proper understanding and education. No matter what may be the future "uplift" or development some conditions will never change. Food and clothing and shelter, no matter how simple, must be produced and prepared for use by labor. Transportation and intercommunication must be provided by labor. All kinds of work must be done; agreeable or disagreeable; cleanly or soiling. From the raw material to the finished product, some must bear the physical burden, some the mental, and some the financial.

There must be mutual concession and subordination of the individual to the comfort of all. There must be leaders and followers, for without organization there can be only chaos. Society must be organized and improved if possible without destroying its essential elements, or man must go back to the primitive state where each does everything for himself, or by brute strength forces someone into slavery to do it for him.

Much can be done to improve conditions and environments surrounding labor and rest, but the only way to permanently better the condition of the individual is to teach him to raise himself, by his own efforts, into a better position and, by thrift, economy and intelligence in labor, and by absence of self-indulgence earn and save enough to take care of his future.

There must exist a curator for the spirit of the law. Dishonest practices now protected by sophistries and plausible

evasions must be punishable. That can be accomplished by confining the statutory laws to general rather than specific subjects. There is abundant knowledge of right and wrong, and there are laws if enforced and precedents if followed to reach all. If one uses or allows to be used a good reputation in ignorance of the purposes for which it is used, or misleads others through misrepresentation based on ignorance, it is a crime and should be so treated. Representation used for the purpose of influencing or persuading others should be based on actual knowledge and correct information.

The whole public must be convinced that nothing gained at the expense of others can be permanently beneficial; that no advantage to individuals or groups of individuals gained by combination of interests against other individuals, can be permanently beneficial; that waste and extravagance in public expenditure and administration cause higher taxes than all the graft of years. Our lawmakers instead of seeking new ways for taxation should curb reckless extravagance in public expenditure. Owners, proprietors and corporations may pay the tax, but every tax comes from the ultimate consumer. The tax is as much a part of the cost of the production as are wages, and between the raw material and the ultimate consumer come all costs. Profit is the incentive to production; without profit progressive industry would cease, but any unnecessary expenditure or *tax* is a brake on progress and a burden upon prosperity. Taxes, high cost of material, waste, idleness, careless work, are included in the rent of the tenement.

The rent is paid by the tenant.

No uplift can be permanent, no reform beneficial, without full recognition of the natural and cultivated differences in man. Some are leaders, some are dependent followers, some want restful positions, some only responsibility; some see and pluck opportunity from sterile surroundings, others may be bombarded with opportunity but accept none of it.

All should realize that if we are to live in comfort the efforts of all must fit into each other and that some concession, some give-and-take, is necessary. When all these things are done, each will find his proper place in the social organization and all will be enabled to have their proper share in life and prosperity.

The broadening extension and improvement of our industrial, commercial and utility enterprises; their application, availability and adaptability to the wants and necessities of humanity, are due in a very large sense to the introduction of scientific and technical methods into their conception, construction and operation.

The great profits which have been made in many industrial enterprises have not been extorted, as many believe, from the public through force of their necessities, but by giving to the public more or better at the same or less price and by more and better being produced by the same or less physical effort on the part of labor. Some of the greatest benefits have been through the elimination or utilization of waste, or the conservation of energy.

In all industrial or constructive enterprises the technical and scientific staff and the laboratory are as essential a part of the organization as any other, and the enterprise which neglects it cannot keep pace with others that do not.

Scientists and technical experts of the highest grade, such as were formerly to be found only in the laboratories or recitation rooms of colleges and universities, are now found in the laboratories of every great industrial enterprise opening up new fields for old things, or developing new things for fields both old and new, and extracting from waste, something which will either add to or cheapen some necessity in life. This costs money and is only possible where the expense can be spread over such large production as to make the cost to each unit of production negligible. Consumption ceases when the unit cost of anything is made greater than the unit value to the consumer, and production must cease when the unit cost is made greater than the price obtainable.

In the development of the telephone, at the very start the investigation, research and experimental department was established.

Quoting from one of the reports of the American Telephone and Telegraph Company:

> "For this purpose a staff of technical, electrical and mechanical operating experts must be gathered together

and educated. To educate and assist these, to enable them to do intelligent work, avoid repetition and duplication, all that had gone before and all that was being done here and elsewhere must be known. For this purpose a bureau of research and information was formed. Patent and legal experts must be employed and educated to secure the advantage of this work and study, as well as to furnish protection in the use of the patents."

Most if not all of the innovations in the telephone instrumentalities were first tried out, if not evolved, by that staff. This largely accounts for the present position of the Bell Sysem and for whatever position it may occupy in the future. The staff includes a greater number of scientific and technical and mechanical experts of the higher grade than can be found in any university or industrial enterprise in the world. It enables the Bell System to keep in advance of the art, protects the public from exactions of outside inventions, and gives every associated company in the system expert advice and expert assistance in the operation and improvement of the existing system and in the projection of future development.

Quoting from a recent report of the company:

"This advance has not been dependent on any one invention, idea or suggestion, but is the result of tens or even hundreds of thousands of little things, each a spadeful, as it were, in filling up or removing the obstacles, and smoothing the paths of progress. Inventions of wondrous analytical subtlety have marked epochs in the progress of the telephone service, but in an art or industry or system made up of many interdependent operations and services; each new idea, no matter how controlling, must be adapted to what already exists to make it serviceable; any great or small invention is only useful when moulded into the mass so that its service becomes an undeterminate part of the service of the whole system."

The cost is large. It is spread over a vast system. The unit cost is small, but the results, almost unappreciable from day to day, are marked from year to year. The entire cost of years was saved to the public by the protection it gave against one

claim of an extended patent, which would have prevailed except for the knowledge and information which this bureau had and which could be obtained from no other source.

This work could not be carried on by any disassociated, unrelated system of local exchanges; no limited system could give the universal service of the Bell System, of which every subscriber is a center from which conversation is possible to the extreme limits of the country. Nor is any like work being carried on by any government owned and operated telephone system in the world. All the world depends on the Bell for the latest and the best. Many novel projects are advanced by inventors or promoters, some legitimate, some for promotion purposes, but without any exception the only things in the way of intercommunication by conversation which stand the test of time are those which have been either initiated inside, or adopted and developed in the Bell System. The work is carried on quietly; and what is done or being done is not announced by promise or prophecy, but by introduction to public use.

In the improvement of new instrumentalities the "machine as a whole" must be put under trial. In most utilities the "system" is made up of separate "machines" or parts, each of which can be developed independently in different manufactories or laboratories and combined into one effective system.

The telephone "talking machine" is *not* the transmitter or the receiver alone. A single telephone or transmitter and receiver, without the connecting wire, is about the most useless thing in the world. The "talking machine" or "complete instrumentality" consists of the transmitter and receiver, the connecting lines, the switchboard, auxiliary apparatus, loading and phantom coils, and the thousand and one instruments and instrumentalities any part of which may be put in use for any conversation and all of which is necessary to complete a universal system. Every improvement must be demonstrated by use on the entire "talking machine" on the whole system; if it is but one unit the effect must be noticed on the whole and its connection with all other parts observed.

Quoting from a report of the company:

> "The telephone plant, in all its parts, must ever be subject to a process of evolution tending always to a higher and higher type. Its capabilities of responding to these advancing requirements furnish a good test of its design and efficiency and value.
>
> "The plant of the Bell System must not be regarded merely as a completed machine which becomes worn out, and then, after a time, is thrown away and replaced by a new one. It is like an ever-living organism, always growing in size and usefulness, incorporating into its structure what is new and improved, and eliminating the obsolete, the worn out and the used up. Thus it is kept permanently in a condition of full vigor and at the point of highest attainable efficiency, anticipating the ever-growing needs of the service and responding successfully to the always-increasing requirements of the public."

The problem *commenced* with the "smallest possible talking machine," a telephone transmitter connected with a receiver, such as Bell and Watson used in that first historic conversation. This small machine has expanded into one of many millions of receivers and transmitters, connected by millions of miles of wire, equipped with thousands of pieces of auxiliary apparatus. The present problem has to do with all of this. The problem of transcontinental talk could not be solved over a local circuit, nor a circuit reaching but half way; it had to be solved over an equivalent circuit connected with the system. The solution of talking through underground circuits could only be solved by actual underground circuits. The solution of the problem of electrical high tension interference could only be solved after those circuits were in operation and their effect upon the system observed. The problem as to giving the most efficient local and long distance service to hundreds of thousands of subscribers had to be solved by observation and deduction on a system which had the lines and the subscribers. In other words, the telephone service of today has been an evolution, step by step, some short, none very long, from the original — "small machine" — i. e., two telephones and a connecting wire between adjacent rooms — to the existing nation-wide universal "talking

machine" of the Bell System. The instruments which Bell and Watson used with difficulty between two rooms in the same building can now be used, because of the improvements to the "machine," to talk across the continent. Used under the same conditions as then existed, there would be the same limitations in talking.

It is well known that there is a decided limit to distance in underground electric transmission. The first long distance circuits had to be overhead from office to office. The short underground circuits of local exchanges would at that time *kill* the transmission. In time, ways were found to overcome this effect, and long distance wires are everywhere connected with the local underground exchange systems. Before a long distance underground talking circuit was built it was thought by physicists that a couple of hundred miles was the limit, and even that distance could not be used as part of a longer circuit in connection with overhead circuits. Two hundred and fifty miles of underground line were built, and extended to five hundred. By the time the five hundred miles were completed, means were found to make conversation possible for that distance, and what was more important that five hundred miles could be used in a longer circuit consisting of underground connected with overhead circuits. In the first transcontinental demonstration it was so used and in the first wireless transcontinental demonstration the talk from New York was transmitted to the wireless towers at Washington wholly through underground circuits.

When the first telephone line was built between Boston and Lowell, telephone experts did not believe that commercial talk would be possible, and if possible, did not believe that there would be business enough to pay expenses. After it was built, the Bell experts found a way to make conversation possible and business followed.

Physicists advised us that if the extraneous noises due to earth and atmospheric currents could be gotten rid of, it would be possible to talk between New York and Chicago over a copper wire as large as a man's wrist. Transcontinental talk is now being carried on over ordinary copper circuits and "phantom" circuits are now superimposed on the regular circuits, increasing the line capacity. The Boston and New York line was projected; then Chicago, then Denver, each a step, and when the

chief engineer of the Bell System advised that talk over a transcontinental line was possible, work was commenced and in July, 1914, the first test was made, and by January, 1915, the line was opened for commercial purposes.

If there were no Bell System — only disassociated individual companies or groups of companies, no line over a few hundred miles long would have been built, or if built it could not be operated as satisfactorily as under the present conditions. Efficient commercial telephone operation can only be maintained when every operator on the line and the system connected with it is under one control. For long distance and wireless, the cost of experimentation, construction and loss before self-sustaining would be beyond the possibility of any one of the disassociated companies.

The development of the exchange service has been by the same process. As each hundred miles in the distance presents new problems, so does the adding of each hundred subscribers to a local exchange. When the development reaches city and suburban exchanges, with instantaneous connection and connection with adjacent exchange districts, the problems become very complicated.

When in July, 1914, after the talk to San Francisco, the chief engineer said that wireless conversation was possible, authority was given him to go ahead and for some months conversations were carried on between more or less distant temporary low power wireless stations. At last, believing that the art was at least as far advanced as was the art of telephony at the World's Fair in 1876 and further development depended on the use of the best wireless towers, we approached the Navy Department and immediately their great wireless stations were placed at our disposal. The wireless experts of the Navy became as much interested in the problem as were those of the telephone company. What was accomplished you know. What will be accomplished is unknown. Little by little, step by step, development is probable until it can be utilized at least as a supplement to the great Bell System.

Talking over wireless is like talking in a boiler shop. Earth currents, and electrical disturbances which sweep through space, are picked up by the wireless antennae and translated into noise by the delicate receiving instruments.

These storms are the bête noir of the wireless, whether telegraph or telephone, and for months at a time they will be so continuous and so serious as to make wireless communication over great distances impossible and over short distances extremely difficult.

There were the same difficulties in the early development of the telephone. The grounded telephone wires, acting as does the antennae of the wireless station, picked up these same currents and translated them into noise. Some may remember that these noises in early telephone times made conversation always difficult and sometimes impossible. The noises caused by earth currents were gotten rid of by making the telephone circuit of two wires entirely insulated from the earth. The atmospheric disturbances still remained but were neutralized by transposing the two wires, or virtually twisting them, and in this way the regular telephone conversational current was given a noiseless path. What device will be possible to neutralize the effect of these electrical storm disturbances on the antennae of the wireless is yet the problem of the future. Prophecy is easy, but in face of the seriousness of the problem, no one who has to make good will be likely to make any definite promises.

What the development of the telephone has emphasized is this fact, that the problems which have been solved could never have been by any system of disassociated unrelated local telephone companies. No one company would have had the "machine" to develop and for that reason no such problems. The magnitude and the cost and the advance work necessary would have been beyond any local system.

Given the idea and the knowledge and the brains, development in any line of art, science or industry is largely a question of money, and as the world has seen from thousands of examples, some large and some of small importance, to spend money on an "idea" requiries initiative, enterprise, courage, and the stimulus of reward.

The reward of the Bell System is protection to its shareholders through producing something better and of more value to the public at a price within the reach of all, and through the policy of making it so useful that no one can do without it.

Control and Regulation vs. Government Ownership.

There are theoretically two ways of protecting the public in their assumed or real rights, so far as public service enterprises are concerned: First, "Government Ownership;" second, "Control and Regulation."

GOVERNMENT OWNERSHIP.

The most earnest advocates of government ownership will admit that it carries with it and cannot be divorced from many very undesirable conditions.

The most disturbing feature, and the most impossible of control, is protection from the government itself. It would be an unregulated monopoly, with unrestricted, unlimited powers, serving *individuals* for their *private* advantage and benefit at the cost of the *general* revenue.

Government ownership would introduce beyond a possibility of prevention partisan and political control into enterprises absolutely non-political and which should have a purely business management. Whatever public demand there is for government ownership is not because of faith in the efficiency of the government but because of a fear that in some unknown mysterious way individual interests may be affected by private enterprise.

All will concede that if but a part of the mismanagement and waste revealed by investigations of government operation are true, the public could not be satisfactorily served by any management under our form of government.

For the protection of the community, of individual life and health, there are some necessities that should be provided for all at the expense of all, such as roads, pure water and sanitary systems for concentrated population, and reasonably comprehensive mail service. The determination between services that should be operated by the government and those which should be left to private enterprise under proper control should be governed by the degree of necessity to the community as a whole as distinct from personal or individual advantage. The mails might be put in the doubtful column under this distinction; but it must be remembered that originally the mails or posts were put under government operation for other reasons, and it is a

grave question whether the great extension of the mails to purely commercial purposes at the expense of the general revenue has not extended the postal system beyond its scope or advantage, even in its broader interpretation.

It is within the power of everyone by personal observation to determine the efficiency of publicly managed operations.

Do your letters come to you as quickly as is possible? Do you depend on the mails even for over-night distances in matters of importance, or upon the telephone, telegraph or private journey? Are you treated considerately, efficiently and promptly by public employees?

What politically managed enterprises are there that have not deficiency in service and deficit in operation, if measured and audited as private operations are?

While there are many enterprises, like gas and electric light, owned and successfully operated by municipalities, they are limited in size and are usually administered by those who give their time without cost. On a larger scale of operation, with larger problems, the time and attention necessary would so cut into or interfere with regular occupations, that free administration could not be depended upon and efficient managers could only be obtained in the open market in competition with private enterprises.

Deficits in government operation, like waste in political administration, are acquiesced in because of the political activity of those benefited and the indifference or apathy or helplessness of those who bear the burden.

Those who point to the admitted or supposed efficiency of the post office should remember that that portion of the post office service conducted by the government embraces only the collection, distribution and delivery of the mails through disassociated independent post offices. The transportation of the mails from post office to post office — the largest and most complicated part of the service — is by transportation facilities developed, administered and operated entirely by private enterprise. The department admits the rural delivery as conducted by the government is wasteful, and that equal efficiency could be obtained and millions could be saved if it was farmed out.

In considering the question of government ownership of

utilities the form or organization of the government itself will be found to be controlling.

That government which now has the broadest and most extensive control of its utilities, is the most highly and thoroughly organized government in the world. Its efficiency has been recently displayed in a very striking manner. It is in operation an autocratic aristocracy with some elements of popular voice and freedom of expression. Its subjects *en masse* are not potent nor likely to protest except under great provocation, or so long as freedom of activity and opportunity to profit remain in private enterprise. There probably would have been less government ownership had it not been for controlling military and political reasons.

In the administration its executive and operating departments are permanent organizations, with permanent officials and employees. All of them have a prestige and standing only a little below that of officers in its military organization, and decidedly higher and apart from ordinary citizenship, which makes the positions acceptable and desirable to many, even at a small compensation. In all branches there is opportunity for anyone to reach even the highest positions, through displayed efficiency and ability.

The policy of the government respecting its commercial and industrial development both domestic and foreign is strongly progressive and helpful. In furtherance of those interests all sorts of subventions, special concessions and discriminating rates are made. The whole country is but the size of one of our states, densely populated with numerous large centers, which simplifies the problem. With all these advantages, the success obtained is not such as would commend it to other countries.

While this policy has prevented speculation in utilities, the wildest speculation in all lines of industrials has been, if not encouraged, at least allowed, and against this there seems to have been no objection on the part of the government nor protest or opposition on the part of the public.

The prices charged for the same class of service are more or less the same as in the United States. Ordinary services, which in fact are deferred, are cheaper, but charges for their preferred services, which compare with our ordinary service, are

about the same or more. If wages and other costs were considered, the advantage would be greatly in our favor.

Is Our Form of Government Adapted to Operation and Management of Utilities?

Our government is a representative democracy. The policy which determines the action of the administration is settled for the time being, and the leaders selected, by a plurality of those who are interested enough to vote, which seldom if ever constitutes a majority of all.

Crops, employment and other commercial conditions have been the determining factors as to whether one of the old parties, or some one of the recurring new parties, should for the time control the government. Whichever party, whichever political policy temporarily comes in, with it comes a radical change in departmental policy and a change in all the responsible heads of departments and all the responsible subordinates. There is much the same change in the departmental and bureau chiefs, if the same political party is continued in power.

The heads of departments are not selected on account of their experience or knowledge of the business which they are called upon to direct, nor necessarily with that of any similar or any other business. To point out deficiencies, and promise reforms becomes a necessity to every candidate for office. The controversial and exceedingly exciting political campaigns are made up chiefly of accusations, if not of absolute crookedness at least of the grossest incompetence of those in office, and of reckless promises of all sorts by those who want to get in. These campaigns are the cause of irreparable damage, for much that is alleged though never proved is believed by the public.

If but a small part of these alleged evils did exist, an absolute cleaning out of all, and the prosecution of many would be a positive duty, for such frauds or such corruption as are alleged cannot exist at the head without the knowledge of all, and the participation of many. The tenure of office is too brief to reform any deep-seated irregularities. To perform the duties of his office is enough for any official even if he has had the necessary training. When to that is added the usual political activity, the most capable must fall short, even with the best intentions.

Because of these conditions governmental " operation " must be reduced to rule and regulation; individual initiative or responsibility is impossible.

It is not the fault of department heads, subordinate chiefs or of employees, but it is an essential part of the system. Some call the system " red tape " and speak of it sarcastically. *It is necessary* and *without it,* under our *political* form of government governmental business *would* be demoralized. It is expensive and inefficient, except for routine work. Clerks and officials may come and may go, but the business will go on in the ruts of systematized routine. Mediocrity will remain. Capacity soon seeks other fields of action. Initiative enterprise is too upsetting to be tolerated and too destructive to allow it to get much notice.

Do not understand that this is a tirade against our form of government; it is not, it is simply a broad statement that our government activities can never successfully include industrial and commercial enterprises or developments.

In all industry or enterprise, inequality begins to develop itself at the threshold, and continues throughout the whole organization. No two workers are equal as to the amount or quality of accomplishment. Full recognition of *this* and *no other consideration* must determine the place of each individual in a successful organization.

Without an operating organization absolutely divorced from and independent of our political organization, there would be demoralization and disaster should any of the utilities be taken over by our government.

The question is one of great importance. Nothing should be attempted without the most thorough and painstaking investigation controlled by a desire to make the " finding " consistent with the actualities, and not to make the " actualities " fit preconceived ideas or desires.

The only practically democratic government, speaking a common language with us and having a highly specialized and fairly continuous civil service, is that of Great Britain, which took over a previously profitable telegraph service in 1870. Since then it has lost many millions of pounds in its operation with an increasing annual deficit, which for 1913 amounted to over $6,000,000. The telegraph rates, taking into account dis-

tance, wages and other controlling factors, are substantially the same as in this country even before the increase of 50% in the minimum rate recently made.

The National Telephone Company's exchange service was taken over in 1911. The company had been paying the government an annual license fee of about two and one-half million dollars, and paying its own security-holders approximately 6% out of its earnings.

Although the government had a telephone organization, which operated the toll lines and some important exchanges, although this organization like that of the telegraph and post office is permanent with permanent executive heads, although it took over the organization of the private company, the telephone service earned for the year 1913–1914 only one and one-half million dollars, but little more than one-half the license fee paid the government. The government operation has so far been very far from satisfactory and the public are clamoring for a service free from political and parliamentary control.

Control and Regulation.

In the early history of our civilization, in a dispute between arbitrary power on the one hand and the rights of the people on the other hand, trial by one's peers was instituted. The powers of the "Jury of Peers" were to ascertain and determine the facts in all cases of dispute.

This institution has served well and long in our history, and nothing has appeared which either is or promises to be as satisfactory.

There are differences as to statements of fact between the public and the public utility enterprises, particularly those of transportation.

There are in most of the states and in the nation commissions of control and regulation, which are in effect juries, to determine the dispute. What better way can or could be devised for the settlement of all these questions? *This is the practical way.*

When juries were originally constituted for the protection of the rights of the people, great care was taken that they should be non-partisan, non-political and absolutely independent even of the most arbitrary sovereign. In letter at least these conditions have never been departed from.

What better fundamental principle or policy than this could be adopted for our commissions of regulation and control?

These commissions have to protect the "individual member" of the public *against corporate* aggression or extortion, and the "*corporate member*" of the community *against public* extortion and aggression. They get their power from, are answerable to, and dependent upon the public. That public is an interested party in the controversy, just as susceptible of wrong notions, wrong impulses, as any individual, but with no individual responsibility or conscience. For this, if for no other reason, prejudice and partisanship should be absolutely guarded against and there should be the most careful provisions safeguarding to these commissions their independence and liberty of action.

It is difficult for any human being to rise above his prejudices or preconceived notions, but our higher judiciary has shown that a body of men can be brought together which will assume the gravest responsibility and act with wonderful efficiency and equity when its absolute independence is guarded by a zealous public.

Public jealousy for the absolute independence of the jury has been an effectual safeguard to the individual and to society. While in the workings of our jury system errors may have been committed, there is no living man who will not cling to it for his protection.

Cannot the position of our commissions of control and regulation be as firmly established? They were created because of the necessarily superficial, and very unsatisfactory and uncertain control and regulation by direct legislation. The system could not be perfect from the start, for practice and experience alone make perfect. The few years of experience have demonstrated the power for good when exercised along the best lines, and the power for evil when prejudice, partisanship and incapacity creep in.

To equip our commissions for the best service, the appointees must be of the highest standard, selected because of their general and broad experience and reputation among their fellow men. To secure such individuals, the positions must command the highest respect and their decisions, even if not

entirely satisfactory, should not be subjected to captious criticism or objection.

So long as the duties are confined to control and regulation, and are judicial, not executive, there is a large field from which to select the most capable of men.

Against grave errors or findings, against usurpation of power, there is and should be the protection of the courts. An orderly appeal from a commission to a court should not be considered in any sense as a resistance to constituted authority.

In the work of the commissions, many of the subjects are recurring and of substantial similarity, in the consideration and determination of which experience and intimate familiarity with the subject and with past practice and precedent is necessary. For these reasons the term of office should be of sufficient length to give the public the benefit of that education to which necessarily the early period of their official tenure is devoted.

The positions should be appointive, not elective. The tenure should be for life, subject to removal only by impeachment. If the tenure is limited and if in the performance of official duties any member establishes his sufficiency for the position, reappointment should be an established practice.

The compensation should be commensurate with the importance of the office, and there can be none more important. It should be sufficient, together with the prestige of the position to command the services of the very best citizens regardless of their private means.

Upon these commissions as bodies, and the members as individuals, will depend the future of "Control and Regulation." Never probably has there been a new departure established any more satisfactorily, under such difficult, uncertain and unstable conditions. Established to restrain and suppress on the one hand the inertia of certain evils which have been ingrained in our commercial practices, and on the other hand to restrain an indignant and excited public, that public by which it was created and could be destroyed, it has done *so* much, *so* well, that there is absolute proof of its great possibilities under perfected organization and a higher public recognition.

Let us resume prosperity:

Since coming to the Coast we have heard much about overproduction, about crops without market, fruit rotting on trees.

We heard in the East last winter and spring, much the same about industrial enterprises being shut down for want of demand for the commodities.

