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THE ECONOMIC STATUS OF SCIENTIFIC MEN AND WOMEN.¹ II

SALARY SCALES OF TRAINED MEN AND WOMEN

By Professor RODNEY H. TRUE

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THE organization of the Committee of One Hundred on Scientific Research at the Washington meeting marked an interesting departure from the usual policy of the American Association for the Advancement of Science. It had always concerned itself directly with the consideration of problems of research in the several sciences, but had not taken cognizance of the conditions of research. The Committee of One Hundred was organized to study the problems of the researcher. Among the several factors that weigh heavily in determining his success are those of adequate equipment, free time to devote to the work and a mind free to apply itself to the rather exacting work of research.

We are told that financial resources have now been

enlisted sufficient to adequately supply the needs of a large body of high-grade research work and that universities and colleges are giving more generous support to this aspect of their work.

We are also told that in some universities and colleges the teaching load and other duties crowd into the resources of time and energy to such an extent as to greatly reduce or even extinguish research.

We hear from many quarters that inadequate salaries are being paid in academic institutions with consequences hostile to research. We hear that the denials forced on college and university teachers by salary inadequacy force them to sell more or less

¹ Symposium of invited papers read before a general session of the American Association for the Advancement of Science, New York, December 28, 1928.

of their time to earn added income, to the detriment of research. We hear the opinion expressed with emphasis that this has now gone on long enough to have its effect on the class of men and women filling academic positions. It is asserted that second-rate and third-rate men are now more numerous in our faculties than heretofore with the disconcerting outlook toward lower standards in our higher educational institutions facing us.

The subcommittee on the economic status of the scientific worker has sought to investigate the questions of salary in the hope of establishing the facts in the case.

A survey of salaries actually paid to members of college and university faculties will give us something definite to work with. Whether these salaries are equal to those paid to trained men and women in other lines of work likely to compete with colleges and universities for the efforts of the best of the young leaders who may be choosing for themselves a life work may in a measure be shown by a comparison of academic salaries with those paid elsewhere for trained men.

The sum of money received does not always permit one to judge whether or not the income is adequate. The needs must be set up against the purchasing power of the income in order to judge adequacy. Consequently a study of the budgets of academic families seems to be needed if we are to assert much regarding the adequacy or inadequacy of salaries.

In the following paper are presented data gained from a study of the salary scales paid to trained men and women in several lines of work. A variety of academic institutions are considered in appropriate groupings, commissioned officers of the army and navy, the civil service employed by the national government in Washington and in the field, and a considerable group of manufacturing enterprises that form the final training school and goal for great numbers of young men who go into business.

The figures here tabulated have been carefully collected from official or other sources believed to be trustworthy and are thought to be substantially correct for the present time. Certain of these groups have undergone considerable change within the last year or two and may be changed again, hence these figures are of temporary accuracy.

ACADEMIC INSTITUTIONS

The situation with the academic group from different parts of the country will be indicated first. State universities, endowed universities, found chiefly in the east, colleges mainly located east of the Mississippi River and agricultural colleges from all parts of the country have been dealt with. The list is not

always complete but is believed to be long enough to be fairly representative.

In the list of salaries, positions from the president to the instructor have been included, since the college or university is an organized enterprise and obeys much the same psychological laws regarding the distribution of responsibility as army units or manufacturing enterprises.

State universities. The state universities form a rather natural group because of the official character of their support, because of their necessarily close relation to the school systems of which they are the crown and because of the possible political and other influences to which they are in some measure subject. Since these institutions are usually of rather late origin, they are most strongly developed in the younger and often times more vigorous states.

In Table I are shown the salary ranges reported from thirty-six state universities for the several faculty grades indicated. In most institutions there is a salary that is regarded as "normal" for each grade. Sometimes this is near the medium range, sometimes below it. This sum was set by the authorities replying to the questionnaire.