The trouble is not *overproduction.* It is *underconsumption.* Put the millions of men now idle,— or working temporarily on war materials,— at work permanently. Those now at work temporarily are not yet consumers in the big sense; they are paying off debts incurred, or making good the savings spent during the idleness of last year and spring. Put them at work permanently in the upbuilding of our enterprises of utility and transportation.

Establish rates that will make the investment in these enterprises so certain that the hundreds of millions of capital necessary for their extension and improvement will be forthcoming.

There is plenty of idle money, as well as idle men. Put the money at work; turn it into productive labor.

The spending of this money on constructive activities will put a good part of these millions of men at work,— and those millions will start such *consumption* of all commodities, as will make work for all the others.

Instead of *overproduction* there will be *underproduction* in all the workshops, orchards and fields of the country.

What matter it, if some roads do become far more prosperous than the average? It is necessary that others may live. There are, and always will be unequal conditions. Some roads can prosper and pay liberal dividends on rates that will hardly pay operating expenses of others. Natural inequalities cannot be regulated or controlled by man. Let natural and economic laws do that.

Put men into a new country, some will prosper, others barely make a living. It cannot be prevented, unless you kill prosperity for all.

Suppose some prices are increased a little. What matters it when all have incomes to buy. The producer may pay a few cents more freight on each box of fruit, but it is better to do that, get his costs and some profit, than to get nothing.

A man earning wages can pay a high price. One not earning cannot pay any price.

Past experience should teach all of us that when prosperity sets in she is no niggard with her favors.

A Printed Announcement of Mr. VAIL'S, on the American Telephone and Telegraph Company and its Relations with and Obligations toward Wireless Communication, October, 1915.

THE AMERICAN TELEPHONE AND TELEGRAPH COMPANY AND ITS RELATIONS WITH AND OBLIGATIONS TOWARD WIRELESS COMMUNICATION.

TO make wireless communication understandable, and to make plain both its *possibilities* and *limitations,* the governing conditions and principles, which to the layman are somewhat abstruse, must be explained.

There exists, through all space, some "ether" or other medium through which can be transmitted light, heat and electrical waves or vibrations, or some such movement or activity as has all the manifestations of waves or vibrations.

Broadly speaking, the science of electricity is still undeveloped and unrevealed, but from its manifestations, laws or rules of action have been deduced, and its action and effect are calculable.

The wireless telephone and telegraph, or operating radiograph, is the "*generation*" and "*control*" of electrical vibrations of great intensity thrown out into space, which seem to proceed in every direction, seem to conform to the curvature of the earth, and seem to penetrate most material substances. They spread and fill space as do the waves of sound. Their intensity rapidly diminishes as do sound vibrations, probably in the ratio of the increase of the space filled by them as they pass out and onward, and like any sound, are intense or loud at the source, but fade away into silence as distance increases, so that at the distant receiving station they are of slight tenuity.

There is, as yet, no practical method of deflecting or reflecting these waves, as is done with light or sound, and probably because of their great length there never will be.

The existence of these waves has long been known, but until Hertz discovered or invented a practical "detector" it was impossible to convert them into any tangible form. Since then

many methods have been discovered, some one or more of which is utilized in the various wireless telegraph systems.

These waves are of different lengths, frequency and intensity; can be controlled so far as impulses or variability are concerned; and can be used for telephonic or telegraphic or signaling purposes.

The wave length and frequency can be availed of to get a certain range of selection; but selection is not secrecy, as any receiver can be adjusted to all lengths and frequencies.

The intensity of these radiations is so great that any large number of sending stations erected near each other would seriously interfere with and confuse each other's *outgoing transmission,* and even a small number would absolutely destroy the tenuous *incoming vibrations,* and *all* could be destroyed by extremely high tension and high frequency radiation in close proximity.

The nearest thing that can be compared to such a situation is a steam engine blowing off steam at high pressure when someone nearby is trying to converse. Under such conditions conversation is impossible.

The most interesting and most useful characteristics of the radio vibrations — those which make possible distant telephonic communication — are that these vibrations, unlike the electrical speaking vibrations over the wire, retain their peculiar and essential speaking form even to the very faintest activity at the point of actual disappearance or loss to detection, and therefore, when magnified by the telephonic appliances used by the Bell System, the speech is distinct whether it be in distant Honolulu or Hong Kong or Paris or Petrograd.

The great obstacles to dependable usefulness with commercial possibilities — the causes which confine this great achievement to particular undependable uses — are natural conditions as yet and probably forever uncontrollable.

In space, or through the "ether" and the earth, there seem to be continuous electrical "storms," activities or manifestations, which for the sake of clearness may be called natural disturbances. These natural disturbances are sometimes mild and not very serious, while at other times they are of such intensity and activity as to absolutely nullify and destroy the artificial vibrations of the wireless stations.

For long periods these natural disturbances will continue of sufficient intensity to make it impossible to send the artificial radiographs, or at least to receive or detect them. In the midst of these storms there will be lulls or moments of quiet or comparative quiet, and it is at these times that it is possible to use the wireless or radio for telegraphic or telephonic communication. In the quiet moments it is possible to communicate without much effort. In the less quiet moments, by repetition and continuous effort, messages and conversation can be got through. In the moments of great activity all effort is useless.

The coming and going of these natural disturbances are known only by their effect upon the artificial vibrations with which they come in conflict; no clouds or prevailing winds, barometer or thermometer, indicate their coming or enable a forecast to be made. They fill, or seem to fill, all space, and even if their origin and course were determined, would probably be as uncontrollable as is the water in the midst of a great ocean when in its wildest moments; you might float upon it, but not with confidence.

Wireless telephony can be compared to an attempt to carry on all telephone exchange business over one great conductor connecting everyone, and over which all telegraph, all artificial electrical disturbance caused by transmission or power lines, and all the natural electrical disturbances were in full play at the same time. These are the conditions that govern radiograph activity and limit its possibilities.

There are only two ways of carrying on wireless telephony: one, by getting far away from all artificial disturbing causes and having only natural disturbances to contend with; or by the use of one of the limited selectives which have only the interference of the natural disturbances.

There are however uses, many and important, probably as many and as important as can attach to any absolutely undependable thing. Distant communication will be possible some of the time. Short-distance communication will be possible sufficiently for communication with isolated places or things not otherwise to be reached.

The American Telephone and Telegraph Company has from its beginning been trying to build up an intercommunicating instrumentality, universal and interdependent, by which every-

one could reach every other connected with it — a service so well adapted to the use of all and of such great pecuniary and other advantage to all, rendered at a price so well within its value to all and so well within the reach of all, that none are too poor to take advantage of it or too independent to get along without it. This is the Bell System.

Whatever there is to add to this use or to this value or to increase its universality, this Company proposes to develop.

As fast as conditions make it possible, or potential business makes present extensions of prospective value to the system and to the public, either directly or indirectly, the American Telephone and Telegraph Company will extend, enlarge and amplify its system in every way that scientific research and development make possible and social or business demands make desirable.

To this end the American Telephone and Telegraph Company will, so soon as the necessary construction and equipment can be assembled, extend the universality of its system by wireless stations at selected points on the Coast so located as to enable persons and places not able to be connected in any other way to maintain communication with the world through the Bell System.

There have been and will be many statements of what has been done and promises and prophecies as to what can be done, but so far nothing in the way of actual public communication has been done in wireless telephony except through the instrumentalities of this Company, and the probable future of what can be done is subject to the conditions outlined in this statement.

An Address by Mr. VAIL at the 44th Annual Session of the Vermont State Grange, at Burlington, Vermont, December, 1915.

SOME TRUTHS AND SOME CONCLUSIONS.

THERE are many things which are disturbing and unsettling our social and economic conditions, not only those of Vermont, but of the whole country. These conditions are governed by inexorable laws which statute laws cannot change. Experience has shown us what they are. It is my intention to-night to try to indicate some of these troubles and if possible some method of improvement.

One of the most serious difficulties in the way of deliberate well considered action is our desire for sensational news and statements. In politics, in business, advocates of either side will make the wildest and most misleading statements, which may not be believed, but whether believed or not, there is an influence, an effect, a coloring, that continues its influence no matter how thoroughly the cause has been disproved.

Another difficulty in the way is that our country is so big and its interests so diversified, that it is difficult for anyone to be fully and correctly informed as to what is going on in the other or distant sections. General movements will have different effects in the separated sections, but all sections are affected directly or indirectly by whatever happens in any other section. Indirect benefits are difficult to appreciate by those who see others directly benefited.

If we desire to act intelligently and properly when we do act, a proper understanding and knowledge of what is to be acted upon is necessary.

If we desire results from action in any matter concerning the community at large, co-operation or team work is necessary. Not each man striving for himself regardless of others, but all working together for the benefit of all. Team work or co-operation will produce greater aggregate results for the community and greater distribution of these results to the individuals. Individual work may benefit the individual in a narrow sense,

but the advantage to the community is secondary and there is a smaller distribution of the benefits.

It should not be difficult to understand that wealth is a benefit to the country if it is widely, although not evenly, distributed. Its distribution only follows natural laws; nothing in this world is evenly distributed. Health, strength, energy, endurance, these mere animal qualities which would seem to be every man's right, are more unevenly distributed than anything else. Inherited qualities, like mentality, capacity, initiative, concentration, application, industry, those qualities which make or mar one's life, how unevenly they are distributed! Can it then be wondered that with all this God-given inequality, personal inequality in life should exist and must be accepted as inevitable. Some must serve. Food, clothing and shelter, no matter how simple, must be produced and prepared for use by labor. Transportation and intercommunication must be provided by labor. All kind of work must be done; agreeable or disagreeable; cleanly or soiling. From the raw material to the finished product, some must bear the physical burden, some the mental, and some the financial.

All must realize that in life some give-and-take, some concessions by each to others, are necessary. Each man has his rights, but no man has license to disregard the rights of others in obtaining his own. When each of us finds our proper place in, and fulfills all obligations to, the social organization and to the community, honestly, and to the extent of one's ability, each will have his full share of life and prosperity.

Vermont — Possibilities.

Vermont is a state in which production is largely from the soil — agriculture, mines, quarries and forests. Relatively her industrial development is small though in lines of special industry and through the development of her water powers, it may become more important. New England as a whole is an industrial section of the country. Agricultural sections produce a surplus of foodstuffs in excess of local home consumption. Industrial sections consume the surplus. Vermont has in the industrial sections of New England a great market at her very threshold.

We have passed through an agricultural depression, caused by the cheap production of the West, and cheap transportation from the West. While it continued, the new generations of Vermont were obliged to seek elsewhere for occupation. They flocked to the new West, and to the industrial and commercial centers of the East. Those who chose to remain in Vermont, to enjoy quietly such life as could be had here, with such effort as they choose to exert, rather than take part in the struggles of the world, are now giving place to a new generation of the same blood and the same average capacity as those who went abroad and became prominent factors in the upbuilding and development of the wealth and industries of our country.

It is no longer necessary for the new generations of Vermont to seek their fortunes in other states. With fewer opportunities abroad, and those wanted by the new generations there, and with greater opportunities at home, the new generations of Vermont can stay at home, and if they who stay, use the same energy that made Vermonters so forceful abroad, we will soon see a new Vermont.

Farming is now a business; it is necessary to be conducted on the same principles as business. It is a business particularly adapted to those who must work or share in work; for those whose capital is in their ability to work. It can be made to pay as well per unit of effort or capital as any other business. It will always be a business limited in size, and can never be made to expand, as can some other industrial enterprises. It is a business which cannot be done by automatic machines, with automatic labor. Machinery, while it is a large factor in farming, must be operated and managed by all round intelligence. There is such variety in farm work, even of the work of the machine, that it cannot be organized as factory work can be organized. There must be a continuing oversight and direction. Farming is not the " nose to the grindstone " work that popular voice likes to call it. It is not nearly so much so as other kinds of work. The successful farmer who manages his business will have seasons of abundant leisure, although he must be closely on his job at other seasons. If the work of a farmer is done in the proper way at the proper time nature will work for him 24 hours in the day. Farming responds quickly and generously to efficient work and methods, but the opportuni-

ties for waste through inefficiency or neglect are large in comparison with the opportunities for profit. It is the personal attention that counts in farming. There is no kind of business at which a working man can make some kind of a living with less work or make a better living with the same work.

There is no business so open to your young men without any capital, except that capital of labor, strength, vigor, but with willingness to work and intelligence to direct and conserve, as is farming in Vermont.

The business of farming takes but little more work, thrift and care and planning, to produce a profitable surplus than it does to make a scant living. It takes but little more labor per acre to care for a good crop than a poor one. Raise your witch grass and your corn in separate fields, you will get a more profitable crop of each.

Care for your dairy. Don't keep a cow that does not yield a profit. It's better to feed and milk one good one than two poor ones. Send the poor ones to the butcher. Make every animal and every acre produce a maximum result. It is not hard work that counts, it is efficient work.

You need not buy Oregon apples if you will treat your apple trees as you do well bred colts or calves and poultry. Keep the insects off of them. Give them good beds of earth to grow in and plenty of feed to mature them and pick and pack your fruit as carefully as you do your eggs; it is far more delicate. When you do this you can sell your apples on the Pacific slope instead of buying apples from Oregon.

Take as your slogan, Increase in quantity, increase in quality and decrease in cost per unit of measure or weight.

Increase in cost — increases price, decreases consumption, decreases profits.

Decrease in cost, increases consumption, and aggregate profits.

The great fortunes of modern times have been accumulated by decrease in cost of production, increase in consumption and consequent increase in aggregate profits.

Every man's wealth is in his ability to labor. If you want to prosper, turn your labor into wealth. If you look around you will find many ways of turning your labor into tangible profit. Each of you must have a piece of ground that would

make a nice field if the boulders were taken off or buried, if the hubbles were plowed down, and it was drained. The produce in one year will pay for your work and tiles and dynamite, and your farm will be more valuable to keep, or to sell.

Whether you do much or little work do it thoroughly so far as you do it at all. It takes nearly as much time to do a poor job as a good one; one is a waste of time, the other yields you a handsome return. Don't undertake so much work that you cannot do it when it should be done. If you want to enjoy your leisure time and not be worried about something neglected, drive your work and don't let it drive you. There are few men who cannot, and who do not, do a good job so long as their necessity is greater than their inclination to take things easy, but there are many who stop doing, just as soon as they get enough to satisfy their immediate necessities. If this is satisfactory to them, if they would rather do with little and spend time in idleness, than work and have more, it is all right so far as it concerns themselves, but they have no right to complain or be dissatisfied when they see the fellow, who don't stop doing, get more than they have, nor have they any right to think that those who work while they are idling away their time should divide with them.

Co-operation.

By intelligent, practical co-operation much can be done to bring about better results and secure better markets for our production, but to co-operate effectively and practically we must recognize that under modern conditions, transportation, distribution, merchandising, are absolute necessities in the modern world. The producers and consumers are too far separated from each other, are too scattered over large areas to deal directly with each other and also because each producer or manufacturer supplies only a very small part of each consumer's want.

No farmer could agree to furnish a number of families with so many quarts of milk, so many fresh eggs, etc., each day or week in the year, much less be ready to furnish an extra amount on short notice. It requires the co-operation of the middle man, the merchant and trader.

The same conditions which have created our social and economic organization, have also created large systems, or

organizations, of industrial enterprise engaged in transportation, intercommunication, public service, manufacture and all sorts of constructive operation, and a large organization of "middlemen" engaged in trade and commerce, in wholesale and retail, collection and distribution of products, engaged in getting the goods of the producer into the hands of the consumer.

This great organization is necessary to both the producer and consumer, and is supported by the margin between the price received by the producer and the price paid by the consumer. It is an organization for prosperity that in the large will never be done away with.

There is, however, a large field in which co-operation in buying and selling will benefit the whole community.

Where many producers in the same section are engaged in one class or kind of production, as milk, fruit, vegetables, berries, they can co-operate as between themselves and the distributors; they can systematize and regulate the packing and inspection. They can get nearer to the ultimate consumer by eliminating all except the absolutely necessary middlemen. By the enforcement of the proper rules they can make it impossible for some producers to spoil the reputation of the products of the section by improper methods and the selling of inferior products under superior brands. Where there is a large consumption of commodities, like feed or fertilizer, and the amount of that consumption is known in advance, they can co-operate and buy at the wholesale price. Many other ways common-sense thought will point out to you. This co-operation should not be opposed by the local merchants. Anything that tends to the greater prosperity of the local producer increases the business of the local merchant.

Through the Grange an effective co-operation could be arranged. Where necessary there could be auxiliary organizations like fruit growers, berry growers, potato growers' associations, but the greater part of co-operative work could be done through or under the auspices of the Grange.

Keep your Grange out of politics or partisanship, except so far as purely agricultural or economic questions are concerned, and when you act, act as one man. The power of the Grange

used with intelligence and as a unit for proper ends, would be the greatest power in this country.

The great force and power exercised by any union organization is by acting as a unit. Every public action is the action of all. Whatever differences may be before the action there should be none when action takes place.

You will not all agree at the start, there will be honest differences of opinion, but there can and should always be found some workable agreement. If it is not the best, it will be better than a divided house. The only way to reach any agreement is through discussion, understanding, or mutual concession to each other, until some course of action can be agreed upon for which all will work. No one can get just what he wants in this world, and half the time if he gets what he thinks he wants he finds he doesn't want it. Go into any discussion with an open mind; be ready to be convinced if you find the other fellow has the best reasons. No one should make up his mind firmly about anything, until he has heard all there is to be said for or against, and when you have, you will find that you were wrong more than half the time. The man who is right 55 times out of one hundred is the successful man. Don't be afraid to change your mind when you begin to have doubts about your old opinion, or begin to realize that you are wrong.

Economics — or Protection of Our Home Industries.

It is very much to be regretted that the world disturbances so materially affect our situation that it creates many differences of opinion as to what would be the result of our own economical legislation.

After the recent legislation, reversing our established policy of protection to our industries, the protection of our own workmen from foreign competition, a paralysis of our industrial conditions set in which was very marked in the Fall, Winter and Spring of 1914–1915.

This was caused by the actual and prospective purchasing of articles of foreign manufacture, instead of those manufactured at home. The war abroad, the disturbance of their industries, the increased purchase from us of foods, commodities, and implements formerly made at home, or produced in other countries, the expenditure of thousands of millions in this country,

have temporarily made conditions abnormal, but it is not nor will it be permanent. We will sooner or later have to face home conditions. For our surplus production you must have the market, the consumption of the industrial workers, either in this country or in foreign countries. The greater distance the market the greater the cost of transportation and merchandising and the lower the price you receive. If you sell your produce abroad you must pay the freight and commissions which you save if you have a home market. You can afford to pay slightly more for an article manufactured at home than abroad for that reason.

We are allowing millions of immigrants to enter this country every year. For them employment must be found. We have millions of young men coming to mature age every year. For them employment must be found. What better way is there than to keep our own work for our own people, pay your money to them and they will buy your products for each working man is a consumer.

The high wages paid in this country may increase the cost of some manufacture but who would reduce our labor to the level of Europe? High wages make it necessary to protect our home labor against the products of the cheap labor of Europe. Without protection through tariff you cannot have home manufactures at high wages and without that there will be small employment, small wages, and small consumption. With employment at good wages one can buy at high prices. With uncertain employment and uncertain wages no one can buy much at any price.

If you spend money at home the money stays here and adds to the wealth of the country, if you send it abroad it benefits the foreigner and is beyond your reach.

If we are going to import foreign made articles for our use, we must stop importing foreign labor to share with our own people what labor there is left to do.

Do not let theorists and political economists lead you astray on the question of free trade; there is absolutely no such thing. Each country is now protecting itself by tariff and other laws, against other countries' labor. Natural conditions, broad seas, distant communication and artificial boundaries make absolutely free intercommunication and interchange impossible.

It is no time for us to abandon our policy of protection. We have prospered under those laws which have protected our industries. We have suffered every time we have adopted a different policy. Let us profit by our experience.

Labor.

It is a platitude to say that we have respect for labor, but let us not confine our respect to that labor which is perfunctory, that kind of labor at which a man can work without being interested, without exercising anything but his muscles; that kind of labor which starts work when the bell is through striking and is ready to stop when the bell begins to strike, and is ready at any time, to lean upon his tools and discuss anything from the German policy down to the question as to who struck Billy Patterson.

We are all strong and consistent advocates of labor getting its share, but let it be for each man getting his proper share — organized labor which enforces a wage scale out of proportion to what fellow laborers are getting is not fair, and is tyrannical and oppressive, particularly when at the same time they oppose any increase in revenue which would enable a proper and equitable adjustment to all labor to be made. All wages should be the maximum possible for efficient labor but to pay sufficient wages there must be sufficient revenue.

There are other kinds of labor than mere mechanical labor. The man who does not work by the clock, is planning work for others to do, in arranging and procuring work to keep his men employed, in procuring the capital with which the enterprise can be carried on, to pay for raw material, for wages. All that is work, and it is work upon which all the other labor is dependent.

Ordinary labor, skilled and unskilled, gets its pay whether the work is done at a profit or not. It gets pay for good work, it gets pay for bad work which has to be done over again; it gets pay when injured by the falling scaffold built by himself. If the contractor fails, labor has a lien on what he has done, even if it has been paid for. Whatever the position of labor in the past, whatever the oppression it may have been subjected to, certainly there is no oppression now, labor is protected and independent, it cannot be oppressed.

We hear much about profit sharing. Profit sharing is in one sense partnership, and in partnership each contributes something and risks something.

Farming on shares is profit sharing. You let a man use your farm, your stock and buildings, and he gives you a certain share of the produce. You do not pay him his wages while he is working. He shares with you the risk of profit or what might be called his wage.

That labor should manage industry and get all the profits, is right, if it includes all labor, not merely the manual labor, and if the labor is content to wait for his daily wage until profits are realized. There are factories to build and equip, raw material to buy, a buying and selling and operating organization to maintain, conditions of trade and changes of fashion to study, and many other kinds of work nearly all expert or technical, without which there would be uncertain employment for ordinary labor.

While seemingly large profits have been made in some industries, they have been due almost entirely to combining industries that were carried on independently, some at a loss; and by manufacturing on a large scale, saving much that was formerly wasted, or to the introduction of some novelty which was accepted by the public; to some efficiency in production which enables one to produce cheaper, or where there was a potential demand for large output at small profit. If any branch of industry was carried on in the same manner as it was fifty or even thirty years ago, either prices would be very much higher or wages very much lower. A paper read by me in San Francisco contained the following:

The whole public must be convinced that nothing gained at the expense of others can be permanently beneficial; that no advantage to individuals or groups of individuals gained by combination of interests against other individuals, can be permanently beneficial; that waste and extravagance in public expenditure and administration cause higher taxes than all the graft of years. Our lawmakers instead of seeking new ways for taxation should curb reckless extravagance in public expenditure. Owners, proprietors, and corporations may pay the tax, but every tax comes from the ultimate consumer. The tax is as much a part of the cost of the production as are wages,

and between the raw material and the ultimate consumer come all costs. Profit is the incentive to production; without profit progressive industry would cease, but any unnecessary expenditure or tax is a brake on progress and a burden upon prosperity. Taxes, high cost of material, waste, idleness, careless work, are included in the rent of the tenement or price of the commodity.

The rent is paid by the tenant, the price by the consumer.

Wealth — How Created.

All wealth is created by constructive and productive work, either directly or indirectly. Directly, when it is the result of developing some industry or utility which serves the people. When you are, by your work, developing a continuing productive power, when you are producing some commodity or giving some service which is of some value to the public, and which the public needs, you are creating wealth. To be of value it must be of use, that is, meet some need and must be, at least, equal in value to the price paid by the purchaser.

Indirectly, wealth is created by the building up of industrial centers, creating a consuming, purchasing population, enhancing the value of local or neighborhood property for building or producing purposes.

In all this transportation plays the leading part. Transportation and inter-communication changes local stagnation into world-wide prosperity.

Transportation — Effect on Market.

You may own the land. Your fathers may have come into the wilderness and subdued it, you may have had it in your family for generations, but beyond your work to make it produce more or by clearing up the land, you have not added to its value. The value over and above its value to supply your own needs is dependent upon a market for its surplus products.

The value to you of your products, is the price the consumer pays less the cost of marketing, which includes the transportation and middleman. The transportation and intercommunication facilities which put you into touch with the world at large, are just as necessary as the planting or harvesting.

It is absolutely true that a large part of the railroads in the state of Vermont never have and never will pay any adequate return on what it would cost to rebuild them. I doubt if a single one would. Outside of a comparatively few miles no railroads would have been built in the state simply from the standpoint of railroad investment. There are no two railroads in the country that cost the same to build a mile, nor can any two railroads be operated at the same cost. And, as a rule, the easier the country and the cheaper it is to build, the less the cost of operation and the greater the traffic. Uniform rates applied to all railroads will bankrupt many, but at the same time give others ample revenue.

The railroads in Vermont were built by the pioneer lumberman, or the speculative promoter or contractor, and after the first purpose had been served have been operated by trunk lines, usually at a direct loss, but for the indirect advantage to their systems as distributors, feeders or connecting links.

A large proportion of the railroads of the whole country will not under existing conditions, over a term of years, earn enough to properly maintain and operate them. In particularly prosperous times they appear to show a surplus, when times are normal or subnormal the receiver takes possession. It is then the optimist, the constructive promoter, who takes large chances for large gains, re-organizes them, combines them with more prosperous roads to which they act as feeders, spends money on the equipment, stations, roadbeds, and makes them of greater service to the public. In doing this he is doing a service to the public dependent upon them. So far as he has created a permanent enterprise, which is of service to the community, he has taken nothing from the community at large. Rates cannot be raised to pay dividends; these are controlled and have been for years beyond the control of the roads. The promoter may create a large capital, which he may sell at a big price, but from whom does he get it? Not from the community, but from the individual. If the stock is worthless he has not harmed the community, only the individual to whom he sold. The money is not lost to the community. No wealth has disappeared. It has only changed hands. It's like betting on horse racing, cards, and other games of chance, which many indulge in — a foolish thing to do, and is not to be upheld or excused,

but it is likely to continue so long as people have property and like to take chances.

You have had many speculations in Vermont of many kinds, in which high values were created, and still higher ones, so long as the craze lasted, or until the man who bought could find no buyers, but found himself holding the bag while some other fellow had his money.

It would not be a bad thing for the state if another railroad boom should start, and a few cross-country railroads should be built, even if some contractor or promoter made a few dollars. They could not take away the roads after they were built, and they certainly never will be built if you wait for the local investor.

Look the matter squarely in the face. I am not an advocate of wild speculation or promotion. It is demoralizing to the individual and the community, it gets false ideas of wealth, it gets into the heads of those who don't want to work and demoralizes them. I am not only a strong advocate for control and regulation but I think I am one of the first corporation managers to advocate it. It is as necessary for the protection of corporations from each other as for protection to, or from, the public. What would happen if a railroad could pick up its property which did not pay and move away to another field, as other business does; do you not think your attitude toward them would be different? When you want one built into your section you do not threaten the promoters, you coax them. If the railroads are to continue to serve you, they must live, they must prosper. You cannot continue indefinitely to increase their expenses by increasing taxation, wages and requirements of every kind, without in some way increasing their revenue. If rates and operating conditions were the same now as ten years ago, there would be no necessity for any increased revenue. In the past increased revenues and reduced rates have been met by scientific and practical operating organization and improved transportation methods. The limit has about been reached in that direction. You must consider and treat the railroad corporation as a part of the community, a necessary part, and treat them as fellow members. Upon their prosperity your prosperity depends.

Improved Common Roads.

You are doing great work in Vermont in the improvement of your common roads, they are a great economic factor. Motoring in other states will convince anyone that the country roads in Vermont average as good, if not better, than those of any other state, and they have been paid for. To make Vermont attractive so that the tourist will stop over, and not just pass through, there are some few things yet to be done. Hunting and fishing could be better preserved. We have our laws, but the laws are not enforced. Sometime since in speaking to a Vermont audience I suggested that there should be created some state reservations which should include a few large tracts of land situated in the different parts of the state in which our streams found their source. These would all be forest lands. By purchasing and setting apart several of the principal tracts, prohibiting absolutely fishing or shooting on them for all time, they would soon become nurseries for the lower streams and for game, and to a certain extent prevent those sudden floods which sweep down over the country.

Proper care of the growing timber would not only pay all charges on the purchase, operating charges, but would probably show a profit. But it is not the direct profit that the state wants. It is the indirect profit that will follow in many ways.

This suggestion seems to me should receive consideration, discussion, and if found to be sound, some action should be taken at no distant day.

Education.

There is one question close to my heart, it is one that should be of paramount interest to you all.

Your educational commission made a most thorough and painstaking study and investigation into the educational conditions and requirements of the state. It called to its aid some of the world's foremost and advanced practical students and experts in educational matters. The most thorough study and investigation into local conditions ever made for any state or county was made by these experts.

Conclusion of that investigation was "That upon the state rested an obligation, which has been recognized at the foundation of our statehood." That obligation was that opportunity

should be given all the youth in the state to obtain a thorough education in the fundamental or elementary studies; those studies which were essential to all no matter what their station or walk in life; those studies which when once mastered by youth would enable them to go just as far as they had the desire and capacity to go, and without which they could not go far.

This fundamental education should embrace spelling and reading, writing and construction of language sufficient to read with understanding, talk and write intelligibly and with intelligence; enough geography to know their own country and enough about other countries to enable them to keep accounts, make ordinary calculations and estimates. With such a foundation to build upon, all the additional education desired can be obtained.

In the bygone days, before the days of prepared food and ready made articles of general use, when ingenuity and experience was necessary to make crude implements and raw material serve the purposes of life, education in the practical side of life commenced at home at childhood. By the time ordinary schooling was finished the young could do a great many things and knew a great many things that they do not know now at the same age. It was an education you cannot get out of books, but must come from actual experience in the doing of things. This education must be obtained before one can go far in life. If it cannot be got at home, as it used to be, it must be got elsewhere. If it is not obtained while the youth are getting their school education, it must be afterward. Why is it that so many of you older men remark the difference between the youth of 16 now and when you were a boy? It is no idle remark, it is a fact, that the 16-year-old boy was then more mature, in that he understood how to do many thing which he cannot do now. It is the practical work in life that makes material improvement or progress possible. At sixteen one may know many things, but without practical training he can do few things. Under the present educational system or curriculum, the secondary courses at school are filled with studies, better fitted for mature minds, which could be advantageously postponed by all except those preparing for college. They are for the most part beyond the understanding of the youthful mind, and unless the boy is to follow in higher educational or professional lines,

they can be learned so far as desired after the mind is developed. Nearly all who graduate from the secondary schools have to hew their way through life. Why not prepare them for work in life as is done for work in college? Under the present conditions, they have to obtain the practical training after they leave school. That is why so many of older men, who could do things at sixteen, poke fun at school education when they see a boy, big, stalwart, who can play football and baseball but do little else. He can play football and baseball and can't do other work, because he works at, and practices football or baseball. To do any thing you must work at it, you must get experience from practice.

To bring about these desirable conditions, the commission on education advised that during the last few years of the school period, some practical education be given in the use of the hands, tools, and brains working together. Teach them how to do things, so that when their school term is finished they may be handy in the house, on the farm or in the shop. A man who is handy and can do things, if he has to work for wages, can get better wages and get work when others cannot. If he is on a farm he can do things himself and not have to hire others. In other words, he is self-dependent, and a man or woman who is self-dependent is the most independent man or woman in the world.

Of late this kind of education has run to fads of all kinds, and is liable to be made useless. It should be kept as near the actual doing of actual things of home and of home surroundings, and on lines of actual work in future.

If you see to it that your permanent board of education are hard-headed practical men (and are left in office long enough to know what is to be done) and your superintendent of education is of the same kind, and keep your school system out of politics, you will in time get something good.

We have laid too much stress on this matter of higher education. All the education possible is necessary and a good thing to have, but a higher education means years of study and close application, the devotion of a life. To the large majority who must get down to practical working life, higher education is impossible and of no advantage, for they cannot make use of it. What the average man needs is a general and broad education.

If they have a good understanding and a good thorough knowledge of the elementary fundamental studies, they can acquire all that is needed by reading and such study as they may have time and desire to give, and they will get all the enjoyment that it is possible for them to get out of intellectual activity.

This recommendation was opposed on the idea that it was depriving the boy of his chance in life. From no standpoint is this so; it was giving him his chance.

The youth who is getting practical experience, the actual work of life, at the same time he is going to school, is getting a great advantage. It does not delay his education from books, and it does enable him to take hold of the practical side of life the moment he leaves school. It enables him to learn while going through college that for which he would have to serve as an apprentice after graduated.

Preparedness.

This is too big a question to consider here in its entirety. Preparedness means being ready for any thing at any time. That means armament, army and navy kept at full quota all the time.

The discussion, however, has a direct connection in my mind, to the education of youth. We all know that a little discipline, a little training is good for the youth.

Discipline inculcates self-control, subordination to their own inclinations and weaknesses or evil desires, something that every man must get, in some way some time. It is not subserviency to submit to discipline. Far from it. Physical training makes a better physical man; being systematic it develops all the muscles, it teaches the boy to stand erect, walk and carry himself properly. It makes a finer man of him, as discipline makes a better man of him. These things should be taught to the youth in school; only a few hours a week and you will have a better lot of men for peace and in time of trouble — trained men to draw from. Training of men takes time and to send untrained men into the field of battle is pure slaughter.

From the Annual Report of Mr. VAIL as President of the American Telephone and Telegraph Company, March, 1916.

A Year of Great Achievement.

THE formal opening of the transcontinental telephone line extending from Boston and New York on the Atlantic seaboard to San Francisco on the Pacific, on January 25, 1915, has been followed by the extension of "extreme distance" transmission into all of the states of the Union, by applying these new improvements to the plant of the Bell System. It is now possible to talk from points in any one state to some points in every other state of the Union, while over a very large part of the territory covered by the Bell System it is possible for any subscriber to talk to any other subscriber regardless of distance.

The necessary changes in plant and equipment will be continued, wherever there is found to be potential commercial traffic, until telephone intercommunication is established over the whole system, in all of the states of the Union.

During the year very notable development in radio telephony, the transmission of speech without wires, was made.

On April 4 we were successful in transmitting speech from a radio station at Montauk Point on Long Island to Wilmington, Delaware.

On the 27th of August, with our apparatus, installed by permission of the Navy Department at the Arlington, Va., radio station, speech was successfully transmitted from Arlington, Va., to the Navy wireless station equipped with our apparatus at the Isthmus of Panama.

On September 29 we successfully transmitted speech by wire from the headquarters of the Company at 15 Dey Street, New York, to the radio station at Arlington, Va., and thence by radio or wireless telephony across the continent to the radio station at Mare Island Navy Yard, California.

On the next morning, at about one o'clock, Washington time, we established wireless telephone communication between Arlington, Va., and Pearl Harbor in the Hawaiian Islands,

where our engineer, together with United States naval officers, distinctly heard words spoken into the apparatus at Arlington.

On October 22, from the Arlington tower in Virginia, we successfully transmitted speech across the Atlantic Ocean to the Eiffel Tower at Paris, where our engineers, in company with French military officers, heard the words spoken at Arlington.

On the above day, when speech was being transmitted by our apparatus at Arlington to our engineers and the French military officers at the Eiffel Tower in Paris our engineering representative at Pearl Harbor, Hawaii, together with an officer of the United States Navy, heard the words spoken from Arlington to Paris.

While milestones mark progress made, steps make the progress. During the past year transcontinental telephony, radio transmission of the speaking vibrations, and the transference of the electrical speaking vibrations from space to wire or from wire to space, have been the "milestones" of progress of electrical transmission of speech. The improvements which have marked the progress of telephony appear to be revolutionary, when observed at intervals of years or by the onlooker, but to those in the march, or taken from month to month, they are only advance or evolution.

> Inventions of wondrous analytical subtlety have marked epochs in the progress of the telephone service, but in an art or industry or system made up of many interdependent operations and services; each new idea, no matter how controlling, must be adapted to what already exists to make it serviceable; any great or small invention is only useful when moulded into the mass so that its service becomes an underterminate part of the service of the whole system. (American Telephone and Telegraph Company annual report, 1914.)

Study of needs and requirements, development of apparatus, methods and practices, demonstration of usefulness and practicability, application to the existing or potential demands, account for the very high state of efficiency and great useful-

ness attained by the Bell System. Every part of the equipment and plant construction and the operating methods have been raised to higher efficiency and usefulness. The radius of dependable commercial speaking transmission has been very greatly increased, and it is now certain beyond any question that as fast as developed or potential business and social requirements indicate commercial practicability, every section of the country can be put in speaking transmission with every other section, and every subscriber to the Bell System will be able to speak to every other subscriber regardless of distance.

Many scientists and inventors in this country and abroad had sought to accomplish long-distance transmission by the employment of special and powerful telephone transmitters and batteries and other auxiliary apparatus installed at subscribers' stations. By such methods it is true that the range of telephone transmission could have been extended, but only by immense expenditures of capital to cover the obsolescence and reconstruction of subscribers' stations, and the necessitated reconstruction of subscribers' lines and switchboards to overcome the increased interference or cross-talk, induced by the increased intensity of the currents and powerful instrumentalities used.

By the plan which has been worked out and adopted in the Bell System, the existing instruments and subscribers' lines and switchboards are made effective for the practical transmission of speech over any distance. At a cost only slightly exceeding that which would have been required in the ordinary routine of maintenance and reconstruction, many and important changes in equipment have been made which have increased the availability of the system. Without any radical reconstruction costing hundreds of millions of dollars, the effective talking range of every subscribers' telephone in the entire Bell System has been greatly extended and the service rendered, made more useful.

The method adopted can best be described as perfecting transmission by clearing and smoothing the way by lowering grades, straightening curves and removing obstructions, making a passage for the transmission of all telephones, rather than by using great power to overcome imperfect conditions.

These events mark an epoch in the history of telephony, and are but a part of the results from the work of our research and development staff.

The results are particularly noteworthy in the emphasis they place upon the tremendous advantage of the Bell System, of its central administration and its centralized control of operating policy and methods, and the work of its departments of operation, construction and manufacturing, and of research demonstration and development, in the field of economics, practice and science. They could not have been obtained without this central co-operative, co-ordinating control of the entire system. The independent efforts of segregated systems would have failed to produce satisfactory results; the duplication of work would have involved confusion and disturbance beyond endurance, and would have called for immense expenditure.

As illustrating the efficiency of the rountine work, under the practice evolved by this mutual co-operation: it frequently becomes necessary to transfer some thousands of subscribers from one switchboard to another. One second before a certain hour all the thousands will be connected with one switchboard, and one set of operators, and at the stroke of the hour all will be connected with another switchboard manned by another set of operators, without any subscriber realizing what has happened.

In the development of the radio transmission of speech, after its possibility had been demonstrated at our own experimental stations, relations with the Navy and War Departments were established. The use of the wireless towers of those departments was placed at our service, and every possible courtesy, convenience and assistance in the conduct of the experiments was given to our staff by all connected with these departments. Besides these radio experiments, the departments were given demonstrations as to the availability of the Bell System and its wonderful potentiality in case of any emergency which would require quick and satisfactory intercommunication between the different departments of the Government and its scattered stations and officers throughout the whole country.

In case of any trouble requiring any such service, because of the central control of the Bell System, the Government could have at its immediate disposal a plant, equipment and operating staff which for completeness and efficiency would not be possible in any other way.

The announcement that wireless or radio telephony was an accomplished fact aroused much interest not only among those

who had possible uses for it but those who desired to profit by it personally and financially, and many of our shareholders were apprehensive as to the possibility of its supplanting the wire system. To answer queries and allay apprehensions, a circular letter was given out explaining the scope and uses of the radio telephone, and also stating that whatever might be its future, that future would be as a part of the Bell System. The circular was full and explicit, and recent developments do not in any degree change it. One amplification which will possibly make it clearer, is: — At the transmitting station the power used depends entirely upon and increases rapidly with distance to be covered, and for very long distances is very considerable. The vibrations which are transmitted have great amplitude, volume and intensity. The intensity and volume of these vibrations as they pass outwards and onwards, diminish rapidly in every respect except as to definiteness, and at the distant receiving station they are very faint, but however faint, providing the static conditions permit and there are no artificial electrical disturbances, they can be picked up and transferred to a receiving instrument or to a land wire, to be transmitted further. If, however, the radio receiving and transmitting stations were at the same point, as they are on land lines, so long as transmission was going on, creating artificial electric disturbances of great intensity, these receiving or incoming radio vibrations would be entirely destroyed by the intensity and volume of the outgoing vibrations. Conversation such as is carried on over land lines is only possible by having the radio receiving station situated at a place free from artificial electrical disturbances, miles distant from, and connected by wire with, the transmitting station. In this way the radio incoming vibration could be picked up, transferred to wire, and thus transmitted to the party conversing at the transmitting station.

In answer to the query, will the wireless ever take the place of wire systems in the transmission of speech? So far as any present knowledge or any present indications govern, the answer may be an emphatic "No."

The importance of the subject, together with the lack of exact information and the great amount of misunderstanding of the subject is the excuse for the length of this explanation.

Everything in the way of invention or development must conform to natural laws and subordinate itself to natural forces. Success has only resulted where these laws have been respected; failure has always followed wherever they were not.

In this truism lie the possibilities and impossibilities of wireless transmission.

In the discussion of wireless telegraphy and telephony there may be assumed to be a universal, invisible, imponderable ether or wave conductor, enveloping the earth and extending indefinitely into space, through which the electrical signaling waves of the telephone or telegraph pass in all directions. In this ether there prevail " static " disturbances which are active at all times to a greater or less degree, but ordinarily perceptible to us only through lightning storms. These static phenomena, so far as can be judged, are of the same nature as the radio vibrations, but of greater intensity, amplitude and volume at times, and when in action seem to be universal so far as they affect the earth; they produce noises in the wireless receiving instruments, and for months at a time make conversation, and even transmission of signals, impossible except for very short distances. There have been several methods proposed by scientists, the most promising of which may eliminate or nullify some of the interference, but will in no way extend the possibilities of the wireless.

In wireless or radio transmission there can be no secrecy, for although the wave lengths of the vibrations vary and a certain number of " selective " transmissions can be had, any receiver can be adjusted to any " selective." The number of simultaneous conversations which may take place by the wireless telephone is so limited that its utility is practically restricted to use between points or objects which cannot be communicated with in any other way, and then for dependable connection only over short distances. Even with these limitations, much difficult engineering work yet remains to be done before the wireless telephone can practically fulfill the limited functions we may reasonably expect of it.

Control and Regulation.

The relations of this and the associated companies with the various boards of control and regulation and the national, state and municipal officials, have continued to be most satisfactory,

and generally are on a basis of mutual confidence and co-operation. Many if not most of the questions which are sent to these bodies are settled by informal discussion and adjustment. Of the questions which have come to formal hearing and determination the decisions have been, with few exceptions, such as the company concerned could accept.

Control and regulation have done much to clear away the dangers of arbitrary action and unreasonable demands both on the side of the public and of "public services." The experience of the past, however, reveals dangers that menace its success.

There is danger in the possibility of "control and regulation" usurping the functions of management, and that the multitudinous questions of detail, trivial and negligible, for the most part simple questions of operation, will crowd out, and make it impossible to give full consideration to other and more important questions. Deliberate consideration is impossible in an overworked body.

Even the unsatisfactory practice of allotting questions to individual members for consideration, opinion and report, to be adopted as the opinion of the whole body, will not properly take care of the work. The inevitable tendency is that opinions and decisions are strongly influenced by, if not made by minor officials and the clerical force.

Many questions that come before these bodies are of such notoriety and are surrounded by so much sensational and mistaken assertion, misleading information and erroneous belief, that it is difficult for one not to be influenced in the formation of his opinion by a partial and often distorted presentation of the facts. In the settlement of such cases it is most important, therefore, that there should be abundant opportunity to get at the real facts, and ample time for deliberate consideration.

Other menaces are: the division of jurisdiction — too many independent boards having jurisdiction over the same questions — and the re-assumption of delegated jurisdiction by legislative bodies.

These dangers not only menace "control and regulation," but they also menace the work of the "public utilities." These multitudinous questions and multiplied bodies are the cause not only of great expense to the "utilities" which sooner or later the public pay, but they occupy the time of the operating

officials, to the detriment of the real work of management. Many detailed reports are called for, and prepared at great expense, that cannot possibly be examined and digested, even if the whole force of the commissions gave all their time to them alone.

Commissions of control and regulation act under delegated authority from legislative bodies and were formed to protect the individual members of the public against corporate aggression or extortion and the " corporate members " of the public against public extortion and aggression.

That public is an interested party in the controversy and just as susceptible of wrong notions or wrong impulses as any individual.

These bodies have neither the power of the legislature nor the jurisdiction of the court, but are interposed between the two to give these questions of public relations the time and semi-judicial consideration which legislative bodies cannot give, and to lessen the number of cases in which appeal to the courts might be necessary. The sole cause of their existence was to control and regulate, under the legislative power delegated to them. Their operations should be strictly confined to control and regulation and never invade the province of management. *Management is inherent in the ownership and is inseparable from the responsibility of ownership.* The boundary line between management and regulation in many cases may be hard to define, but in a large majority of cases it can be determined with definiteness and precision.

This Company and its associated companies have been foremost to establish, and propose to continue their efforts to maintain good wages, good working conditions and relations of the most cordial kind for and with their employees — a fact which has been of the utmost importance to the efficiency of their service to the public. It is believed that discussion and suggestions looking to a fair and reasonable regulation of such relations between " public utilities " generally and their employees may fittingly come from a company which has had so satisfactory an experience with those engaged in its own service.

One of the most important of the functions of control and regulation is fixing the charge for service and prescribing the

character of that service. The revenue of "public utilities" depends upon these charges. That revenue must be sufficient for all costs of operation. Costs include wages, maintenance, depreciation, reconstruction, and capital charges. Wages are about, and for purposes of discussion can be considered to be, 50 per cent. of costs of operation.

While each factor of cost is in fact as important as the other, and upon the whole expenditure depends the ability of the "public utilities" to perform their functions, wages are directly personal and to them attaches a superior importance over the others. Wages and conditions of employment should be such as will command the very best service at all times, and should be so adjusted that there could be no dispute in respect to them that could not be settled without disturbance of the service.

Wages in each class of employment should bear proper relation to the whole, and there should be no temptation, no opportunity or no power on the part of any class of employees to obtain an undue share.

The only excuse, which at one time was a good excuse, for using the power and force of combination to obtain increase of pay, recognition of rights or bettering of conditions, was when increased net profits, due to low wages, all went to the employers.

There is no longer such excuse. It has long been recognized that good work can only be obtained from, and waste and extravagance avoided by, interested and satisfied employees. Safeguards of many kinds have by statute been thrown around the employee; he is protected against danger and compensated for damage.

Where earnings are controlled, where surplus operating revenue after a reasonable return on capital goes back to the public, in reduction of charges, in construction of plant for which no capital securities are issued, in improvements in quality or quantity of service, wages also should be controlled.

Under existing practice, the question of wages is a matter of internal arrangement, or in extreme cases a matter of arbitrary power or of reference to the arbitration of temporary bodies.

When bodies of control and regulation consider costs and sources of revenue, they consider wages not primarily as to their

sufficiency or equity, but in an inclusive way with other expenses to assure themselves that costs are not excessive. If these bodies were authorized to intervene in disputes where wages and working conditions were concerned, they would consider them concretely, both as to sufficiency and equity, and as a dominant factor in adjusting revenue.

To gain objects, or to enforce demands by combination and arbitrary action causing suspension partially or wholly of service, to the great inconvenience of the public, should not be possible. Such action on the part of the employees of a "public utility" is as unjustifiable and unpardonable as would be an arbitrary suspension of service by the utility. It is an exercise of arbitrary power, a disregard of the interests of the public, which should not be allowed in these days.

Restraint has been put upon the corporation side, which is effectual so far as public service enterprises are concerned.

The causes which have made improved wages and labor conditions possible will be found in the application of the results of investigation, research and general study of all questions concerning management and operation; in the activity of invention and in the introduction of labor-saving machines, all of which have combined for greatly increased efficiency and improvement of methods and greatly increased production per unit of labor or effort. These causes have made it possible to greatly improve and cheapen production and service, and at the same time decrease the hours of labor, improve conditions and meet the continually recurring necessity and demands for better wages.

"Society has never allowed that which is necessary to its existence to be entirely controlled by private interests."

In the present state of public opinion, which has almost if not quite the force of common law, there is no reasonable dispute that should not be settled by common agreement, and when that fails the side which is disappointed and believes that it has a good case, should be willing to leave its case to a body having power of control and regulation and possessed of a knowledge of and jurisdiction over *all* the essential elements necessary for reaching an equitable decision.

The duty and obligation of an employee, to the employer, to the employment and to the dependent public; the attitude of

the employee towards these duties and obligations; the effect that attitude may have upon the employment, on the service or on the public served, are vital public questions.

Whatever may be the facts with ordinary industrials, the position of the employees of public service enterprises, particularly those of transportation and intercommunication, is as distinct and separate from that of the employees of an ordinary industrial, as the position of any public service enterprise is distinct and separate from that of an ordinary industrial enterprise.

Public service employees, nominally the employees or servers of the corporation, are the employees or servers of the public. It is the " service," not of any particular employee but of every employee, that the public pays for. Service is rendered by the employee directly to the individual. The quality of the service rendered depends upon the interest of the employee in the service and the attitude toward the public. Employees who come in direct contact with the public can, in whole or in part, nullify or make objectionably inferior the efforts or service of the best organized and most comprehensive system or of the most efficient methods. No system can give good service, unless there be a direct recognition on the part of the employee that he has a duty and obligation to the public served; and following that duty and obligation, there must be some accountability of some kind to someone, if that obligation is evaded and the service is not rendered in the way it could and should be.

Good service requires expertness, which can only come from experience acquired through continuity in position; it requires efficient system and method, enforced and carried out; it requires not the servile, but the respectful and implicit subordination of the employee to the system, the method, and necessarily to the officials of the organization; it depends upon co-operation and co-ordination of the efforts of all, employer and employee.