TABLE I
SALARIES PAID BY 36 STATE UNIVERSITIES

	Minimum	Maximum	Average
President	\$5,000	\$22,800	\$11,597
	Average Minimum	Average Maximum	Average Normal
Deans	\$3,916	\$ 6,331	\$ 5,085
Professors	3,024	5,321	3,813
Associate professors.....	2,670	3,878	3,100
Assistant professors.....	2,106	3,388	2,510
Instructors	1,436	2,695	1,869

Some very interesting results would come out of various analyses of the data at hand, but this task must be deferred.

Agricultural colleges. Closely allied to the state universities are the colleges of agriculture and mechanic arts. These institutions are wholly or in large part supported by state and federal funds, and for a special type of training stand in a similar relation to their constituency as does the state university to general education. Owing in part to the late origin of these schools and in part to the differing importance of agriculture in different sections, these schools have been more strongly developed in the great agricultural states of the middle west than has been the case in the manufacturing east.

It is difficult to get a complete picture of this group, owing to the fact that some of them are corporate parts of the state universities and can not be separated in any clear-cut way from them. For present purposes only those schools that are maintained as separate institutions are included here.

Data are presented from twenty such schools, five from each of the four large areas of the country.

TABLE II
SALARIES PAID BY 20 COLLEGES OF AGRICULTURE AND
MECHANIC ARTS

	Minimum	Maximum	Average
President	\$6,000	\$17,000	\$9,150
	Average Minimum	Average Maximum	Average Normal
Deans	\$4,110	\$5,381	\$4,992
Professors	2,792	4,350	3,609
Associate professors.....	2,379	3,310	2,871
Assistant professors.....	2,032	3,042	2,406
Instructors	1,482	2,332	1,822

Endowed universities and colleges. Among the older states higher education was often begun and supported by private gifts. These institutions were sometimes established to support the opinions of special groups or parties. As time has passed they have largely lost the group label but have continued to rely on the gifts of friends. In so doing they have kept out of certain entangling alliances and have become powerful in the academic family. For historical reasons, they are strongest, generally speaking, where state support has been undeveloped, and have their maximum growth in the east.

Full data concerning privately supported institutions have not always been obtainable for this study. Why salaries should be regarded as a matter of secrecy is a proposition that might lead to speculation. No attempt has been made to secure data from all endowed colleges and universities, but the group here presented is believed to offer a fair comparison with the other groups dealt with. It is realized that in the other classes the small private colleges have no homologs and hence are not adequately represented in this presentation.

In order to get a general view of the salary situation as it stands with the groups of academic institutions here dealt with, I have averaged the average rates given in the first three tables. I realize that this resulting average is not strictly a weighted average but offer it as an approximate summing up of the situation.

TABLE III
SALARIES IN 12 ENDOWED UNIVERSITIES AND COLLEGES

	Minimum	Maximum	Average
President (3)	\$11,500	\$12,000	\$11,833
	Average Minimum	Average Maximum	Average Normal
Dean	\$	\$	\$
Professor (12)	4,571	7,033	5,856
Associate prof. (11).....	3,855	4,368	4,293
Assistant prof. (12).....	2,730	3,996	3,356
Instructor (12)	1,617	2,823	2,180

TABLE IV
COMPOSITE FOR ACADEMIC SALARIES

	Average Minimum	Average Maximum	Average
President	\$7,500	\$17,267	\$10,860
Dean
Professor	3,462	5,568	4,425
Associate professor	2,964	3,852	3,421
Assistant professor	2,289	3,509	2,757
Instructor	1,512	2,616	1,957
Averages for teaching faculty	2,557	3,886	3,140

The average salary of a member of the teaching faculty drawn from the records of the groups here dealt with, in all sixty-eight institutions, is about \$3,140. This is only an approximate result because of the small number of institutions included.