Continuity of service requires at all times a sufficient number of trained employees to take care of the demands of the service, and it should be beyond the power of any part of the organization to lightly cast aside even an implied obligation.

There are two " parties " in all public service — the organization with its plant and facilities for giving service, and the

employees who give the service. The employee is by tradition regarded as a part of the organzation and subject to its discipline and control. To a certain degree in some cases this has been nullified by combination. If this combination or the possibility of it is to be admitted, then so far as is necessary to preserve the right of the public to a continuous and dependable service, it should be under the same control and regulation by the same bodies that the corporation itself is under.

If the fundamental laws would permit it and public sentiment could be created to enforce it, it would be very desirable to work out some practical plan to accomplish this result.

" Public services " are of such a nature as to create a dependency upon some one system. It is impossible to suspend or interrupt these services even temporarily without putting the public to great inconvenience and to much suffering. To cripple or destroy such services or the means or facilities for rendering such service would be a calamity, something that nothing could justify. The obligation on the system to give a continuity of service is so strong that no excuse except *force majeure* can be recognized. No argument or accumulation of causes could possible justify those, who in any way controlled the situation, in doing anything either wilfully or through negligence which would result in suspension or interference with service.

Conversely, if employees are to be controlled they should also be protected. What, then, is the method of protection? In the past, boards of arbitration have been a resort when matters have come to an *impasse*. Special and independent arbitration bodies are temporary, do not possess and cannot appreciate all the factors, and what is most important, have no responsibility for the effects of their decision on other interests.

To adjust properly any question involving expenditure for any part, every factor in connection with the whole business should be considered — the revenue, costs or charges, and everything that affects these. This can only properly be done by one and the same body, which must have jurisdiction over all factors involved — and therefore the only logical body to regulate and protect public service employees is that which regulates the " public utility " itself and has the responsibility to the public for this regulation.

On the other hand, it is both unreasonable and impossible to expect the employee to admit or appreciate this unless at the same time the individuals of the public recognize and observe their obligation or duty towards these employees. Courtesy on the part of the public is too often overlooked or forgotten, and too often the public fail to recognize in their bearing and action towards these employees any direct relation or any of those obligations which all employers should have towards those who serve them, and towards those who are, at least for the moment, in a subordinate position. Too often the attitude of those demanding service towards the employees giving them service, is in unreasonable and undignified contrast to that which they should give and which they do give to the employees of their immediate personal establishments.

Conclusion.

It is perfectly within bounds of conservatism to say that the American Telephone and Telegraph Company and associated companies were never, as a whole, in a more satisfactory, if as satisfactory a position financially, physically, and particularly from the point of mutual relationship with their employees and with the public.

The underlying policy of the Bell System was formulated at the beginning of the business, by those who had the perception and imagination to realize the potentialities, and more important, had faith in the possibilities and courage to undertake their development.

That policy was in effect, "one system" under common control, interdependent, intercommunicating, by which every one at every place could converse with every other one at every other place.

This policy has been consistently and persistently pursued. So far as the whole country is concerned, such a system may now be considered an accomplished fact. It has been tried and tested by experience. It has been proved good and has been accepted by the telephone-using public as the only one under which they can have satisfactory service. No matter what the technical objections or negligible differences of opinion or theory, it has been, if not formally approved, substantially accepted by all national, state and municipal authorities and

boards of control and regulation, and has been adjudicated upon by courts of high jurisdiction, throughout the country, as the only policy or plan by which can be given a service such as the commercial and social requirements now demand.

There have been many and grave dangers confronting the American Telephone and Telegraph Company and associated companies. The most difficult to control was that arising from the intimate, exacting and delicate relations with the public, inherent in any "public necessity," but peculiar to the telephone service because of the confidential personal relations with its users. The menace of this danger is happily averted in a great degree. The employees of the service who come in close relation with the public recognize that courtesy and patience make their task pleasanter and their relations more agreeable, and the public are fast responding to this silent appeal.

The greatest danger now safely past and never again possible, was in the promoting speculative boom, which existed in the abundant years which closed the last century.

It was only the policy of one universal interdependent system, persistently followed, and the advantage of the service due to it, that enabled the Bell to maintain itself.

The desire for cheaper and greater service, the fear of monopoly, allegations of enormous profit were used by promoters, some wilfully and intentionally misleading, some mistaken, who appealed to the selfishness, covetousness and prejudices of the investor and the public. There was a wild investment in inflated securities sold to the unthinking public on the promise of big profits and dividends. Failure in performance brought a sad experience to these mistaken promoters and investors. The fallacy of cheaper service than that given by the Bell System, and of superior service from any different apparatus or operating methods, was demonstrated beyond question.

The necessity of the existing opposition companies, now growing old, to care for depreciation and obsolescence and to maintain a local service at least equal to the Bell service, even to hold their existing position, makes existing duplicating enterprises negligible so far as they affect the present or may affect the future of our business. Under reasonable restric-

tions, necessary to avoid discrimination against the Bell subscribers, these duplicating companies are now given the use of the toll and long-distance lines of the Bell System to connect their subscribers with the subscribers of all Bell exchanges beyond local and circumadjacent ones. (See correspondence with the Department of Justice, in this Company's annual report for 1913.)

Our policy toward them is and will be unchanged. If in any case it becomes the desire of the telephone public that we should, and the public and all authorities acquiesce and it can legally be done, we stand ready to make any reasonable arrangement which will protect the service and the public, and which will not discriminate against the subscribers of the Bell System.

The financial experience from past efforts; the general sentiment of the public that one interdependent universal system under control and regulation, is sufficient, and more than one a nuisance; the ability of the Bell to furnish any type or style of apparatus, establishes the absolute futility, even if it were physically or financially possible, of any attempt to duplicate the Bell System. Less than a complete duplication would be useless; a complete duplication would be a nuisance.

There have been serious apprehensions that rate-adjusting bodies might bear hard on rates and reduce them to an unprofitable point. There have been disputes over what were reasonable rates, but not a single instance where there was a tendency or inclination to make any but fair ones.

In rate making, whether legislative or competitive, there is a general tendency towards uniform rates for all like public services. Uniform rates are necessarily based on average costs over the territory to which the rates apply. These costs may be either determined, accepted or assumed.

No two systems or independent enterprises of any nature, and particularly of "public service," are like conditioned as to construction, operating, density of traffic and other factors which control cost of operating; consequently there are in large territories, great variations in the causes which affect the numerous costs from which the average costs are deduced.

Extensive combinations or systems favorably situated or well balanced combinations of units even of wide variation, prosper under uniform rates and will even show good results at "unit"

rates no greater than the unit cost of operating on other combinations or systems unfavorably situated or badly balanced.

Extensive systems badly balanced or independent enterprises unfavorably situated, may be fairly prosperous under uniform rates during periods of great commercial activity, but will be barely self-sustaining in normal times and are in the hands of a receiver in sub-normal times.

This is most forcibly demonstrated in transportation, where there are such extremes in the unit cost of operation on differently situated or conditioned systems and independent enterprises.

The Bell System is a well balanced, comprehensive system of intercommunication, in which each exchange district is a center of an intradependent system, each of which is superimposed in part over the other, and each of which must be considered in rate making as a whole.

It is recognized that the value of the telephone service is dependent upon the available service of the entire intradependent system to be reached from any exchange center; that there is and must be great variation in the revenue-producing ability of each separate exchange district and connecting line making up the system that in rate making all these elements creating this value of service must be recognized and taken into consideration.

To the extent that these conditions are within the jurisdiction of any rate-making body, they are now generally taken into consideration, and may be considered to be well established principles.

There is no public service which is in a better position as to its future revenue than the Bell System, and its strength lies in the fact that it is a well balanced, intradependent, aggregated system made up of many units, interdependent as to service and policy and operation, but intradependent as to common interest and support.

The underlying basis of rate making is the "value of the plant." On this the Bell System has nothing to fear. The actual value of its plant — the only value that can be used for rate making — is many millions in excess of the book value. The book value is many millions in excess of the par of all outstanding capital obligations.

Its capital obligations are conservative. All discounts on bond issues have been charged off. There has been paid in on account of capital stock of the Company over $31,000,000 in excess of the par of that stock, or for every share of outstanding stock, par $100, $108 in cash has been paid into the treasury.

Our situation is due entirely to the conservatism of the past; and to the making of ample charges against current earnings for depreciation and obsolescence as should be and must be done with any regard for the future. This is now authorized and directed to be done by all bodies of "control and regulation."

The recognition of these principles and factors as controlling in rate making, guarantees and protects the American Telephone and Telegraph Company and associated companies in reasonable rates, which will enable them to maintain good service by having a satisfied, well paid and interested operating staff; will enable them to maintain and extend their system, increase its universality to the greatest possibility and to place its service within reach of the greatest possible number, although in so doing there will be lines and exchange systems constructed and maintained in advance of the development or even the potentiality of a business that would support these sections independently.

> "Those advocating government ownership say 'that private claims or rights of owners (*i. e.* shareholders) of the existing systems *will not be allowed to stand in the way.*' It is neither contention nor resistance for the thousands of owners to claim 'just compensation' based upon a fair valuation; the guaranteed rights of all give them that protection. Just compensation means that it must be 'just' and represent full value of the property; this contention is very clearly upheld in . . . a United States Supreme Court decision in a case where it was claimed that just value meant full value of the property, including franchises." (American Telephone and Telegraph Company annual report 1913.)

So long as the policies which now control the companies are followed, so long as there are fair rates and good service, there is little danger of public ownership.

The public are recognizing the fact that in the rates charged for telephone service in the United States there is no exaction, and are beginning to believe that these charges are the cheapest in the world, and the service the best and the total cost to the public less than it would be under government ownership.

The amount now paid in dividends and charges on the outstanding capital obligations is no greater than the government would have to pay for the purchase money. In addition to its dividends the Company is paying over $13,000,000 in taxes which would be lost to the community under government ownership.

The report of 1911 contained the paragraphs:

> "We believe that we are working this problem out on the broad lines of the greatest benefit to the public, and that this is evidenced by the fact that our standards and lines of organization and operation are the standards the world over.
>
> "As a corollary to this — we recognize a 'responsibility' and 'accountability' to the public on our part, which is something different from and something more than the obligation of other public service companies not so closely interwoven with the daily life of the whole community."

In this policy, in this belief, in all our acts there has been a consistency of purpose, an absolute frankness of statement, and so far as confidence can be had by any corporation which is dealing with a vital necessity to the public, we believe we have public confidence.

With a reasonably satisfied public; with a reasonably liberal public; with a reasonably inclined federal, state and municipal control and regulation; without any onerous or unreasonable demands in sight or probable; with a normal business requiring only normal amounts of future capital; with a system sufficiently in advance of existing conditions to meet all possible demands or emergencies; with a business of such a nature that it makes the most economical "servant" for social or commercial intercourse, the first to be employed, the last to be dis-

charged; with an operating staff from office boy to senior executive, from the newest to the oldest, who look upon the system as their system, who are jealous of its reputation and zealous in support of it; who have a keen interest in its improvement and development; who believe that their success and the Company's success are inseparable, who are never satisfied except with something better and who recognize their obligations to the public — with all these, we should look forward with confidence to the future.

An Address by Mr. VAIL at the Banquet of the National Geographic Society, at Washington, D. C., March, 1916.

THIS splendid compliment to "telephony" and to those identified with it, coming as it does, on the official birthday of the telephone, is most highly appreciated by us all, and recalls to me many points of mutuality.

The home of the Society is in the beautiful "Hubbard Memorial." Mr. Gardner G. Hubbard, the father of the telephone business, was the sponsor and father-in-law of Dr. Bell, inventor of the telephone, was one of the godfathers of this great Society, and grandfather-in-law of the man who has done so great a work in the development of the Society and of its magazine, devoted to the spreading of geographical information. The part taken by Mr. Hubbard in laying the foundation of the existing telephone business, in opening up the vista through which we could all see its future, and the contributions made by him to the general business policy which has had so essential a part in the greatness of the business can never be overstated.

As general superintendent of the railway mail service, I was brought into intimate personal contact with Mr. Hubbard, who was the chairman of a commission created by Congress to investigate and report upon the then aspects of the always-with-us controversies over the compensation of the railroads for transporting the mails. Congress had recently made a horizontal reduction. On the trips of the Commission over the country Mr. Hubbard carried with him a few telephones, and without neglecting the work of the Commission, he at every opportunity exhibited and explained this marvelous invention. We discussed the business, its possibilities and potentialities, and the policies which should underlie its development, so that my connection with the telephone may be said to date from its inception.

The apparatus was extremely crude and very unsatisfactory. A child never was born with less apparent promise of the destiny it has attained. Yet there never has been a discovery

or invention that in a short life of forty years has so revolutionized that with which it has had to do.

The four associates — Bell, Hubbard, Saunders, and Watson — who were behind the telephone under the leadership of Mr. Hubbard started the business in 1877. The first corporations which brought capital and organization to practically and systematically exploit the business were formed in 1878.

To look back on those days it seems as if they had covered ages, yet it was but three years from 1876 — the natal year of the telephone — to 1879, the year in which the settlement with the Western Union was made, and the first big hill in the life journey of the telephone was crossed. At least two of these three years were employed in teaching the telephone itself how to talk intelligently and satisfactorily; for not until 1878 was a practical, commercial, dependable, usable instrument developed.

From the settlement with the Western Union the history of the business is well known; its progress is familiar to you all, and this evening you have had a demonstration of what can now be done and indications of future possibilities.

The most important single event in the history of the telephone business may be of interest.

The telephone patents had been offered to the Western Union, but the offer was declined. Through the Gold & Stock Telegraph Company, the Western Union was doing a profitable local private line business, using printing telegraph instruments. The first development of the telephone was for use on private lines, replacing the printing instruments. When the Western Union realized this, to protect its business, it entered the telephone business in competition with the Bell, operating under various patents which it claimed were independent of the Bell patents.

The Bell interests were devoting their energies to developing telephone exchange business. The Western Union, through its prestige and power, had for a little while a seeming advantage. The fight was a David and Goliath affair. The Western Union was the largest and most powerful corporation of the time — relatively greater than anything that exists to-day.

Eventually a compromise was proposed. The Western Union believed the great future of the telephone to be in private line

use; the Bell believd it to be in the exchange service, which is in fact a system of private lines from the central office to each subscriber. By means of switchboard and trunk lines any subscriber's private line can be connected with any other subscriber's private line, constituting a private line from subscriber to subscriber.

The negotiations hung on the condition denying to the Bell interests the right to connect their exchanges by means of toll lines. Few had faith in the future of the toll lines or their value as compared with the private lines, but if long distance conversation should be developed the Western Union feared it might be a menace to the telegraph business. Time has demonstrated that the telephone can never be substituted for the telegraph instrument; that the long distance telephone is not competitive with telegraphy, but has a distinct field of its own; that the telephone system is supplementary to, not competitive with, the telegraph system.

The prospects for the future of toll lines or distant speaking — the idea of carrying the voice any great distance — met with little serious consideration, and the idea of speaking across continents met with ridicule. Our engineers, at a considerably later period, thought it might be possible to talk to Chicago if we had a big enough wire; but the bigness was prohibitive.

The conferees of the Bell were divided about the toll business; some of them tired of the contest, preferred half a loaf in peace and comfort, rather than a struggle for a whole loaf; if yielding would bring about a settlement some were willing to yield. To me the idea of yielding the toll line use meant the curtailment of our future — the absolute interdiction of anything like a " system."

At the end of a nearly all night session on one of the Sound boats *en route* for New York, we had a unanimous committee who determined that the Bell should retain the exclusive and unlimited right to telephones for exchange service with a fifteen-mile radius, and for conversational purposes, any distance, but willing to yield to the Western Union the exclusive right to the telegraph business and to private lines. On this the Bell stood, except that the private line right was made non-exclusive, and the settlement made on these lines determined the basis for the telephone development.

The present development of the telephone is not due to disunited effort, although many and valuable suggestions and inventions have been either concurrently or independently developed outside the Bell system. It is due to the centralized, co-operative, co-ordinated work of the departments of operation with the departments of engineering, experiment, research and development — of the whole Bell System. Research, investigation, experiment, comprehensive and thorough, are now necessary to hold any position in any industrial or utility enterprise, and these on a large comprehensive scale are enormously expensive.

This centralization has produced a high and most completely developed system; beyond every point that has been reached there have always been possibilities of something greater, and these possibilities have been the goal of everyone connected with the business.

It is a unique coincidence that the two epoch-making inventions which created the art of electrical transmission of intelligence were made by men absolutely outside the field of electricity. Professor Morse was an artist. From his reading of Professor Henry's discovery of the magnet and the possibility of controlling its action from a distance, he conceived the idea of transmitting combinations of signals, to be interpreted into figures, letters, words, sentences. He had no scientific or mechanical education or training and little money. He found in Alfred Vail an assistant, one who had a scientific education, mechanical training, skill and ingenuity, who had a father with common sense enough to believe in the idea, money and courage enough to finance it.

There were many working on the multiple telegraph, but from different standpoints and for different purposes, among them Professor Bell. He had in Watson a trained mechanic and electrician, and in Hubbard and Saunders believers and capitalists. Bell was not an electrician, but was trained in articulation and the science of speech. His powers of observation and particularly of perception and deduction were great. In his telegraph studies and experiments he observed some phenomena from which he evolved the idea of the telephone, and when he

recognized in the vibrations of the reed the peculiar timbre of vocal speech, he knew he had the solution.

There was no one working on the speaking telephone, except Professor Bell, who could have invented it. They were approaching the subject from the standpoint of electricity without that knowledge of acoustics or the requirements of speech production or the character of vocal vibrations, of which Bell was the master. This knowledge was the key to the invention.

It was so simple that all wondered at it, and so seemingly impossible that all ridiculed it, but so soon as it became of utility many claimed, copied and pirated it.

There was not and never has there been any telephone made which is not based on Bell's patent, and with the exception of what Berliner contributed, his invention contained all that is essential in the instrument in use to-day, and yet the only time when Bell was the undisputed inventor of the telephone and the Bell Company without opposition was during the year 1876, before its commercial value was recognized although everyone acknowledged its scientific importance.

The Geographic Society has a symbolic picture with the inscription, " The Geographic brings all the world to you." It might be said that the telegraph brings all the world into immediate communication, and the telephone fetches your voice and conversation to the world.

Geography establishes position and determines distances; discovers the potentialities of the world and reveals the paths of intercommunication.

Geography may be termed the anatomy; transportation the venous or arterial system; and telephony and telegraphy the nervous system of the world and its economic and social structure.

Intercommunication, of which the telephone is the latest exponent, binds this world together, draws its interests closer, and will in time create a condition wherein all interests will be common to all people.

Common interests, patriotism — the bases of all communities, commonwealths or nations — can only permanently exist

where there is common language. Natural and permanent boundaries of nations are so established.

Geographic science is fast revealing the world and its possibilities and potentialities; intercommunication is fast utilizing these discoveries and making necessary to all people common language or common understanding of languages, and when that common understanding comes which is bound to come with free exchange of thought and ideas, then will come a common brotherhood.

It will take time to overcome the force of inertia which binds the man to the inherent, inherited, inbred ideas, traditions, prejudices, habits, conventionalities — which endure through generations and are overcome only by new experiences, new knowledge. Some term this conservatism, but it is nothing but the inertia that comes from lack of a new knowledge vivified by new experiences.

Geography reveals the world and makes it real; it dissipates the haze and fog of superstition and tradition, attracts and encourages the travel which brings expansion. In this vast field there is abundant room for practical constructive imagination to work. The immediate future is only dimly outlined by the light of past experience and present knowledge; the distant future is still in the shadowy haze of uncertainty, speculation and doubt; but though it may be too optimistic and too hopeful, there seems to me no doubt but that progress in the future will be as marked as in the past.

There can be but few great developments in the future of which the beginnings have not been made or have not been foreshadowed. Each age has believed it had reached the acme of evolution in economical, commercial and artistic lines, and that but little more was possible. In "transportation" the newly introduced stage-coach of the eighteenth century gave way to the steam railroad expresses of the nineteenth century; and electrical and aerial transportation are dawning in the twentieth. In "intercommunication" the signal lights of the Middle Ages gave way to the semaphore of the eighteenth century — the electric telegraph of the early, supplemented by the telephone in the late nineteenth century. And in the twentieth comes the dawn of transcontinental, transoceanic,

and circummundane electrical intercommunication and conversation!

When Mr. Bell and Mr. Watson first talked in public over the telephone, or Mr. Hubbard first tried to interest constructive interests in the new "Yankee toy," if either had prophesied as possible what actually exists to-day, he would have been laughed at. Those who laid the foundation of the business could well define the structure; but its magnitude has far surpassed expectation. When my connection with the telephone was announced, one who was then a representative and afterwards a senator and a cabinet minister, whose name always commands respect, said to me: "Vail, that isn't a big enough business for you." Consider that in the light of to-day!

Is it too much to think that in time it will be possible for anyone, at any place, to immediately communicate with anyone at any other place in the world, by reasonably available methods; that distance will be annihilated and the whole world will be united in common interests, common thought, common traditions and prejudices? Then and only then can there be a common people.

The wonderful work that geographical research did in opening up the unknown world in the late seventeenth, eighteenth, and early nineteenth centuries, presented a new field to the people of initiative and enterprise, of an old world already bursting its confines by its overdevelopment.

This world development, for which geographic research is largely responsible, is in turn responsible for the magnitude of present operations, economic and social. This immensity is constructive, not destructive; is something to be welcomed and encouraged rather than persecuted and destroyed. It is something which is uplifting all men, raising them up to higher levels and possibilities, and is neither oppressing nor taking away from man any possibility of greater enjoyment or of better things. It is bringing to him and within his power of acquisition, those things which were formerly for the few. It is making possible all things that can bring the extremes of mankind nearer together.

This economic industrial development of the world is caused by that co-operation; that co-ordination of effort which assigns to indviduals the tasks and duties for which each is best fitted,

and in this way gets the most out of the efforts of all. It will not, nor can anything ever make anyone independent of individual effort or raise anyone above his inherent possibilities.

This development is so infinitely greater than that of the past, and has come so much faster than the minds of men could possibly become adjusted to it, that there has been no standard familiar to man's mind by which to measure it. The abuses which always accompany any movement great or small, are looked upon as integral elements of them, not merely incidental. These misunderstandings, the inclination to introduce repressive and corrective measures where only directive measures are wanted, are caused by the *vis inertiae* of men's minds and the impossibility of adjustment to the rapidity and immensity of the development.

When the true understanding comes all will unite in directing and guiding and protecting. Then and only then shall we reap the full benefits of man's developing powers and understanding and of man's initiative and enterprise.

An Address by Mr. VAIL accepting the Elliott Cresson Medal awarded by the Franklin Institute, at Philadelphia, May, 1916.

ON behalf of the American Telephone and Telegraph Company I accept this most complimentary tribute.

When the telephone business was first organized, the possibility, but not the magnitude of the future, was recognized. Then was adopted, after deliberation and discussion by the founders of the business, the comprehensive policy of making the telephone a useful utility, broad in its scope and universal in its application. This policy has been faithfully followed by those who have been responsible for the operations of the business.

We accept this tribute of to-day as a recognition by this great Institute and by the public that that policy was a wise one, and that it had been wisely and successfully carried out.

This tribute has another and even greater significance.

The telephone service is an individual service, rendered to individual users by the individual members of the telephone organization.

It is a service dependent upon the right thing being done at the right time, by the right person, in the right way. To the extent that when all this is done the service is good; if any fail, to that extent the service is defective.

This requires on the part of every individual member: to the organization, loyalty; to their obligations, fidelity; and, in the performance of their duty, conscientiousness.

This award is, therefore, a personal tribute to each individual connected with the service, to the full recognition by them of their obligation to the organization and to the public, and each one will so feel and appropriate it.

Gentlemen, on behalf of my Company and on behalf of my associates, on behalf of every individual connected with the Bell System, please accept hearty thanks and expressions of the highest appreciation of your action.

Address by Mr. VAIL at the Commencement Exercises of the Graduating Classes of Lyndon Institute and Lyndon School of Agriculture, Lyndon Center, Vermont, June, 1916.

GRADUATES: I have been coming before you year after year to greet you, cheer you on your way, and try to say something that you might carry away with you, something which might influence your future for the better, or aid you in your life work.

We are apt to indulge in long homilies or dissertations on all the phases of life. There are a few maxims which express all that underlies, and a few conditions which influence one's life, position, standing or influence.

While all men are not born with equal endowments, either physical, mental or material, if one makes the best use of all that which he does possess, he will create for himself equality and even superiority, and make for himself a far more satisfactory life than many more liberally endowed who do not.

We are apt to look upon the possession of many things which we do not have as necessary to happiness and enjoyment in life, but if you lead a rational life, one of reasonable industry, if you exercise reasonable carefulness in the expenditure and use of your energy or property, take reasonable care of your mind and body, keeping them clean and healthy, and do not abuse your mind with unhealthy imagining or thoughts, or your body with excessive indulgence, you will have all that makes for real enjoyment, and as much opportunity for it as anyone could possibly have.