PROFESSIONAL AND SCIENTIFIC SERVICE OF THE UNITED STATES GOVERNMENT

The scientific and technical services of the national government require the most varied kinds of scientific training and experience and constitute probably the largest organized body of scientific workers in the world. The Department of Agriculture, the Bureau of Standards, the Geological Survey and the Bureau of Mines among others form important sources of demand for men and women trained in the colleges and universities. The government service has suffered from low salaries and from various weaknesses due to methods of administration. The salary situation is improving as a result of the Reclassification Act of 1923 and the recent amendment growing out of the Welch Bill, until the average salary of workers in the professional and scientific grades in Washington belonging to the Department of Agriculture has reached the sum of \$3,894, an amount greater by \$754 than the average salary of members of the teach-

ing faculties in the sixty-eight colleges and universities above considered. This advantage seen in the government service is a relatively recent one, due largely to the average advance of over \$500 since 1924.

When the Reclassification Act went into effect, the kinds of work having approximately similar requirements were brought together into a series of grades for which duties were broadly defined and for which compensation was fixed on a sliding scale. I have brought together in Table V the several grades designated in the Amending Act of 1928 with the salary range in each grade. Since shifts are constantly being made within the grades, no attempt has been made to establish a weighted average for the employees of these grades, but there are brought together the figures indicating the limits between which salaries in the grade vary. Since the requirements for filling these positions through civil service examinations are based more or less definitely on the formal steps in college or university education, the latter equivalents are indicated in order to give the academic latitude and longitude of these groups of government employees.

TABLE V

SALARY RANGE OF GRADES IN THE PROFESSIONAL AND SCIENTIFIC SERVICE OF THE NATIONAL GOVERNMENT

Grade	Designation of grade	Minimum salary	Maximum salary
9	Special professional grade	\$9,000	above \$9,000
8	Chief professional grade Heads of large bureaus	8,000	9,000
7	Head professional grade Assistant bureau head	6,500	7,500
6	Principal professional grade Head of smaller organizations	5,600	6,400
5	Senior professional grade Project leaders	4,600	5,200
4	Professional grade under general supervision	3,800	4,400
3	Associate professional grade Investigator (Ph.D.)	3,200	3,700
2	Assistant professional grade (M.A. or M.S.)	2,600	3,100
1	Junior professional grade (College graduate)	2,000	2,500

Assisting the investigators in the professional and scientific grades are workers whose previous education and experience are less than that of a graduate from a college or university of recognized standing. This

is called the subprofessional service and interests us here chiefly because of the salaries paid. Again eight grades are indicated with duties decreasing in requirements from Grade 8. These are usually laboratory assistants who have had training in college or in high school or its equivalent elsewhere.

TABLE VI
SALARY RANGE OF SUBPROFESSIONAL SERVICE
(SCIENTIFIC GROUP)

Grade designation	Minimum	Maximum
Grade 8 Chief, subprofessional most difficult technical work, two years college	\$2,600	\$3,100
7 Principal subprofessional very difficult technical work..	2,300	2,800
6 Sr. subprofessional difficult technical work	2,000	2,500
5 Main subprofessional responsible technical work	1,800	2,100
4 Asst. subprofessional ordinary technical work, one year college	1,620	1,920
3 Jr. subprofessional supervised usual work high school	1,440	1,740
2 Under subprofessional supervised simpler work common school	1,260	1,560
1 Minor subprofessional simplest routine work common school	1,020	1,320

It will be noted that these laboratory assistantships filled by men and women who have gone beyond the high school but who have not graduated from college command salaries varying from \$1,800 to \$3,100, overlapping the salaries paid to instructors and even that usually paid to assistant professors. Associate professors, on the average, do not exceed the maximum of Grade 8 of the subprofessional service at Washington.

UNITED STATES ARMY

The commissioned officers of the army constitute another group of trained men. Many of them are West Point graduates, while many others have gained their rank through other training. The army is one of the vocations to which young men of ambition turn. In it are steady pay, a chance for advancement and perhaps for stirring adventure. The social position of the officer is a strong inducement to many. The living expenses are in considerable part met outside of salary, and after retirement, at an age that leaves

one still much to look forward to, the retirement allowance of three fourths of the last salary will keep the wolf from the door. Some having no fondness for the bloody side of the business may see little chance for either killing or being killed and appreciate the good points sufficiently to join. Here length of service is recognized by longevity pay, and allowances for rental and subsistence are added to the pay. Moreover the liberal reduction in prices at the government stores or commissaries do much to "stretch" the salary income.

In Table VII is shown the pay scale of the commissioned officers of the army. In calculating minimum and possible maximum pay rates, I have added to the base pay the allowances for rent and subsistence and such additions as come with length of service. In calculating minimum pay allowances I assume no dependents. In the case of maximums, dependents are assumed. No account has been taken of advantages derived from buying at the commissary owing to the great number of variable factors.

TABLE VII

PAY SCALE OF COMMISSIONED OFFICERS OF THE ARMY

Rank	Minimum pay	Maximum pay
General	\$13,500 plus confidential allowances	
Major-general	9,176	\$9,700 (legal limit)
Brigadier-general ...	7,176	7,500 " "
Colonel	4,676	7,200 " "
Lieutenant-colonel ...	3,936	7,200 " "
Major	3,336	7,200 " "
Captain	2,696	5,348
First lieutenant	2,196	4,992
Second lieutenant ...	2,196	4,150

UNITED STATES NAVY

The pay scales of the commissioned officers of the U. S. Navy are subject to the same general considerations as have been advanced in connection with those of the army officers. Length of service is recognized in ranks below the rear admiral, substantial allowances for rental and subsistence are made and retirement on a generous pension are found. The navy too has its commissary at which officers may buy at a marked reduction in price.

In view of the pay scales seen here for the officers of the army and the navy, the question occurs to one, why do the ambitious and in this case not too idealistically inclined young men turn to these lines of activity for their life work? Apart from the possibility for adventure that may appeal to some, the financial inducement is greater than shows on the pay scales. Officers are retired at three fourths of the

TABLE VIII

PAY SCALES OF COMMISSIONED OFFICERS OF THE NAVY

	Without dependents	With dependents
Admiral	\$11,379	\$11,900
Vice admiral	9,679	10,200
Rear admiral (upper half)	9,179	9,700
Rear admiral (lower half)	7,179	7,500
	Minimum	Maximum
Captain	\$4,679	\$7,200 (legal limit)
Commander	3,939	7,200 " "
Lieut. commander	3,339	7,200 " "
Lieutenant (senior)	2,699	6,357
Lieutenant (junior)	2,199	4,998
Ensign	2,199	4,158

pay received at the time of retirement. When one sees what these pensions are equivalent to as successfully invested savings in the case of the teacher, it is clear that the pension is a very potent financial argument.

A major with dependents in the active service after twenty-four years draws in pay and allowances \$6,988. Such a major retires on \$3,675, three fourths of his pay (allowances being excluded). For a teacher to provide himself a similar income would mean a saving of \$73,500 safely invested at 5 per cent. How many teachers in academic circles could see their way clear to saving that amount in a teaching period of twenty-four years or more on the salary scales now prevailing in American colleges and universities?

The Public Health Service employing a considerable number of medically trained investigators in many respects parallels the situation seen in the navy; while the higher ranking officers are less well paid, the terms of retirement are similar for the body of the service.

BUSINESS ENTERPRISES

The statement is frequently heard that now as never before the ambitious and alert young man is "going into business." The sons of teachers and other professional parents are seeing in the money game something more interesting than they see in the life of the teacher and researcher of the college and university. The term "business" includes many kinds of work, but in all of them the financial gain is the common motive. Not all going into business, however, expect to become wealthy. Many are indeed content with the outlook for a comfortable and ample

income, but value highly the independence or opportunity for self-dependence offered by business.

It was deemed to be a matter of importance for this study to ascertain the rates of pay met with in one great line of business, that of the manufacturer. The scale of pay above the lower grades is considered to be significant, because up this scale the young college man must climb, and one of his great incentives in going into business is the thought that even the president's position may perhaps one day be his. In other words, the scale of opportunity in a business enterprise competes with that of the college or university in the mind of the young man laying his plans for life.