You will early come to realize that the greatest enjoyment in life is in the accomplishing, not in the accomplishment. Great acquisitions and high positions have their burdens and reponsibilities. Too much ambition or desire is oftentimes accompanied by discontent, and almost always followed by disappointment.

We hear much about "preparedness." Preparedness is a very elastic and most comprehensive term. It is or should be preliminary to everything we do. You may remember that my advice has consistently been — determine what you want to do, and then thoroughly prepare for it.

You are facing the struggle of life. For that struggle we have been trying to prepare you. All effectiveness in life comes from intelligent application of the knowledge acquired in preparation, and of the experience that comes from the endeavor to apply that knowledge.

Thorough preparation avoids disaster — whether in the peaceful pursuits of industry and economics, or in personal, national or international conflict.

Preparation must have for its foundation discipline — that discipline which impels you to subordinate, to yourself all selfish purposes and sordid desires; and subordinate yourself to those in authority and to do those things which you know should be done, and to do them at the proper time. Success in anything depends on doing the right thing — in the right way — at the right time,— and to do this requires a lot of self control that can only come from discipline.

If you will follow out all that has been taught you, after the manner and purpose in which you have been taught, barring extraordinary happenings, you should have a successful, contented life, for after all it is from that rational contentment, from that satisfaction that follows the living of a useful, well ordered life, from being honest with yourself and helpful to others that all happiness comes.

An Address by Mr. VAIL at a Meeting of the Vermont Forestry Association, at Lyndonville, Vermont, August, 1916.

PREPAREDNESS, CONSERVATION AND CONSERVATISM.

WHEN I was asked to speak the natural question was, "What about?" The logical answer, at a Forestry meeting, was Forestry, and incidental to forestry State Reservations suggested.

Considering these topics there seemed to be many things collateral and necessary to the success of the enterprises, many things necessary to be done before entering upon, or in connection with these undertakings to insure their success.

My paper to-night which will embrace some of these collateral questions; many at first appear to be wide of the subject but you must remember that there are many elements which are common to all successful undertakings.

Preparedness, conservation and conservatism are three great words of our language and three great factors in our civilization. They are the necessary aids to success and prosperity. Extremists on both sides have abused them and faddists have used them to sugar coat their harmful "cure all" but fallacious theories.

When they are exercised with intelligence, common sense and due respect to existing and probable conditions, nothing but good can follow. The extent of that good, will be in exact ratio to the intelligence and judgment used in the exercise of them. Neglect or wrongfully exercised or carried to unreasonable extremes, confusion, disturbance, uncertainty must follow.

PREPAREDNESS.

Preparedness is the getting ready for action before the time for action comes; that is, being ready to meet that which we know or have reason to believe will come. It is getting ready to do what we must do before we commence doing. It applies as well to the battles and struggles of life as to the battles and struggles of nations. It applies to every action or movement in life.

Conservation.

Conservation is a word at which many balk. It is a simple word. It is only caring for or saving that which exists and preserving it for future use. It is thrift. Conservation which saves for future use, that which we need for present use, or conserves at an unreasonable cost in time or money that which cannot be used or disposed of to advantage, is overdoing conservation; it is miserly; it is economically bad. Overdoing conservation is as bad as underdoing.

Conservatism.

Conservatism is another word that is used as a term of reproach. It should not be, it should be sticking to what you know is good and satisfactory until it is demonstrated that something better has come to take its place. Conservatism, which will not be convinced, or clings to the old simply because it is old, is old fogyism and is as bad as that kind of radicalism or progressiveness which would destroy all that exists without first providing something as dependable to take its place. Rational progressiveness makes for better things. Conservatism preserves what is good.

Preparedness, we are hearing much of, but it is not the preparedness for the work of life, it is National military preparedness against outside aggression. As that is a popular subject and one much in evidence, a little consideration of it is not out of place, particularly as some of the preparedness for military life will be equally effective in our ordinary life. It is right that we should be prepared against outside aggression as far as possible. Our boundaries, coastline and ports should be sufficiently protected to hold off any probable attack. It takes a long time to make ships, armament, coast or border defence and soldiers. Ships, armament, coast and border defence we should be amply prepared with, and as far as possible they should be kept up to current modern standards.

To maintain a standing army sufficient for all emergencies would be a serious economic handicap. It would take young men out of their work of life just at the most important period

to them. It would take them out of the economic pursuits of life to the serious detriment of their own future and that of the country as a whole. It would entail a vast burden upon the revenue of the country. We should maintain a reasonably large and thoroughly organized and educated skeleton army; an army that would be sufficient to hold any attack at bay until further preparation could be made.

The time necessary to create an army is the time necessary to drill and train men to act together as a unit under direction, to obey orders without question or hesitation, to be ready as a body for quick, certain movement and to know how to care for themselves when on a campaign. Much of this preparation, of this drilling and training should be part of the education of youth. Physical training, the training in drilling and walking, standing, exercise and proper care of body, develops grace of movement, alertness and nimbleness and is necessary to the proper development of the body, to the full enjoyment of health and to the betterment of mankind.

Team work, obedience and discipline, as developed by physical training, are necessary in civic life, and to economic success.

Team work is all working together as one to accomplish a purpose.

Obedience is prompt response to obligation, to duty whether to self, family, nation or superior.

Discipline is subordinating the individual's will to the will of others, to obedience.

In military life all these qualities are absolute necessities and the lack of them invites defeat. In real life the lack of them also invites defeat in attaining the larger purposes of life, but without them life can be lived in a shiftless, careless way which is neither to the advantage of the individual or the community.

Whether it is possible or even probable that we shall ever be forced again into an extensive conflict to preserve our country is an open question. One man's guess or prophecy is a good as another's. Experience of the recent past has shown that human nature has not changed since prehistoric man had to hunt for his food and fight to prevent its being taken away from him. It might be, because we are so big and so far away from everything, that we shall be let alone. But if we are to

stand nominal guardian, or national protector of this hemisphere, as we assert or claim to be, we may be called upon at any time to enforce our mandates or meet our ultimatum. Be that as it may, we hope we many never need the trained boys for actual military conflict, but we do want our boys and our girls to learn all that physical and military training and drilling teaches them; to be alert, active, nimble, to have good digestion and circulation; to be full fleshed, ruddy skinned with fresh bright clear complexions and expressions. We want them to have that discipline which brings obedience to family, social and civic duty, to the command of those in authority. We want from them unquestioned recognition of the superiority of law and order, and the absolute subordination of the individual to it.

By drilling and training a few moments every day at school, by giving a few weeks each year for a few years to mobilization and mobilized training and maneuvers, there could always be a trained force from which the skeleton regular organization could be voluntarily filled and we would be prepared for any National crisis or for any participation in the battles of nations, and, much greater than this, we would be preparing and conserving our youth for the battles of life, for a better home life, for a larger enjoyment and broader mentality, and for a vista of better things.

Let us have preparedness which will do this for our civilization while at the same time meeting all the requirements in case our civilization should through our own foolishness or the aggressiveness of others, lapse momentarily into barbarism.

Conservation has been used much and abused much in connection with our national resources. It is a big open question; how best to serve the present necessities of man and yet have proper consideration for future necessities? If you are thrifty you conserve fruits and vegetables and other products for your future use, but you only conserve articles particularly intended for that purpose, or the surplus above your present needs. That is what should be the teaching of conservation — how to use without waste our natural resources for our present needs, and protect, and conserve the rest for future use. When the present needs are in conflict with our real or conjectural future needs, we must decide in favor of the present demands, or those of the near future.

Conservation as applied to forestry is a question of location or environment and local conditions. In Vermont it is not waste to burn up the small branches of the fallen trees; fuel is too plenty and too cheap and labor too expensive to prepare them for use; yet in some parts of the world it would be wanton waste not to save for use for domestic purposes every last stick and twig. It was not waste for our pioneer fathers to make a slash of the timbered sides of these Vermont hills and burn it to clear the land for agricultural purposes, because the wood encumbered the ground and was an obstruction to settlement, but now if you wanted to clear a piece of timber for cultivation or pasture you would not do it that way. It is not waste or wanton destruction to clear woodland to the last stick, if you protect the new growth for future use. Our timber land must now be treated the same as any growing crop — planted or be allowed to plant itself, protected and harvested at maturity, and our shade trees must not be held too sacred to remove if they become a nuisance instead of a pleasure or a benefit.

Much is talked about conservation in connection with the freshets of spring and dwindling of our streams in summer. Many of the things which some think due to lack of conservation are the inevitable sequence of cultivation and settlement. Timber land cut over but not burned over, if the new growth is protected, or timber land of growing trees, will practically protect the streams as well as if the old timber was left standing. Uniform streams throughout the year have never existed, and to make them would require reservoirs to catch all above the average flow and to hold it to use as needed. The tangled, mossy, fibrous ground of the primeval wilderness and the valley swamps caused by fallen timber and luxuriant weed growth acted as reservoirs and did maintain a more uniform flow than we now have, but they did not prevent freshets when the warm spring rains came on a great depth of snow laying on frozen ground, or when a big downpour fell on fully saturated ground and swamps full of water — but who wants to restore that condition? Cultivated fields will not absorb as much water as forest bramble. There will be more soil washed away from a plowed field than a meadow or forest, but of what value would the forests be if there were no cultivated fields to support the people who create commerce, build cities, and

of what use or value would there be for forest products? Of what advantage is it to let timber that is valuable stand and deteriorate?

Much has been said about the wanton destruction of the forests in the west on lands which were not at the time necessary for settlement. If it had not been for cheap lumber in the west during the last half of the last century, there would have been more hardships, more difficulties in the settlement and subjugation of that vast country. The plains were timberless except the few trees worthless for timber on some oasis, or fringing the larger creeks or rivers. Cheap lumber brought from other points was a necessity to build the shack or shanty shelter of the pioneer in a stoneless country and to fence the fields before the day of barbed wire.

Cheap lumber has been a great factor in the upbuilding of our country, and cheap lumber must mean careless and wasteful methods of lumbering because you must take only the best and easiest to get.

While past methods here and present methods in some environments and under some conditions have been and are justifiable, there is no justification or excuse for the continuance of some of those methods. So long as the bad effect of any method is overbalanced by the benefit to the community, then that method is justifiable. When it ceases to be more beneficial than harmful it should change. That time has come when many improved methods can be adopted to the advantage of all and whatever you expect to be adopted must be of some advantage to the state and to the community, and it would be a good business proposition, to reforest and protect all the hills not utilizable for other purposes.

It is useless to advocate the general reforestation of our hills as a work of the small individual owner or farmer in any large way for many reasons. Wherever land is more valuable for any other purpose it would not be reasonable to expect it. Where it would be profitable few of the dwellers on the hills have the capital to invest in the planting or are able to carry the plantation for a prospective profit fifty or sixty years ahead, and even if they had the capital it could, as a rule, be used to greater immediate advantage.

Reforesting and conservation on a large scale is a State proposition, or a proposition for large timber using corporations. A corporation which is a perpetual individual could well afford to replant where necessary or allow it to reforest itself to such an extent as would cover depreciation, or restore current exhaustion and in this way provide for future needs. This is now being done by many pulp and other like companies for the annual supply of ties.

The farmer, the individual, can conserve in a small way on his wood lot or sugar orchard, or can even reforest by using his otherwise idle moments and in this way capitalize them. In a small way each can conserve and protect, beautify and improve his surroundings while at the same time supplying his present needs and providing for the future. Such a policy, consistently followed, in a few years will surprise you by its extent and magnitude. Clear up the brush wood to give the new growth a chance to grow, cut and trim out the matured and surplus growth so that it will not be using the soil food that should go to the other trees; protect your own lots and help protect your neighbor's from fire.

Cultivated fields and light soiled pastures should be protected from unnecessary washing or gullying so that as little soil as possible is carried off to fill brooks or make some delta thousands of miles away. All that is needed is a little common sense, thinking and observing and doing what is necessary to be done when the need is first noticed. Every one of these sand wastes we have around here started first from a break in the soil and could have been stopped before any considerable damage was done.

Each farm has its peculiarities. A little thought and study will determine how any of these new notions or how much advice coming from all sides is of benefit or can be made use of, but one must first have full information of what has been done and what is being done. It is just as foolish to consider any proposition without knowing what is going on as it is not to consider it at all, or to blindly follow every latest fad, or to stick sullenly and blindly to old fashioned ideas.

Anything will come out all right if it is approached from a practical standpoint and brains and experience and above all observation are used. Know what is going on; follow the good and discard the bad.

If reforestation and conservation on a large scale is the work of the State — how is it best to go about it?

Vermont with its beautiful vistas of hills, valleys, lakes and streams or its broad panoramas with distant background of superlative landscape will always be sought by those in search of vacation and recreation.

There are wilder, more majestic and sublime or awe inspiring sections of the country but none more beautiful in its combination of cultivated and rugged variety. The greater the development the greater will be the beauty and the possibility of that reposeful enjoyment which so many prefer to imposing grandeur.

Certain states as well as the United States have established reservations for conservation and preservation purposes.

The hills and mountain valley streams of Vermont were once and should be the home abiding place of all kinds of useful wild life.

Burned over mountain sides and sawdust have dried and filled up many of our streams. Illegal hunting and fishing have done the rest and have virtually destroyed the fishing and shooting and is retarding all attempts at restoration. From both the aesthetic and practical standpoint all this should be remedied. It can be done to a certain extent, by rigid enforcement of proper laws and the repeal of laws made for effect only, not to be enforced.

If the State should establish several reservations which should include the head waters of our rivers, and reestablish and protect upon the hills the natural timber growth, make some improvement in the course of these streams, and protect these reservations absolutely from all kinds of depredation and destruction, it would in time restore all that Vermont once had, with all the additions which time and experience have proven to be useful. These reservations would be the nurseries of game and fish for the lower streams and valleys.

It would benefit the state both as a place for habitation and resort. It would be a source of large profit to the state from an actual return in money derived from licenses for fishing, hunting and from the sale of lumber, while the indirect return will be almost beyond estimate. Vermont is well able to make the original investment of capital which would bring ample

returns in enjoyment and pleasure and add so greatly to the prosperity of the state. All men filling the high public offices like some great reform or beneficial movement to mark their term. Here is an opportunity for our next governor to hand his name down to future generations.

To aid our industrial development reservoirs could be established at natural points, and in this way preserve the lower river reaches from excessive floods and establish that equable flow of water into the streams which is so necessary to industrial development.

There are many details to be worked out by actual experience. Only a general idea can be presented. There are no impossibilities, while the probabilities, aesthetic, industrial and financial are great.

To make any such movement a success, no one individual, either by careless or intentional disregard of the rights of others or of law, should be allowed to destroy, by disregarding regulations and laws, that which was being done for the benefit of all. There is too much indifference to, and toleration of the selfishness of individuals which allows them by encroachments small and large upon common rights, or to make impossible the full enjoyment by other individuals or by the public as a whole, of their rights. It is time we stopped talking about that independence of the individual, which is in effect only surly self-indulgence and egotistical self-assertion and a bad excuse for bad education and bad breeding.

Accessibility and easy access and intercommunication are important factors in the development of the country for any purpose.

We should so foster our ways of communication leading in and out of our state that the coming and going can be made pleasant, comfortable and available.

We should see to it that our interstate ways of intercommunication are the best possible, and to show the best in our state some should be purely scenic roads, coursing the ridge poles of our beautiful country. We are beginning to have a very perfect road system but we must remember that we not only need to build roads but to care for them. The best made road begins to deteriorate the moment it is finished and the motor pushing itself along by its wheels finds the weak spots

and unless attended there is trouble for the road and discomfort, if not danger, for the user.

Eternal vigilance is the price of good roads.

If in our striving for what is best for our state, we give first thought to its desirability as a place to live and get a living with favorable and desirable environments and conditions, we have gone a long way towards making it even more desirable for the outsider, for the visitor.

It can be done without disturbing our comfort or our ease, it can be done with profit to ourselves and with little or no additional labor, if we only make effective every bit of labor we do.

We don't want to make Vermont the Switzerland of America but we want to make it the Green Mountain State of America, unique and of its kind incomparable. We want to develop its natural charms and resources. We want to make it so attractive that it will hold its young people here and bring the absent ones back. We want all the world to come here and play with us, and all that can to come and live with us.

An Address by Mr. VAIL at the "What-Should-Be-Done-For New England" Conference, at Springfield, Mass., September, 1916.

GET TOGETHER.

THE purpose of this conference is to get together.

All substantial progress in any line is made by properly directed effort. Direction implies a well-considered policy; it implies co-operative and co-ordinated operation; it implies an organization in which all new ideas, all innovation or change, shall passively proceed from the body to the center as suggestions for consideration, and the formulated policy proceed from the center and control all activities. It is not that individual ideas may not be good. They are often good, but very seldom complete; they always require reinforcement or reconstruction and sublimation. They, either singly or in combination with others, are the origin of every great movement or great enterprise or activity, but it is only after concerted effort made effective by organization that any substantial progress has ever been made. Many things which are mediocre have succeeded through organization, and many things which were superlatively good have failed for lack of organization.

The fundamental principle of society is harmony, and harmony can only be obtained by free and frank exchange of views and allowing the consensus of opinion of a majority of all to decide and control. In these days of close intercommunity interstate and international, intercourse and intercommunication, concerted organized action, on well-considered, perfectly understood lines can accomplish almost anything. Individual, separate, or diverse action can accomplish little for the community, however much it can accomplish for the individual.

It should need no argument to impress upon all, the close interdependence between all classes; between all the relations, enterprises and activities, of all the people. The keynote of real substantial progress, is to thoroughly believe this, and completely accept and act on it.

The prosperity of the producer is dependent upon the purchasing power of the consumer. Commercial activity or prosperity is dependent upon activity of interchange and intercommunication.

Interchange of manufactured or produced commodities — interchange of the surplus of one man, one section, or one country — for the surplus of another man, section, or country — is the basis of all commercial or industrial activity — it is the basis of all wealth. It is either the cause or the result, or both cause and result, of the development of the instrumentalities of transportation and intercommunication; of all commercial and financial operation and of progress in all activities. It precedes development of all kinds, physical or mental, social or economical, moral or ethical.

In the consideration of the subject which will come before us, we must deal in general terms and widespread effects. We cannot and must not single out individual variations or individual instances and use them for purposes of generalization. Anything can be seemingly proved by exceptions, taken as the basis for generalizations; all that exceptions are useful for is to show what the rule is.

We must thoroughly realize and educate all, whether their income is through investment or wages for labor, to realize that it is not larger income or higher wages alone, that increases either our purchasing power or our consumption. If the prices of commodities increase in the same ratio that income or wages increase, the purchasing power is unchanged, the consumption is not increased.

We must realize that increased prosperity is the result of the development, of the expansion, of the purchasing power of the unit of labor or the unit of exchange; that this is the result of the application of advanced mechanical and scientific methods to production and industry by which more is produced, with less effort, less expenditure of brawn and brains. That through these methods both labor and capital are made more effective, and many things which were luxuries in preceding generations, are put within reach of all and have become necessities.

That the increase in remuneration for the unit of labor is made possible by the decrease in unit costs of production, both agricultural and industrial. That decrease in costs and prices, where there is a potential market, increases the aggregate profits.

Prices depend upon costs. There must be a fair profit. Without profit in some form production would be reduced to

that minimum which each individual can produce for his own necessities or to barter for any occasional surplus of others. If profits were destroyed wealth would disappear, for wealth is merely the tangible expression, the concrete evidence, of the earning power of productive enterprise. When profits from enterprise are destroyed, " community stagnation " will take the place of " universal, widespread prosperity."

Increased production, increased consumption and increased profits and increased wealth must come from increased effectiveness of all the elements that enter into production.

Increased effectiveness can only come from advanced research and study and investigation and the adoption or application of all the highest practical methods which trial, experiment and experience establish to be good.

We will have gone far in the final solution of our economic as well as our social and sociological questions and disturbances, if we will only bear all these economic principles in mind and realize that they are the basis of all our wealth and prosperity and that the whole machinery of interchange, intercommunication, production, transportation, distribution and consumption are so wonderfully and intimately interwoven and interdependent that you cannot disturb one without upsetting the other.

These are the policies which have, in the recent past, produced those great results in the industrial world; those results which are so astonishing, overwhelming and overpowering that the world has been set agog, and all established traditions in our economic pursuits disturbed, because they have not been properly understood.

The unthinking, the demagogue and the ignorant have attributed the results of effectiveness to unfair and dishonest methods. While doubtless our prosperity has been accompanied by some irregularities, the ratio of these irregularities to the total achievements has been no greater than they were under the old-fashioned methods. There always will be, there always have been highwaymen who preyed on prosperity, but you would not destroy prosperity to eradicate the highwayman.

In New England agriculture has suffered during the upbuilding of our new country because of the relative unremunerativeness of it. The would-be farmer has sought the fertile and cheap lands of the newer countries in which to build their homes, as did their progenitors who came into New England

when it was a wilderness. Those new countries are now filled up and now have no advantage over the East in land, labor or other conditions. The broad prairies upon which those great fields of grain were grown, those far-extending ranches upon which vast herds of cattle roamed, are now divided up into small farms and homes. That land where single individual enterprises produced food stuff for thousands is now occupied by thousands of families, with large capacity of consumption. Industrial enterprises, filled with thousands of consuming employees, have been built up in their midst. Production has been overtaken by consumption. They can no longer supply our industrial New England with food stuff — vegetable and animal —at such prices, as will make it impossible for the New England farmer to compete. New England industrially must in the future depend on New England agriculturally for its supplies.

The great West, and the great commercial and industrial centers which have been tempting the New England boy from home, do not now offer the some comparative ease and comfort and opportunity to those who have to live by their own physical exertion, as they once did. For all those, rural opportunities are now equal and rural conditions superior. When the new generations of boys in rural New England understand this, appreciate this, they will act accordingly, and we will see rural New England keeping pace with industrial New England, and the pace will be one that will go far when once started.

Our new generations must be led to realize these changes and be shown that the same methods must be applied to the rural industries that have been introduced into the manufacturing industry. We must stimulate their imagination and encourage their interest in new methods and new ways; we must develop an active interest and enjoyment in production, in growing things, whether animal or vegetable.

We must let the girl and the boy realize the absolute fallacy of the old saying founded on country life " That man's work is from sun to sun, but woman's work is never done "— that it is a most pernicious doctrine.

Commercial, financial, industrial and even intellectual New England must be made to realize, that to hold its own proper place, against the rapidly advancing practical introduction of these principles throughout the rest of this country, this new

movement must be extended to every nook and corner of New England.

If we are to change the new generations, we must commence with the children, commence with the beginning of the child's formative period. We must impress these truths upon the unformed and yet impressible mind. We must not allow those old heresies of the hardships, sufferings, never-ending drudgery of agricultural and rural pursuits to get any lodgment in the child's mind. We must make the child realize that nothing worth the having is obtained without effort. That self-indulgence in youth means suffering and privations in old age. We must make the child appreciate by the proper education and proper treatments, the beauties and the attractiveness as well as the profitableness and opportunity of rural life and rural pursuits.

Co-operation can do much to advance rural interests.

Co-operation is mutual action based on mutual confidence and applied to common interests; without confidence or advantage co-operation cannot succeed. It is the Golden Rule applied to commercialism and industrialism.

By co-operation is not meant any destruction of the necessary existing intermediaries between the producer and consumer, but the introduction of those auxiliary and helpful to all, and the retention of all the old ones that are necessary. The unnecessary will soon disappear.

Through co-operation, false representations whether direct or implied must be discountenanced, and whatever is produced must be stamped for what it is, that no customer or collector or distributor can be deceived.

By co-operation is meant regulation and improvement in methods of gathering, packing, grading, storing and distributing, that freshness and quality can be preserved, and congestion can be prevented.

Co-operation, so that the small producers can combine their products and command attention from the markets as do large producers.

Co-operation between neighbors, by which expensive machines can be made to do the work of many farms and thus save in original investment in equipment, but what is still greater, in depreciation and interest account on idle machinery.

Co-operation in labor by which during those seasons which are short but busy and cannot be done best by individuals working alone but better by members working together — neighbors can exchange and thus save the wage bills.

Much has been said about "from the farm to the consumer." This on a large scale such as will make wide prosperity, or such as can be applied to great development, is the sheerest nonsense. No farmer can supply regularly and continuously a family's needs in any one article, and far from it, can any one farm produce all the articles which any one consumer needs. Through co-operation, however, many producers can combine even if they are small ones, and through varied production and combination of products can command to a great extent the market both to their own advantage and to the advantage of the consumer.

Co-operation can be advantageous in purchasing those things of large and general consumption.

While much can be done by co-operation in both purchasing and distributing, do not for one moment imagine that the middleman is to be eliminated. There must be always a reasonable sufficiency of wholesale and retail collectors and distributors. There must always be a comprehensive transportation system. There must be the middlemen of commerce, and trade and finance. They are necessary in this most effective age of production, and incidentally they constitute a very large consuming power of themselves. We do not want to destroy them. We must make them better, or put them in a position to develop and extend for our benefit and advantage. We want to protect them in all that is their right in order that they may be made more effective and of greater aid to our production. To do this we must pay them enough for their services to get the best, but no more.