Through the great kindness of the chief executive of a well-known American manufacturing enterprise, I have been able to present here the salary scales of twenty business enterprises, a majority of them dealing with the making and selling of some kind of desired product. These enterprises range in magnitude from one having 400 employees to another commanding the services of over 35,000 persons. One does an annual sales business of three million dollars; another sells products valued at over 150 million dollars. The materials dealt in cover, among others, oil, paper, rubber goods, leather, automobiles, chains, locks, machinery, cotton and life insurance.

Getting the effort of individuals directed and coordinated requires the distribution of responsibility. Such an effective distribution when set in working order constitutes an organization, and reflects the same laws of psychology and of motive whatever may be the product developed. Thus, a university, an army or navy unit, a manufacturing establishment obey the same laws of the human mind and form

structures of more or less definitely homologous parts. As responsibility broadens down from the head through the various grades of subordinates, similarities appear in all these types of organization. I believe it would be possible to find the homologue of the university president, dean, professor, instructor, etc., in the organizations here dealt with. However, in order to avoid distracting considerations that might enter were that to be attempted here, I have accepted the positions as ordinarily named in these enterprises and have not attempted to draw a close parallel between manufacturing and academic enterprises.

In order to give an idea of the various sizes of the concerns here dealt with, I have grouped them according to the number of employees on their rolls and the amount of sales made in a year.

TABLE X
ENTERPRISES GROUPED ACCORDING TO NUMBER OF
EMPLOYEES

Number of employees	Number of enterprises
Up to 1,000	3
1,001 to 2,000	2
2,001 to 3,000	3
3,001 to 4,000	0
4,001 to 5,000	2
5,001 to 6,000	1
6,001 to 7,000	0
7,001 to 8,000	4
8,001 to 9,000	0
9,001 to 10,000	1
15,000	1
38,000	1
Not given	2
Total	20

TABLE IX

ENTERPRISES GROUPED ACCORDING TO ANNUAL AMOUNT
OF SALES

Amount of Sales	Number of Enterprises
Up to \$10,000,000.....	6
\$ 10,000,001 to \$20,000,000	1
20,000,001 to 30,000,000	2
30,000,001 to 40,000,000	2
40,000,001 to 50,000,000	0
50,000,001 to 60,000,000	0
60,000,001 to 70,000,000	1
70,000,001 to 80,000,000	1
100,000,000	2
160,000,000	1
Three billion dollars	1
Not given	3
Total	20

In the tables that follow are shown the sums received by the various officers so grouped as to present the information in compact form. Range of payment is given and an average sum for the group is usually added.

President. The presidents and other higher officers of these twenty concerns in some cases receive salaries indicated as such, and in some cases bonuses are added to the sums specified as salaries. These bonuses are sometimes fixed sums and, added to the sums known as salaries, form the equivalent of salaries of academic faculty members. In some cases the bonus varies between specified limits.

Vice-president. In a majority of cases, the organization includes from two to as many as nine vice-presidents. These several vice-presidents usually form a graded series in magnitude of salaries. In

TABLE XI
SALARIES OF PRESIDENTS

Salary range	Number of concerns
\$ 20,000 to \$ 30,000	3
30,001 to 40,000	1
40,001 to 50,000	0
50,001 to 60,000	0
60,001 to 70,000	4
70,001 to 80,000	2
100,000 to 115,000	1
150,000	1
Unknown	8
Total	20
Lowest salary given	\$ 20,000
Highest salary given	150,000
Average of known salaries	48,958

the following table the total number of vice-presidents is given, their salary ranges and a weighted average salary.

It will be seen later that in some concerns one of the vice-presidents constitutes the general sales manager, while in others there is a special officer so designated.

TABLE XII
SALARIES (INCLUDING BONUSES) OF VICE-PRESIDENTS

Range of salaries	Number of vice-presidents
\$ 8,000 to \$10,000	2
10,001 to 20,000	4
20,001 to 30,000	3
30,001 to 40,000	7
40,001 to 50,000	2
25,000 to 30,000	4
30,000 to 33,000	1
30,000 to 60,000	9
35,000 to 40,000	4
36,000 to 40,000	1
40,000 to 45,000	1
Unknown	7
	45
Lowest salary given	\$ 8,000
Highest salary given	125,000
Weighted average for vice-presidents	36,135

Treasurer. The treasurer's office sometimes forms the point of attachment for assistant treasurers, controllers and auditors, and salaries of this group of

assisting officers are here given in Table XIV as well as those of the treasurers. (Table XIII.)

TABLE XIII
SALARIES (INCLUDING BONUSES) OF TREASURERS

Salary range	Number of treasurers
\$ 5,500 to \$10,000	2
10,001 to 15,000	1
15,001 to 20,000	4
20,001 to 25,000	0
25,001 to 30,000	2
30,001 to 35,000	3
50,000	1
24,000 to 27,000	1
Unknown	6
	20
Minimum salary	\$ 5,500
Maximum salary	50,000
Average salary for treasurers	24,464

TABLE XIV
SALARIES FOR ASSISTANT TREASURERS, AUDITORS
AND CONTROLLERS
(No bonuses given)

Salary range	Number of officers
\$ 4,500 to \$10,000	9
10,001 to 15,000	3
15,001 to 20,000	1
20,001 to 25,000	1
25,001 to 30,000	1
	15
Minimum salary	\$ 4,500
Maximum salary	30,000
Average salary paid	11,579

The officers above dealt with form the apical group of these organizations. Under general direction from this group are the main lines of development of these enterprises. One line has to do with the manufacturing processes, plant and machinery, headed by the works manager. The sale of the product is carried on by another suborganization headed by the general sales manager or merchandise manager.

General sales manager. The salaries paid to general sales and merchandise managers are frequently on a sliding scale supplemented by a range of bonuses likewise on a sliding scale. This makes it somewhat difficult to condense the data at hand into a compact table. Hence in cases some assumptions

are necessary that render any summary statement an approximation only. I believe, however, that the chief features here brought out are near enough to the truth to be of value.

The lowest sum mentioned is \$7,500 to \$8,000; the highest, \$41,000. The average minimum rate is \$14,071; the average maximum rate of ranges given equals \$19,925. The average of definitely fixed salary rates listed is \$18,777. A weighted average of money paid to these officers is \$19,930 per man. This condition exists because concerns having a large number of sales managers pay higher amounts than those hiring a smaller number of managers. The unweighted average of rates paid gives \$17,331. It is believed that the weighted average per man, \$19,930, represents a fair norm for this group with extremes much below and much above this sum. The distribution of rates is given in Table XV.

TABLE XV

SALARIES PLUS BONUSES PAID TO GENERAL SALES AND MERCHANDISE MANAGERS

Pay rates	Number of men concerned
\$ 7,500 to \$10,000	3
10,001 to 15,000	4
15,001 to 20,000	12
20,001 to 25,000	2
10,000 to 21,000	5
15,000 to 25,000	8
Up to 20,000	175
32,000 to 41,000	10
	219
Unknown	3
	222
Minimum rate	\$7,500 to \$ 8,000
Maximum rate	41,000
Weighted average paid per man	19,930

There is little information at hand concerning assistant general sales managers. In the instances at hand the range of pay runs from \$4,900 to \$13,000, the weighted average being \$7,350. Very likely the duties here concerned are discharged by officers bearing other designations in most cases.

District managers. In the case of district managers, remuneration is still on the basis of salary plus bonus. The salary ranges lie between widely separated extremes, but sliding scales are less often seen. In some cases, a commission bonus introduces a very important and probably highly variable factor. The distribution of salaries is shown in Table XVI.