Education on all these lines is necessary. Ideas which have been created by error, misunderstanding, misconception and above all, by mistaken as well as wilfully misleading demagogues, must be corrected. And above all, a mutual confidence based upon a full understanding and right intention must be built up between all the elements of a community.

All those who labor or consume must be made to realize that prosperity is based on three elements: Labor to do the physical work; Capital to supply raw material, plant and equipment and to maintain labor during the time necessary to produce and

market; Brains or intelligence to direct labor, that it may be made more effective to seek and devise new production, new methods and control the application of old methods.

Primevally these were combined in one home or family, becoming separated as industrial enterprise expanded. Primative conditions have passed never to return. Nor do we ever want it forced back upon us, by the introduction and application of unwise, unsound, fallacious theories, which will destroy capital invested in industrial or utility enterprises.

On the farm, however, the home and family and the workshop are combined, or can all be combined in one individual or family. The farmer who does the labor, can accumulate or earn by outside work his money to carry him over while he is converting his own labor into productive and distributive wealth and using his own brains to direct his work in the development of his farm.

And finally, if our Nation is to prosper, we must keep our home markets for our home workers.

We cannot import the cheap laborers of Europe in the way of emigrants, and yet continue to import any of the products of cheap labor, that can as well be made at home.

When intelligence, common sense are applied to all our industries, agricultural as well as manufacturing, and the production per unit of labor is increased by all the advanced aids and improved methods as it can be, reducing the item of labor in all production to a minimum, we need not fear any competition either in our home market or the market of the world.

Brains must be educated either through the experience of others or personal. The cheapest and best education is through the experience of others; this education we must devise ways and means to furnish the boy, and furnish it in such a way as to make him interested. If we can do this a great work will be done.

A greater Springfield, a greater Boston, a greater New England can only come through a wise application of education on sound economic laws. A greater New England must come from the development of our rural resources, as well as our industrial centers; through the increase of homes and families; homes moderate but sufficient, families contented. In these lay the strength of our Nation.

To you, gentlemen of Springfield and elsewhere, we owe a vote of thanks, confidence and support.

Through your energy and persistency we will have in the center of what should be, and what will be if it is not now, the greatest dairy and cattle-raising section of the country — the greatest Dairy and Cattle Show in the world.

Its effect on our producing conditions cannot be over-estimated, if through the wise determination of this conference can be established co-operation, co-ordination and harmony of action in all these efforts to improve.

From the Annual Report of Mr. VAIL as President of the American Telephone and Telegraph Company, March, 1917.

Public Relations.

BELL SYSTEM.

IT is not inappropriate to restate clearly the attitude of the Bell System towards the public. Repetition of facts prevents misunderstanding, as misunderstanding is based on either misleading, mistaken or meager information.

There is no utility or public service upon which the public is more dependent; no utility whose quality of service is of more importance. It has become one of the dependencies of modern life and may be correctly termed, as it has often been, the nervous system of social and economic organization. The character of these relations, their intimacy, are apt to give rise to criticism and cause agitation for national, state or municipal operation or for competition.

This relation involves many delicate conditions and obligations, some incumbent upon the public, some upon the operating associated companies comprising the system, as an organization, some upon the employees as part of the organization, and as individuals so far as they can be considered independently of the organization.

The prerequisite of a telephone service is that it should be a continuous, immediate service; free as possible from any interruptions, and it must be possible for any one in any one place to get into personal conversational communication with any one in any other place; any other service would be a limited service.

The first essential to an understanding is to realize the peculiarities of the telephone service. There is no other utility or public service in any way analogous. Electric light, gas, water, are from a common supply; your service is obtained by turning a key. Personal transportation is conveyance in a vehicle in common with others running on a schedule between definite points. Transportation of commodities or transmission of messages is the forwarding or transmission of the package or message from point to point by the employees of the utility.

Medal presented to Mr. Vail in recognition of forty years of service in the Bell Telephone System

Each package or message can be forwarded singly or in quantity, and at the convenience of the utility.

The telephone service consists in placing a telephone circuit at the use for personal conversation of parties personally present at distantly separated terminals. To get this service the parties must each be connected with the same system, either through a toll or subscriber's line. It is further unique in that it has no alternative, nothing can take its place. Each circuit is put to the exclusive use of the parties talking and cannot be used for any other telephonic purpose, and the time at which it is used is determined by the convenience of the parties.

The speaking circuit must be a continuous one. The telephone current is a delicate one, a disturbance at any one point putting the whole circuit out of commission, and as only a small part of the connections is between those connected with the same central office and there are relatively few places between which there is sufficient business to maintain special circuits, these circuits must be made up by connecting circuits and parts of circuits passing through the various exchange districts, which necessitates uniformity in the operating methods and the equipment, principal and auxiliary. All employees engaged at terminal or junction points in making up the circuit must work in perfect harmony and co-operation and take their directions from one source; in fact, there must be that absolute co-ordination of plant, apparatus, employees and methods that can come only from common interest and common direction.

The telephone system to give perfect service must be one in which all parts recognize a common interest and a common subordination to the interests of all, in fact, it must be " One System," " universal," " intradependent," " intracommunicative," and operated in a common interest.

Such is the Bell System.

The original telephone exchange service and the unit of the " Bell System " is the " Exchange District " by which and over which the local service is given without toll charge to every one desiring service within the area comprised in that district. The " Exchange District " is made up of sub-units of central office districts and through the switchboard every subscriber within a given district is connected by subscriber lines. All the central offices in an " Exchange District " are connected with each other

by trunk lines. To connect all subscribers in any "Exchange District" with one central office would be a physical impossibility in any considerable district, for the reason that no central office building large enough could be constructed and equipped; the cost of the extra length of wire to carry all to one central office would be prohibitive and the congestion of wires would make it impossible, whereas the number of trunk lines to take care of inter-central office calls is relatively small as compared to the number of subscribers' lines.

For the same reasons "Exchange Districts" or central office districts do not overlap each other, nor do the subscribers' lines of one district extend into the territory of another district. Any party desiring service can be connected with any subscriber, in a distant or even adjoining district, more economically and efficiently through the central office of his own district and thence by trunk lines through the central office of the desired subscriber.

The district exchange systems are connected with each other by, and form the terminals of, the toll or long-distance lines which are directly connected with their central offices.

Without terminals the toll or long-distance lines would be of little use. To build special terminals would be substantial duplication of the exchange lines, as nearly every subscriber sooner or later, with more or less frequency, desires to connect beyond the exchange district. Connection and close operating relations between the toll and long-distance lines give service between all points on all exchanges, constitute a system, and are the only solution for universal service.

There need be no two exchange systems in any district. Telephonic connection can be had only between parties connected with the same general system. Two systems each serving the same subscribers would be a practical impossibility and an economic absurdity. Two opposition exchanges each with a different list of subscribers would give an entirely different service. To obtain the service of both exchanges, connection with each is necessary, which is duplication. If two exchanges are connected they then in fact belong to one system, for each would have the use of the other's facilities for its subscribers, under some arrangement which necessitated co-operation and subordination. It would still be duplication, for neither could or

would give the service of the other exchange without compensation.

The inevitable conclusion is one system; one system means no duplication; no duplication means one local exchange system for each separate locality or territory, each connected with the other, all operating as one; this would be co-operation, and co-operation can never be competition.

Could this have been obtained by segregated independent competing local exchange systems each reaching over into the territory of the other, to get at the creamy parts, with all the interconnecting, independent toll or long-distance lines, each struggling for its particular advantage?

This is not a case for argument or opinion now. The "One System" has been created; it is in operation; the public are educated to its advantages; where there are two systems, the public are demanding and public authorities commanding "One System."

The telephone service is the creation of the Bell interests, working in harmonious co-operation to give the public a new utility, a new convenience. It was given to the public in advance of any demand. The demand was created by the service given.

It was not until after the advantage and the necessity of such service became apparent that there were any opposition exchanges, and it was not until the idea of a comprehensive system became recognized as a public necessity that the opposition companies demanded connection with the Bell System of interconnecting wires. In other words, the opposition companies wanted to better their position and supply their deficiencies by the use of the facilities constructed for, and needed by, the subscribers to the Bell System. To meet that demand would necessitate additional construction by the Bell System for the benefit of opposing interests.

The Bell was pioneer in the exchange system, pioneer in the toll-line system, pioneer in the long-distance system, and at all times met the incredulity of the public — first as to the possibility of any telephone service, then as to the possibility of anything but a local service, and then as to the possibility of even a short-distance service, and finally as to the possibility of a long-distance service. While the promoters of the Bell System devoted their efforts to the upbuilding of a system looking to

the future, others rushed in to reap the harvest, backed by local interest, local capital, local everything.

The story might have been a different one had the promoters of the opposition companies followed the example of the Bell interests, and organized a system, a system for the future; had they taken advantage in the beginning of the common experience, of all mistakes as to service, cost of plant, its depreciation and obsolescence, that have been made by all promoters and are being made by all public ownership advocates; and in addition had they recognized that the telephone service had become something besides a local exchange system; that a comprehensive system was becoming a recognized necessity, and finally that to hold their position with the public they must give as comprehensive service as the Bell System did.

Why did the public retain their connections with the Bell System, when local operating companies identified and capitalized and organized and operated by local people known to every possible subscriber and every probable subscriber a possible shareholder, were urging and pushing their own organization and service against what was alleged to be a foreign, greedy, selfish monopoly, built up on watered stock and exacting enormous revenues for inadequate, ineffective service? What could stand up against such a canvass except a service which had some superior qualities, some advantage which no other could give?

The qualities which created the Bell System were self-interest subordinated to public spirit, initiative, vision, imagination, courage and energy in creating a new, service utility, developing all its potentialities, and making all possible improvements.

The only advantage the Bell interest ever had was through creative work in developing the potentialities of the telephone service by incorporating with advance construction advanced ideas; placing those facilities for service before the public in advance of all others.

The Bell System was something good, and always something better than any other. It was never resting and always developing something better for the Bell System.

Was the building of a long-distance line from Boston to New York, when every dollar in the Company's treasury had a hundred uses, and when no one had confidence in its practicability, entirely selfish or to be condemned? Was building lines to Philadelphia and Washington and from New York to Chicago

before any certainty of their ultimate advantage to the public a grievous sin?

The long-distance construction was years ahead of everything like use or demand. It took years for the public to become educated to its possible advantages. For the first three years the long-distance lines were operated at a loss, and the gross receipts from long-distance service for its first sixteen years were less than for the single year 1916.

The Bell idea did not contemplate a monopoly; it contemplated a system and went about the building of it in the only possible way. Telephone service and the telephone system are an evolution; the beginning was the local exchange, following was the connecting of adjacent exchanges, the building of toll lines, the long-distance lines; all interconnecting. What difference could there be whether the separate district exchanges were built directly by the Bell or indirectly through affiliated district companies, organized for local reasons, working in co-operation, harmony, all subordinated to a common interest? Why should it not manufacture for these affiliated associated companies, either directly or through an associated affiliated manufacturing company, its own highly special and technical plant, and in this way have absolute control over quality and character?

The idea was a great public utility for the public advantage and benefit; the advantage to the originators to come through the doing of this public service.

Whatever has developed of a "monopolistic" aspect about "one system" is inherent in the telephone service and is created by the public demand educated to the advantages of universal service.

The field is open and practically has been for twenty-five years. Since the expiration of the fundamental patent, Bell interests have never relied upon their patents — upon which they have expended millions, about $6,000,000 in the last ten years paid to outside parties — except as protection in the pursuit of their business. These patents are broad and comprehensive enough to cover any kind of apparatus used in any telephone service in the world.

If there is a public demand for competition in the telephone service or for opposition exchange, there is nothing to prevent

the building, but if opposition companies are built in the particularly " fat " districts of the Bell System, is there any reason why the deficiencies of the limited service of such opposition should be supported by the Bell System from the facilities it constructed for and needs for its own service, or is there any reason why the Bell System should raise capital to build additional facilities not needed for its own service, often unprofitable, to supply such deficiencies?

The Bell System was created by the public, and by the peculiarities of the service. It exists because the public patronized it, and the public patronized it because they received a service such as they wanted at a price which was reasonable considering the service; at a price which made it advantageous and profitable to the public.

The Bell System has no monopoly. One system, universal service, do not mean monopoly of ownership — organized co-operation does not mean monopolistic control.

There are about 11,300,000 telephone stations in the United States, 6,500,000 Bell owned and 4,800,000 owned by independent companies or associations.

There are nearly 10,000,000 stations connected with the Bell System, 6,500,000 Bell owned, and over 3,300,000 owned by independent companies.

About two-thirds of the independently owned stations are connected with and form an important part of the Bell System.

The Bell System does not make undue profit. Allowing for taxes paid by the system and by the holders of its outstanding securities, the net annual cost to the public for the use of the property of the Bell System is about the same percentage on a fair valuation of that property as the interest return on high-grade railroad or industrial bonds, and is far less than the legal rate of interest in any state. At the same time investors in the Bell System realize a fair return because the outstanding capital obligations are many millions of dollars less than the value of the property.

The Bell System's charge for service is not exorbitant. The average revenue per station to the Bell System has been reduced 55 per cent. in the last twenty years, and is less than the average charge of any other exchange system that gives continuous and immediate service anywhere in the world and less than that of

most of those that give any service. Seventy-five per cent. of the subscribers to the Bell System get their service for less than the average charge. The service of the Bell System is within reach of the small user; the large user pays for his service according to his use.

The Bell System cost of construction is not extravagant. The average cost per station is less than that of other systems of a similar nature in this country or elsewhere. The cost per station, including toll lines but not long-distance lines, is $135. The average annual gross revenue per exchange station, including toll service, is $39.62; the operating expenses, including taxes and depreciation, are $30.75; leaving the net revenue $8.87 on an investment of $135. Out of each dollar of revenue 48.3 cents are paid to labor; 20.3 cents for expenses and supplies; 5.6 cents for taxes; 19.8 cents for dividend and interest; leaving for surplus against the future 6.0 cents.

Two notable epochs mark the progress of the telephone service.

At the Exposition of 1876, Bell, of few friends and little encouragement, alone, waiting in the hall of the Centennial. The body of examiners, all notable men, tired at the end of a busy summer day, picked up the crude instrument in a perfunctory way, and the exclamation, "My God! It talks!" electrified the commission and announced the coming of an instrument which revolutionized social and commercial intercommunication. At that time, with those instruments, it was with difficulty that conversation could be carried on between two adjacent rooms.

The other epoch when the spoken voice was transmitted through the very same instruments from shore to shore and back again across the great continent, soon to be followed by the transmission of the spoken voice from the wireless towers of the United States, through space, to Hawaii on one side and Paris on the other.

From epoch to epoch, note the improvement. What made it possible for the same instruments to do at one time, the impossible at the other? It was the creation of instrumentalities and auxiliaries, the removal of obstacles, the building up of a system for transmission over and by which that delicate current, so delicate that it would have to be multiplied 5,000,000 times to

light an incandescent lamp, could be either transmitted or when it became attenuated could be picked up and given new life for another distance until its destination was reached.

There are few inventions or discoveries that are fundamental — only one in a generation or so. The innumerable inventions and discoveries which have so changed our arts and industries are built up around those fundamental ones, and generally are the result of defects shown in practice and suggestions through close and intimate association with, and study of, the working of the system.

In the evolution of telephony, the telephone is a small part. It is not due to the force generated by the telephone that transcontinental or any distant speech is possible, it is the eliminating of obstacles and the assistance of auxiliary apparatus, it is the making of an easy path. You cannot increase the force at the telephone except to a limited extent, the current of minute volume but great intensity has a disposition to dissipate itself, which destroys its own and confuses all adjacent transmission. It is not the telephone apparatus, central office equipment or wires that independently afford or can afford any service. It is the machine as a whole; all the telephones, all the equipment, all the central offices are vital and necessary parts of that machine. That machine is the Bell System.

Those who recall the rattling and crackling noises of the early telephone service, when reliable commercial conversation was difficult between adjacent offices and impossible between adjacent cities, when transcontinental or intra-continental conversation was but a dream and wireless conversation an hallucination, can realize what these improvements have been, but those who knew not of those days cannot be criticized for lack of appreciation because of lack of information. It is to those that this statement is presented.

Government Ownership.

There are, in various quarters, movements to nationalize or municipalize the telephone service. In favor of these movements, the advocates are using the same arguments and promises, the same statements of possible cheaper service, lower cost of construction, cheaper capital because of low interest on good securities, the same cry of monopoly and extortion, that have

been used in the past in favor of public ownership, all of which have over and over again been proved to be fallacious and impossible.

There is no reason why any individual or public official — national, state or city — should be misled by any statement in respect to the telephone business. There is hardly a district in the United States in which there has not been an opposition company promoted on substantially these same promises and statements. Yet, even where the plant has been of the cheapest and most flimsy construction and of the most primitive character, and the service far from being dependable, not one of these opposition companies has made good, on the basis of the promises made. There is hardly one of these now in operation whose average book cost is not higher than that of the Bell System, whose rates are not higher than originally promised, and which has not frankly conceded that business cannot be maintained on the terms and conditions of its prospectuses.

To ascertain the real facts, and expose the utter fallacy of the statements and promises, there would be necessary only a very little examination, a very little reflection and a very little common sense, unbiased and unprejudiced.

With a cheaply constructed, cheaply operated rural plant, a fairly satisfactory rural local service can be given at a low cost. There are tens of thousands of such plants now in operation, independent of the Bell System, or connected with it and giving local or limited service.

With urban systems, or systems intended to be used in connection with urban and toll-line systems, the construction must be of the highest order, the wires mostly underground, the service must be maintained at the highest standard, such as will afford good conversation, not only locally but to the extreme limits of the system with which it is connected. For long-distance service or for connection over the whole of the Bell System, a cheap, poorly constructed plant would be impossible.

It does seem very singular that the experience of the Northwestern Canadian provinces in government ownership and operation is so entirely ignored by all those who advocate it. The facts are well known; they are not disputed; it is easy to get them. Influenced by the same arguments and the same promises that have been made by all advocates of public owner-

ship and by all the promoters of so-called competing home or local companies, the provincial governments in Western Canada purchased the local plants. Farmers' lines were to be constructed all over the country, rates were to be cut, etc., etc. No one single promise has been kept or carried out; there has been less extension than with the private company; rates have been raised and rural service neglected, if not ignored. This is history, public and open to all who desire information.

It is believed that the carrying charges on government obligations that would be required to pay for the Bell System property at a fair valuation would in the long run cost the public more than the present carrying charges of the Bell System, allowing for the enormous and increasing taxes paid under private ownership that would be lost to the public under government ownership.

Reduced Rates.

Special reduced rates are always fixed on the theory of making a more uniform load for plant, or rather for the purpose of creating a new class of business for the plant during the otherwise idle periods.

The current charges — overhead costs of maintenance, depreciation, obsolescence, taxes, in addition to the interest and dividend charges on invested capital on a fixed amount of plant — do not vary much with the amount of business. The normal business must bear the charges.

In all kinds of public service, the demand fluctuates according to the hours of the day and the peculiarities of the service. The crowded facilities at certain hours must pay for the operation during slack hours; in other words, the average load must bear the costs of operation.

If in any utility some plan can be devised which will create, for the sparse hours, a *new traffic* and thus increase the average by utilizing facilities otherwise idle, for such service large reductions could be made; but such traffic must not occupy the plant during the busy hours, only during the otherwise idle hours. It must be a new character of traffic, not requiring any addition to either facilities or operating force.

Compare the telegraph and the telephone service. The telegraph business is a very fluctuating one; the equipment and plant must be sufficient to take care of the maximum load.

Telegrams are written communications handed in for transmission by the employees of the company over its lines, and ordinarily require immediate transmission, but with that transmission the sender has no part. For anything not requiring immediate transmission, or which will not bear the expense, the mails and other facilities are open, unless special inducements are offered. Although the operating force is adjusted as far as possible to the fluctuating load, the facilities cannot be and there are therefore many hours of idle facilities and some of idle force. There are in correspondence all sorts of communication, the imperatively urgent, the urgent, and that in which a few hours make little difference. Deferred and night messages, day and night letters, at special rates create a new business, which can be deferred and dispatched at the convenience of the company at a time when immediate business does not demand the facilities.

A telephone connection is for a personal communication between two people personally present at the terminals of the talking circuits. The service, as given by the Bell System, is as nearly immediate as is physically possible. It is a service which must meet the convenience of those wanting the service, not the convenience of the Company. The calls for service are made during the active hours of the day and come in the most varying, fluctuating frequency during those hours.

If by some way not yet devised, there could be a telephone business developed which would be a waiting business to utilize these otherwise idle intervals, a much higher efficiency could be got from force and facilities and a lower price for that business might be made, but people do not want to attend at hours unseasonable to their personal convenience or comfort, nor could the parties wanted be found, for the unseasonable hours are the hours of recreation, rest, and sleep, and unfortunately the unseasonable hours for the public are the idle hours of the telephone system. If a deferred service could be spread over these idle hours a lower price would be possible. Such a business would have to be waiting business and, although the conversation might stand the waiting, the parties necessary to the conversation would not.

General business which from 1909 had followed normal lines rather closely, began to decline in 1913 and fell very rapidly causing great uneasiness and much disturbance and suffering among those dependent upon their work from day to day. The latter part of 1914 improvement set in in certain lines, prices of our export commodities commenced to rise, business soon rose well above normal lines and still continues so. The telephone business which fluctuates less sharply and more deliberately than general business followed in a degree the course of general business.

In the construction policy of the Bell System it is the aim to have surplus facilities to meet emergencies; in addition to this surplus there are in the layout of construction some parts which have to be determined and begun many years ahead, and for some parts it is economy to anticipate the growth of the future to avoid frequent and costly reconstruction. There is therefore at all times a large amount of advance facilities wholly or partially completed. In this way the Bell System is provided for all ordinary emergencies caused by rush of business, and can, at short notice, provide for abnormal increase within limits.

Following the course of business for the past few years, the additions to plant were $26,600,000 in 1908, $28,700,000 in 1909, $53,600,000 in 1910, $55,700,000 in 1911, $75,600,000 in 1912, $54,900,000 in 1913, $50,000,000 in 1914, $32,900,000 in 1915, and $66,200,000 in 1916. The figures show generally the trend of business and the policy respecting the surplus plant.

About the end of 1915, responding to general business, from about normal, the telephone business began to increase very rapidly, and soon the surplus facilities were drawn into service. Every effort was made to increase facilities by the rapid completion of construction under course and by new construction, yet before the middle of the year there was in many places more or less congestion and it was often impossible to give the usual immediate service; the sporadic character and fluctuation of these demands increased the difficulties. Although all demands were met with an average delay which would seem inconsiderable in any other system in the world, it was not immediate service. During the late summer and early fall

the congestion was still more aggravated and complicated by the " epidemic " which caused so much domestic uneasiness and anxiety. Had it not been for the surplus and advance construction of the companies the results would have been disastrous; as it was they were almost if not quite negligible. Had it been possible to obtain deliveries of material ordered, even that ordered some time before the congestion set in, there would have been in all probability no appreciable delay in our service, if any.

This is not an excuse, because everything was done that human foresight and past experience indicated should be done. It is a statement of the reasons; reasons which should be understood and appreciated because of the costly effect of the disastrous failures in every line of business, particularly that of transportation, to meet the current demands or even positive undertakings. The failures on the part of the industrials were caused by a lack of plant and equipment, and on the part of the transportation lines resulted from their not having a sufficiency of equipment, terminals, and other facilities, even that sufficient for their normal growth. These failures have been costly and disturbing, and unless soon corrected, will be disastrous; their cost to business generally has more than equalled what it would have cost to provide against them.

In ordinary industrials and in transportation, there is great elasticity; increased output or capacity can be obtained by overtime, 24 hour days, or by crowding the facilities. As is well known, there is no elasticity to a telephone circuit. The demands for service come at certain hours which are fixed by the social and business habits of the public; by the times when the individual can be personally present and can reasonably expect to locate the distant party desired. Each circuit is, while being used, exclusive to the user, and can be used for no other telephone service. If there are parties waiting to take the circuit immediately following its release, the maximum service of the line can be obtained. If there are no parties waiting, then the interval between the demands is lost. The demand fluctuates hourly from a high peak of load during a few of the busy hours of the day to the very small demand during the recreation hours, and hardly any demand during the sleeping hours. This makes the service load of any telephone system a very low average. This average load will always be greatly

increased when there is enough congestion to make the service a slightly deferred service; deferred sufficiently to fill partially some of the non-busy intervals, but not enough to discourage traffic. This is what did happen during the abnormal season.

The additional plant in use including these large surplus facilities, provided without corresponding capital charges, and there being no increased distribution of earnings to the security holders, the net earnings show a large relative increase, notwithstanding very considerable increases in compensations and other expenses.

It should be remembered that a normally non-earning surplus plant is a necessity, that in 1916 this plant was by force of circumstances created an earning factor and to that extent the surplus earnings of the system were abnormal.