TABLE XVI

SALARIES PLUS STATED BONUSES PAID TO DISTRICT MANAGERS

Pay rates	Number of men
\$ 4,000 to \$10,000	109
10,001 to 15,000	6
15,001 to 38,000	1
4,000 to 40,000	700
5,000 to 20,000	40
5,980 to 17,250	not known
Minimum salary stated	\$ 4,000
Maximum salary stated	40,000
Weighted average per man	8,708

In attempting to get a sum that might represent a normal salary for this type of position, I have been obliged to work with those cases in which definite sums and definite numbers of men are indicated. In doing this, it has been necessary to neglect 700 men in one concern working on a scale varying from \$4,000 to \$40,000. In one case, an unstated number of men are receiving from \$6,500 to \$12,000. In another, forty men receive from \$5,000 to \$20,000, \$10,000 to \$12,000 "constituting the average pay for half the group." Thus it is clear that only an approximate average salary can be found.

Salesmen. In the case of salesmen, a fixed salary is sometimes named with a bonus depending in size on the amount of sales made. It is out of the question to learn with any satisfactory degree of approximation what men receive in such cases. However, from the sliding scales given and the fixed figures named, the expectation of salesmen may perhaps be learned within wide limits of variation.

A study involving 1,943 men is not as complete as I wish it were, but data on others are frequently indefinite and I have been obliged to make certain assumptions in order to arrive at a generalized result.

Minimal salaries run as low as \$1,800 to \$2,000; maximal up to \$60,000 in one case. The high figure usually lies between \$10,000 and \$14,000. A probable normal figure seems to lie at about \$6,150.

With this group we seem to reach the bottom rung of the sales department ladder. The minimum sums just mentioned probably represent the pay given to beginners entering the employ of the sales branch of the business.

Works manager. This position concerns itself primarily with the manufacturing side of the enterprise and constitutes the head of this part of the business development, as the sales manager stands at the head of that part of the enterprise that deals with the disposal of the product.

In the following table the salary rate plus bonus is given for works managers.

TABLE XVII

Salary	Number of men
\$ 8,500 to \$10,000	2
10,001 to 15,000	7
15,001 to 20,000	7
20,001 to 27,300	2
Unknown	4
	<hr/> 22
Minimum salary	\$ 8,500
Maximum salary	27,300
Weighted average per man	15,295

Assistant works managers seem not to be usual, but in so far as reported receive a salary varying from \$5,600 to \$9,100, averaging \$7,400.

Division superintendents. The division superintendent is in some cases assistant works manager and in general is subordinate to the works manager in the production branch. Salaries again are often supplemented by bonuses that in many cases exceed the salaries themselves.

The distribution of incomes is given in the following table.

TABLE XVIII

SALARIES, PLUS BONUSES, PAID TO DIVISION
SUPERINTENDENTS

Salary range	Number of men
\$ 3,000 to \$ 5,000	8
5,001 to 10,000	84
10,001 to 15,000	9
3,000 to 6,000	50
4,800 to 13,500	3
9,000 to 13,500	4
	<hr/> 158
Minimum salary	\$3,000 to \$ 4,500
Maximum salary	13,500
Weighted average per man	5,345

Department heads. Department heads as a rule receive stated salaries and are less concerned with bonuses than those ranking above them.

Foremen. The salaries of foremen seem to be little influenced by bonuses and fall within a rather definite range, between \$2,000 and \$4,000, with an exceptional man receiving from \$5,000 to \$6,000. Owing to the lack of data it has been difficult to strike an average paid per man. However, the salary rates are more

TABLE XIX

SALARIES, PLUS BONUSES, PAID TO DEPARTMENT HEADS

Range of salaries	Number of men
\$2,000 to \$ 5,000	225
5,001 to 10,000	6
3,600 to 6,000	17
4,000 to 7,500	30
	<hr/> 278
Minimum salary	\$2,000 to \$3,500
Maximum salary	7,500
Weighted average per man	4,097

easily dealt with. The average minimum calculated on the basis of the number of establishments is \$2,726; the average maximum, \$3,650. A rather risky attempt to get the average salary paid foremen gives \$3,139, a figure that is probably not far from the truth.