In addition to the strain on our facilities, there was a corresponding strain on all the personnel of the system — on the supervising, construction, operating staff. To educate competent operating force, as well as to construct facilities, takes time. The congestion therefore was taken care of by the efficiency, attention, interest and additional effort of the ordinary staff, increased as much as it was possible. The manner in which the entire staff met these demands and aided in maintaining the "Bell System" service, sustained and emphasized its superior character.

Having due appreciation of this extra exertion, faithfulness, loyalty and prompt response to the demands of the service, on the part of our employees, as well as the extra demands upon their earnings in these abnormal times, it was deemed not only proper but advisable to share with them this surplus. Accordingly a distribution throughout the system of a very considerable part of it was made as a bonus, a recognition and an appreciation. It was hoped that it would help them to a little merrier Christmas, and a little happier New Year, from the thought that while some trains were late, no embargo was declared and no deliveries were refused.

There are three principal factors in giving a satisfactory telephone service; a willing, efficient, contented and attentive staff in operating and construction; ample plant and equipment of the latest type and highest perfection, maintained as such by the continued evolution and progress of the service and facilities for giving the service; an expert staff of observers,

investigators and experimenters, all brought into operation, harmonious co-operation and that co-ordination that can be had only by an efficient, attentive and appreciative administration.

No division, department, branch or group can be either ignored or favored at the expense of the others without unbalancing the whole and creating immediate confusion and ultimate depreciation of service.

For the support of this, the revenue for the service from the public must be sufficient. The public, to pay this willingly, must be satisfied and receive at least what they deem to be an equivalent. The attitude of the public is determined by the quality of the service and by the attitude of those giving the service and coming in direct contact with the public; upon them depends in a great measure the ability of the Company to recognize services. When this is fully understood there should be no trouble.

While we have never doubted what the response of our employees will be, for we know what they have been, yet we want to express to every employee our great appreciation. We are all of us proud to feel that the traditions of the Bell System have been maintained and our promises to the public fulfilled.

An Address by Mr. VAIL at the Agricultural Mobilization Convention of the National Agricultural Society, at Washington, D. C., April, 1917.

EFFECTIVE MOBILIZATION FOR ACTION NECESSITATES THOROUGH PREPARATION.

THE great topic of the day is preparedness. It is a big subject, one that should be approached with due consideration and in no careless manner. Preparedness is the first necessity of protection; the only royal road to accomplishment. It means being completely ready for what is probable to happen, and in a general way for what is possible to happen. For what is probable we can prepare rather completely; for what is possible, only on general lines, but lines of flexibility, of adaptability to whatever may come.

The preparedness for our national integrity is a duty of the greatest importance at all times, and like all duties in life that are neglected and postponed, either from indifference or lack of appreciation, has come up to bother us. For indifference to, or neglect of, preparedness in anything a big price must be paid when the time of need comes. There is, of course, a great difference of opinion as to what the best preparation may be, but it must be remembered that there are many ways to do almost everything, one of which may be best, but the others so near best, that the difference will never be known. A thorough discussion, a little bending of the individual opinion, will find some way upon which all can unite and which will accomplish the purpose. To reach any degree of success in anything that involves individual freedom, activities and comfort, the way that is most acceptable to the largest number is the best way, providing it is based on common sense and experience.

As this meeting which we are holding is to consider preparedness for agricultural development, only the general underlying preparation for all pursuits and the special preparation for agriculture and its allied pursuits will be discussed.

We know enough, through our general experience, of what must be met in the life struggle, and what generally to prepare for; we know enough of all the possibilities to enable us to

lay the foundation for special preparation to meet particular emergencies.

The elementary fundamental preparation for life is the same for all, no matter what vocation or profession may be chosen.

That all may be ready for the duties and obligations of citizenship and that unnecessary handicapping of the future may be avoided, this fundamental elementary education and training should be obligatory. It should be given in that period devoted to primary and secondary education.

It should consist first of a thorough grounding in elementary learning, a sufficient knowledge of the structure and composition of language to enable one to read understandingly, reflect logically and converse intelligently; the elements of the history and structure of the social, material and physical world; the use of numbers and figures sufficient to solve all the everyday problems of trade and commerce in ordinary life.

Physically, carriage and movement of the body, cleanliness, orderliness, respectful personal appearance should be taught. The day of slovenly, disorderly, uncouth action and appearance is past except for the primitively ignorant.

All should be drilled in such exercises as will give the body and all its members flexibility, activity and ready response to the will or to command, and all should be instructed in the doing of the little things that have to be done in everyday life and in self-dependence; independence of others in service, particularly in small things.

Thorough training should be given in concerted action not only as groups or masses of individuals, but as assemblies of discussion and decision.

Patriotism, the duty and obligation of citizenship, and the advantages and benefits coming from the observance of those duties and obligations, should be taught. The interdependence of the whole country and the direct or reflex action of the happenings of one section upon other sections and upon the whole should be impressed in an understandable way. Democracy in social affairs should be taught. All should learn and appreciate the subordinating of personal, independent or selfish action or opinion to a common understanding; to a sympathy of action for the benefit and comfort and peace of all, and also, that receptive discussion and reciprocity in action is the basis of all social comfort and prosperity.

All these things can be acquired, almost unconsciously and without any unusual effort in the years devoted to primary and secondary education, and if properly taught there will be formed at the same time habits of application, concentration, thoroughness; of industry, avoidance of waste — thrift — particularly in small things and in small ways; and appreciation of the value of the aggregation of small things. If small obligations and responsibilities are given, ability to meet the larger obligations and responsibilities of life will be developed.

This is the preparation all need, whatever the walk or position or work in life. Upon this foundation any structure can be built, and without it, no matter what the special training or education, there will be a handicap, a handicap which will always exist, although it may apparently be overcome by extraordinary application, concentration and industry.

Remember that "preparedness is the first necessity of protection and the only royal road to success and accomplishment;" and also remember there is no royal road to accomplishment except that constructed by personal effort. No instinct, inspiration, genius or other endowment will take the place of individual effort. Many are endeavoring to find, or think they have found, a smoother and easier path, but all methods in their finality depend upon the personal efforts of each particular individual. Ease developes soft muscles. Rugged work, physical or mental, develops ability and capacity. The training, mental and physical, attained in the mastery of our elementary knowledge, and in the accumulation of experience in the doing of small things will create the necessary force and capacity for the mastery of greater things.

Having achieved the necessary fundamental preparedness, what is the special preparedness for rural and domestic pursuits?

The history of the past may light the way for future progress.

Agriculture with its associated and allied industries is the oldest vocation of the settled world. The experience and traditions of centuries had established practices which gave results comparable to the best of modern practice. Rotation of crops, thorough preparation of the soil, intense cultivation, high fertilization, and the improvement of domestic animals are older than history. Works upon agriculture written as long ago as

the beginning of the Christian era or before, with some slight modifications, could be now used for text-books for a good part of the practical work. In place of belief in scientific explanation of the "whys and wherefores," there were more superstitutions, beliefs in omens and signs.

Until the middle of the past century, the greatest part of the people in the greater part of the civilized world depended upon rural occupations and lived in rural communities. All the necessaries of life, and most of the luxuries, the larger part of everything consumed or used on the farm, were raised or made on the farm, whether it was food, clothing, shelter or tools and equipment. The ways of intercommunications and intercourse and methods of distribution were crude, locally restricted, difficult and undependable as compared with the present. Though rural life was crude and had its deprivations, yet it had its abundance and its compensations.

Agriculture and its allied industries was the most prominent and extended of all vocations, the greatest dependence of the greatest number of people. It was second to none in importance, prestige or the consideration in which it was held. There was for the rising generation more inclination to and opportunity on the farm than elsewhere. To hold land was the chiefest ambition of all.

There was necessarily a degree of self-dependence, of independence of the service of others, that does not now exist. Home training was, relatively to what needed to be learned, more complete than now. The conditions to be overcome and the inadequate resources developed resourcefulness and adaptability, mastery and self-reliance at an early age.

To a greater degree than in this country the position of rural life in the old countries still retains its old time prestige.

The change in this country came with the opening up of vast areas and virgin country, with a soil fertile beyond imagination from the unremoved vegetable growth and the rich alluvial deposits of centuries. These lands were cheap and would yield great crops year after year, without any apparent decrease in fertility and with indifferent or careless cultivation. Such cultivation was justifiable. Under the existing labor and other conditions a 75 per cent. crop could be made and harvested at a profit, while to attempt to make and harvest a 100 per cent.

crop would result in loss if not failure. There were vast ranges for grazing, upon which almost unlimited amounts of animal food could be cheaply produced.

For all this production there was relatively little home consumption. The enormous surplus had to be disposed of elsewhere.

The opening of this great country was made possible by and also made possible those great extensions of ways and means of intercommunication and transportation which developed so rapidly in the latter half of the past century — those great and dependable systems which are bringing the world into closer and closer touch and greater and greater interdependence — which placed all the markets of the world within reach of the surplus of this new production. Cheapness of production and cheapness of transportation made it possible to supply the older parts of our own country, and the deficiency and even the demands of the old countries against local or foreign competition.

This same cheapness of transportation for the collection of raw material and the distribution of finished products, and sound economic laws for the encouragement of home industries made possible those great centers of industrial production, where every article or commodity of domestic use for the supply of all necessities is manufactured, and where specialization, the use of machinery, scientific methods, system organization, utilization or avoidance of waste, have so improved the quality and cheapened cost that home production has in a great degree been discouraged. These industrial and commercial centers are the great centers of surplus food production.

Farming as it was once carried on became a lost art. Specializing in the various crops and meat products became the practice in the new country, while in the East the farms not abandoned became manufactories of dairy products from Western grain and of hay or green groceries to supply the great industrial centers, or in specializing in the raising of domestic animals for breeding purposes. There were few farms upon which more than a small part of what was used or consumed in the house, or even on the farm, was raised or made, and if raised the raw material was, more often than not, manufactured into form for consumption at the industrial workshop. The

farmer depended on the butcher for his meat, on the baker for his bread, on the creamery for his butter and cheese, possibly made from his own milk, and on the cannery for his supply of green vegetables except for a short season of the year.

Home training disappeared; the alluring tales of the attractions and the possibilities of great centers of industry and commerce drew many of the choicest of the rising generation from rural life.

This period may be called the period of decadence of rural life and rural pursuits.

The strength of a nation is in its abundance of homes — homes though of small size, of abundance of comforts and plenty of all that is essential. We are on the threshold of such an era. Country life and country pursuits have become more attractive and more profitable. Opportunities for moderate but sufficient success are as great in rural pursuits as in the great centers of industry, while the comforts and even luxuries that are now available in the country put it on a par with urban life, if not superior.

The day of the close relation of production and consumption in the household or in a restricted local way has passed. The two have become separated. Few realize the absolute dependence of all, upon others, for even the common necessities of life; few realize the machinery of service, of collection, manufacture and distribution that has to be set in motion before the breakfast of the humblest wage-earner can be set before him. Few realize the complicated systems of collection, exchange and distribution that have to be established and maintained for the benefit of all. Few appreciate the extent to which specialization, use of machinery, systematic and organized operation, avoidance or utilization of waste have improved quality and decreased the relative cost of the unit of production. Luxuries have become necessaries and necessaries have increased to a point undreamed of in the past. This is economically sound if properly appreciated and reasonably indulged in, but the abuse is in the national tendency to dependence upon others.

The economic truth is, that where one has proficiency in one line, it is thrift and economy to sell one's time, work, or special product and buy the necessities of life.

The economic fallacy is to buy that which can be produced by one's own work, when one cannot sell time, work or products,

or has abundant spare time. That is extravagant and thriftless as well.

This discrimination should be thoroughly understood by all; its practice will enable one to accumulate for the future and will provide many comforts and even luxuries for the present that otherwise could not be enjoyed.

Agricultural prosperity is based on a ready market for all surplus production.

The wise economic policy of the past which encouraged home industries and the extension of means of intercommunication and transportation, built up those enormous centers of commerce and industry which are the great centers of consumption of agricultural products. Home consumption has in some products overtaken production, and soon will in others. The possibilities of our agricultural production will provide for any future growth.

The more nearly consumption equals production, and the nearer the point of consumption is to the point of production, the better the price for the surplus production and the more prosperous the producer.

Prosperity creates a demand for all products, commodities and services; prosperity means good wages and dependable employment for all.

With dependable employment and good wages all can afford to pay good prices.

With undependable employment and scant wages few can afford to pay even low prices for anything.

If a wise economic industrial policy is followed, if our home consumption is maintained by a wise policy of encouragement and protection of home industries, intercommunication and transportation, there will be no decrease in our prosperity. It is particularly necessary that we adopt a wise economic policy as the foreign market is fast becoming a more competitive market. There are vast territories of virgin fertility now ready for opening in other countries. If we protect and encourage home industries we will protect and encourage home consumption. With any degree of intensified operation, our area will easily provide all that is needed for many times the present population. Rural life will come back to its own, without the old time isolation, separation or drudgery, impossible under modern progress and development.

Agriculture will regain its old time position, the prestige and consideration of the olden time.

The rural home, with its diversified production, will be restored. The farmer will be the power, the influence in the land.

For these new conditions, if agriculture is to be restored to its prestige and prominence, preparation is necessary, ignorant and shiftless methods will not bring it about. The time must pass when the farm is the last resort for livelihood, where anyone who wants to make some sort of a living can make it in some sort of a way on some sort of a farm, when book farming is a reproach.

Where a man is content with all that is necessary to the comfort and enjoyment of life, and is dependent upon his own efforts or labor, or his close touch and direction of his work, as 95 per cent. of the people of the world are, there is no industry from which one can get more than from agriculture. There is no industry where he who must put forth his own efforts can provide for himself and family such a clean, comfortable, quieting and sufficient environment. But to get that, the brains and the hands must work together, intelligently, and with full knowledge from experience gained. There is no industry where there can be more waste from inconsiderate trifling with time and small things than on the farm, but there is no industry which is so responsive to attention to details, or so flexible within reasonable limits to our inclinations or our recreations and enjoyment. The successful farmer within reasonable limits sets his own hours for labor, is his own capitalist, his own boss, and to a degree far beyond any other industry is independent of the service of others.

Agricultural labor is no longer perfunctory seeding and harvesting. It has all the fascination of work done with intelligence and with that knowledge of and interest in cause and effect, the " whys and wherefores " which appeal to the imagination of those who like constructive work and have ambitions and desires above the mere drudgery of labor; it has that life and spirit which distinguishes between labor and recreation, in the doing of things.

Research, investigation and experiment have been carried on both by the government and by private institutions in agricul-

ture and its allied industries. The results of this work which have been established by actual demonstration are wonderful. Reasons have been found for doing that which experience taught was necessary to do. Short cuts to results, economical practices, the "whys and wherefores," have been uncovered or discovered. Machinery has simplified much of the work.

Agriculture has become a profession and business as well as a trade, and must be prepared for in the same way. To a great extent the same scientific and experimental investigation and practical application; the same organization and system; the use of machinery; the same industrial and economic efficiency which has done so much for all other industries, can be applied with advantage to agricultural industries. Records and accounts should be so kept as to differentiate between capital and revenue — particularly whether revenue or profit are due to depreciation of plant or equipment, or appreciation of values rather than result of economic operation. There is no industry in the world where apparent profits from depreciation of plant and equipment, particularly of buildings, tools and machinery and from soil exhaustion, are so often mistaken for profit from operation.

Intelligent and successful operation now requires special study and preparation to be obtained only in educational or preparatory institutions through a more or less extended course of study and practical work.

There are schools, colleges and other institutions where the necessary training in the science and mechanics of farming can be had. All of this is within the reach of everyone, and can be obtained with as little effort and cost as anything worth having can be obtained.

It will be difficult, if not impossible, to make much change in those of middle age who have settled down with well defined habits and have accepted certain conditions and are satisfied with them. The work for the future must be done in the present with the rising generation who if not impressed with the desirability as well as opportunity of rural life and rural work will seek elsewhere.

Farming is no more a royal road to success than are other industries, nor can it be made the source of great accumulation of unnecessary and burdensome wealth, but with the industry,

thrift and intelligence that success in any line requires, it can be made to provide with comparative ease and certainty all that is necessary, a full sufficiency for any rational, reasonable human being and for his family.

To get all there is to be gotten out of rural life, the farmer must keep in close touch with the world, should know and understand what is going on in the world, should understand the conventions and organizations of the social, commercial and industrial world, should organize and co-operate in the co-ordination of all activities in each section to the end that standards shall be established, the best markets secured, and particularly should appreciate the advantage of co-operation in the purchase or sale of products, of bringing to their doors the middle men of trade and commerce, instead of being forced to go to them. The farmer should not isolate himself and become narrow, full of prejudices and unintelligent conceits, as those who live too closely by themselves are apt to become.

Farmers must not allow those who promise everything, but have never performed anything, to influence them and guide them into all sorts of plausible but impractical reforms which are impossible of fulfillment and lead nowhere.

They should not be deluded by specious promise of special or class legislation, or immunity from those obligations which should rest alike on all members of the community. The farmer should insist on legislation based on sound economic laws, long time experience, and sound common sense. They should insist that no legislation be enacted as a sop to passing prejudice or temporary fads without the intention of enforcing it, and that all laws should be based on the best interests of the community as a whole and administered and enforced without favor or partiality.

Trust should rest with those who have demonstrated ability and honesty. Votes and influence should not be traded off for promises. Remember promises are for something to be delivered in future, but generally paid for in advance, and without anyone's guarantee except the promiser. Unless a man has an established reputation no one entrusts him with his valuables, therefore don't put into the hands of the untried the control of affairs either personal or public, the most valuable interests of the community.

Be constructive, not destructive; be conservatively progressive, not retarding.

Do not for a moment imagine that there will not be prenomenal instances of individual accumulation in other lines and pursuits. In a race of strong men there will always be giants of strength. In a race of well educated and well informed people there will always be intellectual supremacy. In a country filled with prosperous people there will always be great concentration in industry, commerce and trade. Let those who want the burden of great things have it. There may be satisfaction of an evanescent illusory character, but remember that there are burdens and disappointments more than sufficient to offset.

Don't try to get all of everything. If there is to be production, there must be distribution and consumption. There must be trade and exchange, for without them there will be that primitive isolation which will entail deprivation even in the midst of abundance.

Co-operation and mutuality in the activities of a large number of small units will give all the advantages and few of the disadvantages to be obtained from great, concentrated units of activity under one control.

The power of the masses when exercised in unison and under common impulse is greater than the power ever exercised by the absolute dictator or despot.

My effort this evening has been to set forth some of the factors necessary to the improvement, betterment and extension of rural industries. That is the object of this society. Its object is not so much to do, as to assist in doing, to bring together, so that all may know and benefit by what is being done, and to avoid the waste of duplication, and utilize the experience of each for the benefit of all.

We Americans are apt to underrate the necessity of preparedness, and overrate our capacity for meeting emergencies as they come. We are all proud of our Americanism, which if of the proper kind is optimism based upon thorough knowledge, thorough preparation, and thorough accomplishment. There is an exaggerated so-called Americanism which underrates difficulties and overrates the power of doing. Do not let us indulge in this false notion in our constructive work in the advancement of agriculture.

One word of our country and the great crisis through which it is passing. Do not let us underrate the possibilities or underrate the necessity of thorough preparation to meet it. Let us all, whatever our sectionalism, whatever our partisan faith, whatever our original nationality, be only Americans and support our President and our Government in the doing of everything necessary to establish and maintain our national rights and our national honor. Do not expect too much too soon; remember that the preparation not made, because of lack of appreciation by the country as a whole of the necessity, will take time. Be patient, calm and firm and all will be well.

Address by Mr. VAIL at the Commencement Exercises of the Graduating Classes of Lyndon Institute and Lyndon School of Agriculture, Lyndon Center, Vermont, June, 1917.

GRADUATES: We are meeting this year under vastly changed world conditions. Last year we seemed to be far removed from, and we had little appreciation of the upheaval which was unsettling and disturbing those adjustments of the old world which were the result of centuries of conflict, concession, and natural tendency. To-day we are a part of it.

Last year we were observing what lack of preparation meant to those engaged, while we tentatively discussed preparedness for ourselves. To-day we are beginning to realize what the lack of preparedness means to us and we are beginning to acknowledge that, were it not for the wall of preparedness erected by our allies in the face of all sorts of difficulties, we would be face to face with disaster.

The conditions existing are very grave, any unfavorable outcome would be appalling, but, thanks to our allies and fortunately for us, the only excuse for any unfavorable outcome will be our own over-confidence, our own failure to make every possible preparation and mobilize every possible resource. To do this in any half-hearted indifferent way, or to regard the conflict confronting us as an easy one, or our natural participation as remote, will invite disaster. Not enough preparation will be almost as fatal as none, while there will be no waste by getting ready a bit too much.

Never mind your personal opinions, your party affiliations, personality, partisanship, religion. All now must be sunk into our Americanism, into that democracy of which we are the greatest exponent and toward which the whole world is tending.

Remember that the origin of, and reason for all government is protection of society and of the individual and his property. Whether the form of government be democratic or autocratic, it is necessary to have rule and regulation, convention and laws, based on experience, wisdom, and good common sense. It must be a thoroughly systematized organization having authority to impose its laws and regulations upon all and to punish those who will not submit. In times of emergency that government

must be protected. Our lives, our liberty, and our substance is dependent upon the stability of government, therefore we must protect it with all our powers, our substance, our blood, our lives if necessary.

Democracy is the organization of society for its regulation and protection, by and through the voice, the will, and the power of all as expressed by a majority and exercised through chosen representatives. While in a democracy there may be differences of opinion, though a large minority may dissent from the opinion of the majority, yet so long as it is the lawfully expressed dictum of the majority it must command respectful obedience; anything else would be anarchy. This does not deprive the minority from voicing their opinion nor doing all in their power to convert the majority to their views providing it is not open defiance or active rebellion and their acts are subordinated to order and authority.

The basis of all government is the supremacy, the superiority, and the power of those who rule.

Autocracy is based on the supremacy of a few and the ignorance of the many. Democracy is the result of the spread of intelligence and the dissipation of ignorance throughout the many. The continuity of any form or of any particular government is based on the wisdom, knowledge, and justice with which it is administered.

Unintelligent democracy is anarchy, socialism and everything else bad in 'isms. Unintelligent autocracy is despotism, tyranny.

If all, or a majority of all, are to make the laws and conventions of government, and appoint the agents who will exercise the authority of government, then all must be thoroughly prepared for that duty. Democracy cannot survive together with ignorance, intolerance or insubordination. To maintain your freedom as well as to maintain your manhood and ensure your comfortable existence, education is the first necessity. In schools such as these you are laying the foundation for that education, getting the fundamental training and knowledge. The more thorough the work you do here the better you will be prepared for your future. The better the individual's preparedness for his obligations in life, the better will be his life and the better will be the society and the government of which he is a part.

Teachers, scholars, and parents should never forget that the school is established to teach things already ascertained, established and generally accepted, and to train and form the mind to habits of study. Theories untried and 'isms unestablished should be left until the mind is mature, until correct habits of investigation and reason are formed, and particularly until after the individual mind thoroughly understands the whys and wherefores of existing things.

We must not go to the extreme of believing that any education, any preparation, can entirely change or overcome the inherent or inherited qualities or characteristics of the individual. Throughout all nature inequalities or rather what should be termed differences exist. They always have and always will exist. For what you may be or what you may have when you come into this world you are not responsible. It is for what you become, for what you make of yourself that you, and you only, are responsible, and for which you are answerable and must give an account. All that is expected of you is to make the best of everything that comes your way, of every opportunity. Everyone is endowed with the ability to do that, and endowed with the capacity for happiness and enjoyment. Everyone is endowed with every possibility necessary to attain all the pleasure of living, that is within the reach of any. Everyone is fitted for some position, some duty, some obligation in life. Find it and make the most of it. Don't quarrel with fate because you may not have or get what you think you want. After you have put forth every honest effort, and then not got what you want, before complaining find out if what you have is not as good or better than what you wanted, or at least first find out all that there is of good in what you have. In this way only can contentment and happiness in life be got.

Never, however, forget one thing, that you can only get for yourself, or retain that you may have, by your own work and your own effort. It is the overcoming of obstacles and the accomplishing of things that gives you strength and power and brings achievement, and it is only through achievement that satisfaction comes.

I wish you all success in life through a useful life, and as you will pass before me I will hand you your diplomas, which certify that so far you have met your obligations and performed your duties.

Two Articles by Mr. VAIL in "Agricultural Digest" for August, 1917.

1. THE WORK OF THE FARM WOMAN.

NEVER was there a time when "the woman of the farm" could co-operate to greater advantage to the benefit of the family, to better general conditions and to help the country at large than now.

Peculiarities of farm life on the small farm are well understood. There is the farm where no hired help is continuously employed or employed only to help out in busy periods, and there is the farm where one or two men are continuously employed, and so on up to a large and continuous working force.

The size of the farm and the amount of work, particularly after chores, regularly done by the members of the family, regulate the employment of continuous outside help, and the amount of work done by members of the family in times of planting, cultivating and harvesting regulates the temporary help employed.

While few like to admit it, there is no class of labor in which more time can be wasted than in work on a farm. The needs of farm labor being variable and the worker changing from one job or chore to another, the inclination is strong to put off work when an idle neighbor comes along and stops for a little visit. Horses loafing along the road or along the furrow also contribute to this waste of time in no small degree.

The man in an industrial shop works his eight hours only, yet his machine is geared up to and regulates the pace at which he should and does work. Outside of his lunch hour there is no stop or let-up and his output is the maximum of his day's work. If the farm laborer worked at the same pace with the same uniformity and as continuously as the worker in the industrial shop, few farm laborers would have to work the equivalent or average of eight hours a day at any season and none would have to work eight hours the year round.

Now in these times farm work can be geared up a little and there are many light chores now done by the man which could be done by the woman and children. There are few averaged

sized farms where the products could not be developed even more without additional help. On most of the farms larger gardens or more fields have been planted, and the worry now is mainly over the scarcity of help to cultivate the additional acreage and harvest the crops. The solution lies in the elimination of waste time and waste effort on our small farms. A little less time in changing from one chore to another, a little gearing up in the speed of work of both man and horse, a little less of daylight idleness and visiting, a little more co-operation in harvest time by neighbors, and much may be accomplished. In this a woman, a child on the farm, can aid materially by taking over some of the lighter work which otherwise takes up the time of the man.

Reflect and think back to fifty years ago. It was then thought almost disgraceful for a man to milk the cow or feed the chickens or do many of the lighter chores about the house if there were women and children who could do them. And the work in the house was greater. There was no creamery to take the dairy work away from the women; there were no sewing machines, and all clothes of men, women and children were made in the house; there was more work in the preparation of food for the family, yet there was health and prosperity for all.

The solution of the labor question on the small farm, temporarily, at least, is the planning of the work in order to effect the largest result with the least labor. Application and concentration upon the work in hand will do much to lead to this definite plan. When the work gets heavier and needs two or more working together or a larger force of workers, neighborhood co-operation will help to solve the problem. A few more daylight hours and the women and children enlisted in the lighter temporary work suited to their physical ability and the result will be astounding.

If these things were done, as they should be done now of all times, there would be little complaint of hard times or lack of profit on the small farm.

2. OUR DUTY IN THE WAR.

We are in this war. We are in it to stay. The sooner we become effective, the more help we can give, the less we will have to do, and the sooner it will be over. The more dilatory we are, the greater burden we shall have to bear. Minutes of delay now mean days, weeks or months of waiting later. Time is the very essence of, the most potent factor in, our duty in the world war. Procrastination now might well be the thief of our success in what we have whole-heartedly set out to accomplish.

War is wasteful. Each life sacrificed now will save thousands later. Every dollar spent generously now will save thousands in the future. If we delay too long we may have to do the whole or at least the major part. This is no time for hair-splitting distinctions or invidious comparisons. Destructive criticism, useless at any time, is now disastrous. Arguments leading nowhere, which in times of peace serve but to cloud an issue, in time of war become dangerous obstacles in a path which is clear and distinct.

The discipline of the soldier teaches him to do willingly, unquestioningly, the things which are given him to do. In a sense all of us are soldiers to-day. Let us be good soldiers and discipline our minds accordingly. This is a time when we must all of us keep step and move along under one mind or create confusion which will render impotent everything which we undertake.

An Address by Mr. VAIL at the Opening of the Chamber of Commerce Building, at Rochester, N. Y., October, 1917.

INTERCOMMUNICATION — COMMERCE — CIVILIZATION.

"COMMERCE carries civilization around the world," is the inscription on your hall. To this might be added — "Commerce is carried around the world by Intercommunication and Transportation." Without these facilities "trading," which is primitive commerce, would have been confined to man's area of physical activity which, unsupplemented, is very limited.

The inscription under which your association lives, and the active participation of your early citizens in the organization and extension of the conveyance of intelligence by electricity — the greatest facility for intercommunication the world has ever known — that arterial system of commerce and civilization which establishes immediate personal communication between distant people and makes neighbors of all the people of the world — give to the subject of commerce and intercommunication a peculiar significance as a topic for my remarks this evening.

Most of us know — or think we know — in a general way what commerce is, but few of us appreciate its wonderfully involved and intricate and interdependent structure, its importance and what it means to the world; fewer understand the economic laws which govern commerce.

A very competent authority recently stated that we are a nation of economic illiterates.

When we listen to or read some of the discussions both in and out of Congress on finance, taxation and collateral subjects, and examine some of the proposed legislation, there seems to be a foundation for this statement; and with the greatest respect for those who are actively engaged in commercial and financial affairs, while they have a masterful knowledge of the technique, there is, without doubt, a great lack of understanding and appreciation of the fundamental principles of modern commerce, of its big issues and movements and what they mean; a great lack of understanding the essential factors and indispensable ele-

ments in its upbuilding and continuity, and of knowledge and appreciation of the laws that govern it.

We, most of us, are apt to judge entirely by superficial indications. We congratulate ourselves on being the most wonderful, progressive and accomplished people in the world when all goes well; we take alarm at the surface ripples of slight disturbances; we cower and tremble and lose our self-control under the great disturbing and apparently destructive movements caused by the cyclonic storms of panic or loss of confidence. Instead of losing our heads and aiding panics we should face them with understanding, we should regard them as the clearing way of unsettled conditions caused by political or economic unreason. We should apply our energies to the avoidance of disaster and preparation for conditions and readjustments which must follow.

No thorough understanding of anything can be had without a knowledge of its origin, its roots.

We can better understand commerce, what it is and what it means; its relations to and dependence upon intercommunication and transportation, by a brief survey of the evolution of man and social organization from the primitive condition. It goes without saying, whatever is created by man must conform to, or be shaped by, his characteristics.

Man is naturally a family or tribal animal, gregarious, suspicious of the stranger, unventuresome, believing in the supernatural, dreading the unknown, fearing the unfamiliar. The radius of his unsupplemented physical activity or power is very limited; brute strength will not permanently take him far. Whatever man has become, or is, or has accomplished, comes through the development of his mentality or intellectuality, and the use of them in the direction and control of his activities. The result of his activities is in direct relation to that development. His nature is not changed, but his limitations are less noticeable or more concealed. The contraction of the world, as measured by time, and familiarity with the world, brought about by intercourse, apparently increase his radius of activity. Intercourse has made the unknown, known; the unfamiliar, familiar; and has made neighbors, associates and friends of those who without it would be distant, unknown and strangers.

Commerce is based upon the desire to acquire or obtain something we wish or need, or to dispose of something we have or

for which we can obtain something to us more desirable. Supply and demand are the controlling factors which govern commerce. Around this has been built up the modern machinery of commercial and industrial development. Venture or speculation is a necessary and inevitable accompaniment of commerce or trading, but when either gets beyond the necessary and becomes controlling instead of subordinate, it is an excrescence, as a rule unhealthy and at times immoral, and oftentimes causes cyclonic disturbance. These are also controlled absolutely by the laws of supply and demand, for when the speculative demand decreases or is crushed beneath the speculative or real offerings, the speculative purchaser comes to grief, as does the speculative seller if the demand continues or increases beyond its limits.

Commerce is the advance agent of civilization. The trading paths of primitive commerce are paths upon which civilization has advanced. In our great country the trapper and hunter first trod the path over which Lewis and Clark later advanced on that mission which made secure the great Northwest as part of our country. The paths by which Livingstone and Stanley opened to civilization the great Dark Continent were broken in advance by the slave-trader or the ivory hunter. The commerce of the shores of the Old World developed the sailing craft which made possible the exploration of the vast unknown oceans, and the first hints as to the vast unknown Western Continent came from the venturesome traders of the seas.

Primitive trading probably bears the same relation to the commerce of to-day as "swapping" between children of a family or neighborhood, or the neighborhood exchange of various supplies which takes place at certain seasons.

The primitive man and his family were isolated and self-dependent. Everything used or consumed was necessarily produced or made by the members of the family. Families increased in size; the patriarchal group was formed. Intercourse and intercommunication began between neighboring families or groups. Individuals and groups of individuals broke away and allied themselves with other families and groups. The gaps between different peoples were filled or bridged. Intercourse became closer, dependence upon one another increased.

As knowledge of the lands beyond the horizon became more general, migration began from lands crowded, exhausted or in

other ways less desirable, to new lands. As the people spread over the face of the earth, larger grouping was brought about and nations were created by conquest or because of the security and protection which superior or united strength afforded.

In all this evolution, in all this spreading of the people on the face of the earth, intercourse, intercommunication, transportation, were both the cause and the effect. The extension of trading and commerce and the extension of intercourse went hand in hand, and as these grew, so grew dependence of individuals, families, tribes and nations upon one another.

Direct trading or exchange of articles when trading at a distance was clumsy, costly, difficult. To overcome this, credit exchange and tokens of value of general acceptance were introduced to represent the value of the articles traded for. Buyers and sellers, collectors and distributers, carriers, and other necessary factors and agencies in the conduct of commerce became necessary, and constituted what may be called the middlemen, the intermediaries of trade and commerce.

Few parts of the world were any longer dependent upon local production either for necessities or luxuries. The great extension of the radius and scope of all markets, and the increased and varied supply of all products, caused greatly increased consumption and use. With increased demand trade specialties became a feature, the differentiation in labor increased, and the work of each individual was more and more confined to that which he could do best. Automatic and semi-automatic mechanical production increased the output of labor. The " machine-made " supplanted the " hand-made " and put within the reach of all many things which before, if they could be had at all, were luxuries for the few. As these conditions became established, production and manufacture concentrated at the best situated, most available or particularly favored location.

Through and by these instrumentalities and these facilities great commercial routes and great commercial and industrial centers were built up, and the great systems of commerce which spread over and bind together the whole world were evolved. Many and romantic were the " rise and decline " of some of the one-time commercial and industrial centers and great routes of trade and commerce.

It is apparent that this development rested upon intercourse, intercommunication and transportation, and could extend no faster than the basis upon which it rested.

As the radius of man's unsupplemented activity is very limited so was primitive intercommunication limited.

We can trace the development; starting with man toting the pack or carrying the parcel overland, or poling or guiding the rude float along the inland waterways and shores of friendly seas; then the development of the auxiliary sail power and the introduction of the domestic animal, either as a pack animal or as a prime motor for the sledge or wheeled vehicle. For untold centuries these facilities evolved gradually but slowly, marked by special advances at different times. During the 15th, 16th and 17th Centuries the intercourse and familiarity of man with the lands beyond increased considerably, and as this intercourse and familiarity increased the civilization of the day spread. During the Eighteenth Century the progress of the wheeled vehicle and the deep-sea and interior-water sailing craft made exceedingly rapid strides, reaching a high state of perfection in the latter part of the Eighteenth and the early part of the Nineteenth Century.

It was thought by many, and freely talked, that the climax in the way of progress of intercommunication had been reached in the wonderfully horsed stage coaches and in the clipper ship and horse-drawn canal packet, and even in railroads for horse-drawn carriages of the early years of the Nineteenth Century. This may be termed the "animal" period of intercommunication.

The impression of superiority of these methods has not yet, even in the light of the improvements of the past century, lost its potency or its power to conjure with. That this is so is shown by the still existing and sometimes exceedingly active propaganda for building new waterways and the creation of a vast fleet of sailing ships, and particularly by the millions appropriated every year to make ocean ports of interior towns and make dry creeks navigable.

During the latter part of the Eighteenth Century a new prime motor was being developed. The internal combustion engine was suggested but abandoned to be taken up and developed a century later. Steam pressure, which had been under observa-

tion from before the beginning of the Christian era, was rapidly developed until as a stationary prime motor it had become an effective addition to the industrial forces of the world.

In the early part of the Nineteenth Century the use of this prime motor for both land and water conveyances was introduced, and made exceedingly rapid strides from substantially nothing, a century ago, to that most wonderful system of rail and water lines of the present which connects the whole world into one intercommunicating social and commercial group.

With the increased distance and the increased volume of commercial transactions, time in the exchange of views became a very important factor. Time in transportation of commodities could be provided against, but not the time required in the negotiation of distant transactions. Conditions might change. Under unknown conditions distant trade or commerce became speculative. Stability and certainty could be based only on known conditions. The need of a more immediate, a quicker, transportation for the exchange of views became a necessity, and necessity, they say, is the mother of invention.

Many were the attempts made to shorten the time taken in the distant transmission of personal communication and intelligence, signals of all kinds, semaphores, express riders, express packets by sea and express coaches by land, but all of them were either limited in their usefulness or in the time saved.

For many years electricity, magnetism or galvanism — a new force, which was destined to revolutionize the economic and industrial world — had been experimented with by scientists and savants.

About the time when your city was being connected with the outside world, Professor Henry, a citizen of a neighboring city, was engaged in electrical research and experiments which resulted in the development of the electro-magnet, upon which is based electrical transmission of intelligence and the use of electricity as a motive power for all industrial purposes.

Following the discoveries of Henry many ideas evolved by many people for its application to all sorts of purposes, particularly to the transmission of signals between distant points. Invention is but evolution, and successful adaptation of invention to practical uses is the direct result of persistent personality directed by common sense. However meritorious may have been the ideas of others, there was one struggling artist, S. F. B.

Morse, who came by his intellectual inheritance through powerful ancestors. Morse became obsessed with the idea that if an electrical signal could be controlled and conveyed over a distance of a yard or a mile, it could be conveyed and controlled any distance and made the servant for instantaneous personal communication.

It certainly took imagination to conceive the idea of putting the whole world into instantaneous personal communication, and it also took persistency and practicability to overcome the prejudices and doubts of others who could not see in this impuissant electro-magnet of yesterday the potentialities which have been developed and are so effective in all lines of industry and utility to-day; nor could anyone have dreamed that in that simple device lay dormant the transmission of personal communications and of the spoken voice around the world.

Neglecting his profession, struggling with poverty, his ideas rejected by his friends and those he tried to impress, he maintained his faith; his courage never failed. Morse was neither a capitalist, an electrician, nor a mechanic, and to develop his idea these were essentials. It was not until he formed a partnership with Alfred Vail, of Speedwell, near Morristown, New Jersey, in whom he found an educated scientist, a practical mechanic of an inventive turn of mind with a capitalist and a manufacturer, of advanced ideas, for a father, that the opportunity became full-fledged and completely manned. There has been some discussion, sometimes verging on acrimonious dispute, as to how much credit was due to each, but it would seem as if there were enough for both, and the individual peculiarities of each of the partners would indicate just what each was entitled to. But one thing must be remembered, that no invention, however meritorious, ever pushed itself, and we must recognize that to Morse's indefatigable persistency and intense and impressive personality the early progress of this new and advanced factor of progress was due.

It was at the Speedwell Ironworks, owned by Judge Vail, that the engines of the first steamship which crossed the Atlantic were built, and among the first locomotives used in this country were those built by the firm of Baldwin & Vail, the predecessors of the present great industrial establishment, the Baldwin Locomotive Works.

These incidents are related to show that the capital furnished Morse was not from any speculative promoter, but from one who had experience in and was a believer in the advancement and extension of intercommunication.

An interesting story is told about the experiments on the telegraph at Speedwell. In a building apart from the main works Morse and Vail were working along, with the usual discouragements and without marked result. Time was passing and the allotted money was going. The Judge was beginning to doubt the outcome, and both the young men avoided meeting him whenever possible, fearing his questioning.

At last success was achieved, the signals were successfully transmitted; the Judge was asked to visit the experiment shop. He listened to the explanation, but wanted a demonstration. Writing upon a slip of paper — "A patient waiter is no loser," folding it and giving it to one of them, with the other he went to the room in which was the other end of the line. It came over the wire, as written. This was the first telegraph message that was ever transmitted. The rest of the development is history.

The existing facilities for intercourse, intercommunication, and transportation, had done a great work. The necessity existed and the field had been made for quicker, more personal communication between far-apart places. Electrical transmission put the flare, the materiality, of personal intercourse into negotiations between distantly separated parties. Never had the opportunity and the thing required come together so opportunely.

The introduction of the new invention into commercial use was through separate and unconnected enterprises. Independent lines were built by independent associations, each connecting a few of the important cities. Through routes and through circuits were unknown, frequent relays and transfers caused delay, retarded transmission, and the possibilities that should attend this method of communication were far from being realized.

This was recognized by a few men, foremost among whom were citizens of your town, under the lead of one who became the greatest promoter of the new birth of this industry, Mr. Hiram Sibley.

Here in Rochester was born the Western Union Telegraph Company, which combined the scattered, struggling enterprises

which followed the first introduction, and molded them into one efficient whole. Here was organized and from here radiated the greatest telegraph system the world has ever known, or will ever know.

The organization of the Western Union had more than a passing significance; its founders builded bigger than they knew. It was the first application, if not the first recognition, of that great principle which underlies modern efficiency in utilities and in industries, particularly those of transportation and transmission. It was the beginning of those great combinations which, economically sound, have contributed so much to the prosperity of our country. The action of your citizens met with country-wide approval, and was received with country-wide enthusiasm.

In the organization and operation of the Western Union was first recognized and introduced the idea of "through connections," "through routes." It was the beginning of continuous service from origin to destination. This sounds simple but it is the great principle upon which all freight, express, through-passenger and sleeping-car service is based to-day. It was the first combination, into an operative whole under one control, of a number of separated entities, whose separate services combined constitute a complete service. These "principles" constitute the greatest factors in the world's progress in economic development and are the principles which stupidity, prejudice and ignorance, backed by political demagogism, are trying to destroy to-day.

In the development of the telegraph came many experiments for its multiplication and in the course of them it was found that musical notes could be transmitted by electricity. If musical notes, why not vocal sounds? There is a marked difference between the vibration of a musical tone, and of a vocal sound. To solve the problem a knowledge of acoustics was necessary, and was introduced by a young Harvard professor who was experimenting in harmonic electrical transmission. Within a quarter of a century after the first practical electrical transmission of intelligence, was also developed the transmission of the spoken voice by Professor Bell's discoveries and inventions. The evolution of this is well known to you all, too recent for historical narrative, and my connection with it too intimate for me to be the historian.

To one who has covered the period from the first introduction of electricity to its operations at the present day, who by personal recollection and experience knows of what was then and what is now, all seems like a romance. One who knows only the present cannot realize what has been done, what changes have been brought about by the introduction of personal intercourse between distant points, and the neighboring of all the people of all the world. We do not yet fully comprehend what is and will be its influence on the conditions of the life, the character and habits of people.

Neither the exchange of ideas or intelligence by means of personal communication electrically transmitted, nor the bringing of people physically remote into mental contact by means of the transmission of the spoken voice has by far reached its ultimate usefulness and development of all the potentialities of wire service. Although the telegraph and the telephone, which are not competitors with each other, but natural complements to each other, are forced to maintain a separate service and operate as though they gave the same service and served the same purpose, there are still great possibilities ahead. If, however, the natural and inevitable principles, which should govern all service of all kinds, are allowed their natural course, and these two utilities, which have been recently divorced, should again be united, there are possibilities of improvements in service and potentialities for new service which for benefit and advantage in every direction are so far beyond anything the public is now getting, and will include such great economies, that the present service, great as it is, will seem crude and costly in comparison.

There are many services in this world which are not by nature competitive, from which to get the greatest possible benefit they must have complete co-operation in operation, co-ordination in service, unity in action, which only single control can effect. The public sometimes are slow to realize but are certain in conclusion when they do fully appreciate and understand.

A new era is now under way in the application of electricity to industries, in the development of the internal combustion engine, and in the wonderful metallurgical development, particularly in the tremendous increase in the efficiency of iron and steel and its alloys, all of which and many more have been brought about by bringing the laboratory conducted by scientists

into partnership with industry and enterprise. What could not be done if the public could only realize that there has not been reached the full possibilities of development in any line of utility or industry, that in any development encouragement and reward are necessary, that discouragement to initiative, restriction of effort and the handicapping of enterprise are bound to bring about a stationary condition, if not a decadence in efficiency!

Don't run away with the idea of any government-operated utility ever meeting the needs of the progressive American people. There never has been and never will be a successful operation, municipal or national, of any utility or industry which has not been first developed by private enterprise. There never has been and never will be any improvement in any utility or industry operated by the government unless the forward movement is being developed by private enterprise. The few examples of successful municipal operation of utilities, if there are any, depend upon voluntary and gratuitous management for their success, or for their apparent success upon accounting methods the use of which would not be countenanced for a moment in the private operation of public utilities.

The future of the country must depend on the intelligence which guides and directs labor, and both labor and capital must sooner or later realize that without interested intelligent direction, the prosperity of industries will soon pass away. Labor without management is as helpless and impotent as capital without management, and we all know how capital disappears under inefficient management. The rights of both must be respected, as well as the rewards and rights of " intelligent " management which makes both labor and capital effective, constructive and productive.

Your city is one of the best illustrations of what transportation can do for a section or a locality. The great and fertile Genesee Valley was long known and recognized as a future garden spot. Although distant when measured by time and difficulties of transportation, home-seekers braved the dangers of the wilderness, and one by one its fertile expanse was dotted with the crude homesteads of frontier life. All along the broad sweep of the Genesee, from lake to mountain, were a strong and potent race establishing the foundation of strong and prosperous communities. They were pioneers in every sense. They were

isolated in every sense; hundreds of miles of difficult passage lay between them and any markets. They were self-dependent. They produced for their own consumption. There were no other markets available, although with opportunity a nation could be fed by what they could produce. What little commerce and exchange there was, was local, restricted. It was stagnation. The great force of the falls of the river about which your city is built was wasting its energy, unutilized because of lack of employment except possibly in some small way to meet some local use.

One of the greatest Governors of your State, Clinton, with a persistent purpose, put through the canal for transportation which brought your valley into comparatively easy and relatively quick transit with the Hudson, that great estuary of the ocean, and you were connected with the world's markets. That magical fructifying agent — efficient, comprehensive, available transportation — did its magical work.

The wheat fields rapidly spread over the valley with their golden harvest. The great falls of the Genesee, which were wasting their magnificence and potentialities in a wilderness, were made to do service for society and for civilization, and within a very short generation Rochester became the greatest wheat and flour market of the new world, and the Genesee Valley became famous the world over for its beautiful, comfortable rural homes. That particular supremacy of Rochester as a flour mart has long since gone. The extension of transportation did for other places what it had done for Rochester; but those same increased facilities, which took away your supremacy in one line, gave your city a command of raw material and industrial supplies, and of extended markets in many lines. As the old single supremacy declined, supremacy in many lines of industry sprang up, and to-day Rochester — known the world over through the initiative, enterprise and persistency of a citizen whom you delight to honor — is one of the most vivid living, continuing and expanding illustrations that commerce not only " carries civilization around the world," but that " commerce is carried around the world by intercommunication and transportation."

Mr. VAIL'S Christmas Message to the Employees of the Bell Telephone System, December, 1917.

A CHRISTMAS MESSAGE TO MY FELLOW EMPLOYEES.

TWO thousand years ago a new era, a new religion, dawned upon the world. We are approaching the anniversary of that dawning.

Whatever of civilization, of freedom, or of liberty we have and enjoy, comes from the subordination by man of human passion and selfishness because of the teachings, the incarnation or reincarnation of the ideals and principles of that religion.

Peace and good will on earth to men. Peace on earth to men of good will is the basis of liberty of mankind.

Our democracy is based on liberty, the liberty of *all* to live and enjoy life, the fullest liberty to each individual consistent with the same right to all other individuals. More is impossible.

Under this civilization has come greater peace throughout the world. Wider intercommunication and more neighborly feeling towards our fellowmen have been developed. Wonderful instrumentalities of transportation and communication have built up that world-wide social and economic organization which brings within the reach of all so much which would be impossible without it.

Man's self-dependence, or independence of others, has passed, but in its place have come greater possibilities of life. Dependence of man upon man implies service of man to man.

To maintain democracy, civilization and service, convention, regulation and law, an organized government is necessary.

The difference between the organization of the government by democracy and that by autocracy is that democracy is government by the will of the governed, and not the government of a few acting by usurped power or that of an insurgent minority.

Government by democracy must be enforced as vigorously, impartially, unflinchingly as that by any other government.

They who differ may express their difference, may do all possible to convert others, so long as it is not done in open defiance

or in active rebellion, and so long as their actions are subordinated to the will and authority of the majority.

If and when a majority of all cannot be trusted to express the will of a people, cannot be trusted to act wisely, and all are not willing to abide by it, any government except government by force will fail.

Our democracy is now threatened from without and the democracy of the whole world is at stake.

The protection of our democracy must come from those it protects. Every individual, to its protection owes all life, liberty, substance. To the protection of that democracy he must if necessary devote all.

We who have served the Bell System know what service means, but only in a degree, however, is the service we have learned, to be likened to the service for which we are now called upon.

Many of us are already serving at the front. All of us are serving in some way and are ready to serve wherever we can and are needed.

To the members of the Bell System the opportunity for the gift of service is particularly great. Each individual, man or woman, in the service of the government or the company is responsible in a large degree for the country's safety and welfare, for the success of liberty and democracy the world over, for the future freedom of humanity.

Let us dedicate to our country, in whatever way, whenever and wherever we may be called, our unhesitating, unflinching service, implicit in its obedience and subordination to duty and authority.

THEODORE N. VAIL.

New York, *December,* 1917.

INDEX