Purchasing agent. The purchasing agent is one of the important members of the staff, sometimes sharing in a bonus based on the evidence of saving in purchasing, I have been told. While extremes of salary are far apart, as a rule the scale for this officer varies less than that of many others. The minimum

TABLE XX

SYNOPTICAL TABLE OF SALARIES IN MANUFACTURING
ENTERPRISES

	Minimum	Maximum	Normal
President	\$20,000	\$150,000	\$49,958
Vice-president	8,000	125,000	36,135
Treasurer	5,500	50,000	24,464
Asst. treasurer } Auditor } Controller }	4,500	30,000	11,579
General sales manager	\$7,500 to 8,000	41,000	19,930
District manager	4,000	40,000	8,708
Salesman	\$1,800 to 2,000	10,000 to 14,000	6,150
Works manager	8,500	27,000	15,295
Division superin- tendent	\$3,500 to 4,500	13,500	5,345
Department heads	\$2,000 to 3,500	7,500	4,097
Foreman	2,000	4,000 to 5,000	3,139
Purchasing agent	\$3,000 to 4,000	25,000	12,437
Asst. purchasing agent	4,000	12,000	5,491
Employment manager	\$3,300 to 3,600	13,500	7,330
Office manager	\$3,900 to 4,500	13,500	7,676

falls in one or two instances between \$3,000 and \$4,000, while the maximum rises to \$25,000. The average salary paid to twenty purchasing agents was \$12,437.

Assistant purchasing agents. The salary of assistants varies from about \$4,000 to as high as \$12,000 in one case, the average of fifteen salaries being \$5,491.

Employment managers. This officer seems not to share in the bonus usually and works at a salary that seems to vary between wide limits. The minimum seems to lie at \$3,300 to \$3,600, with a maximum of \$13,500 seen in one case. The average received by ten employment managers is \$7,330.

Office manager. The office manager receives a minimum of \$3,900 in one case, the lower range lying between \$4,500 and \$5,000; the higher range lies between \$13,500 and \$14,500. The average paid nine such officers is \$7,676.

SUMMARY

A comparison of salary scales of trained men shows rather clearly at the present time that

(1) The pay scale of endowed and state universities and agricultural colleges is approximately like that of the commissioned officers of the army and the navy, but lacks the advantage of the retiring pension of three fourths pay. This pension often relieves the military and naval officer of the necessity of saving for old age. The saving required of the academic man to give him an equivalent retiring fund is not practicable at the present salary scale.

(2) It shows that the academic salary scale is appreciably lower than that of the professional and scientific services of the national government at Washington. The retiring allowance of the government employee, though small, and in part contributed by the employee himself, gives him a distinct advantage.

(3) The salaries of all groups above mentioned are very much lower than those paid in manufacturing enterprises to positions above the wage-earners.

In order to make a concrete comparison, I will enumerate the positions that on the average command salaries of \$3,000, \$6,000 and \$9,000 respectively in these different lines of work.

THREE THOUSAND DOLLARS WILL BUY

A. *Manufacturing enterprises*

- a. Young or unsuccessful salesman
- b. Low-grade department head
- c. Almost the average foreman

B. *Universities and colleges*

- a. Low-grade associate professor
- b. High average assistant professor

C. *U. S. Army*

- a. Low pay captain
- b. Young first lieutenant
- c. Sub-average second lieutenant

D. *U. S. Navy*

- a. Low-rate senior lieutenant
- b. Medium rate ensign

E. *U. S. Civil Service*

- a. High assistant in professional grade
- b. Low associate in professional grade
- c. High assistant in sub-professional grade

SIX THOUSAND DOLLARS WILL BUY

A. *Manufacturing enterprises*

- a. Low assistant treasurer
- b. Low district manager
- c. Average salesman
- d. Good average division superintendent
- e. Good average assistant purchasing agent
- f. Low average employment manager
- g. Low average office manager

B. *Universities and colleges*

- a. Well-paid dean
- b. High professor

C. *U. S. Army*

- a. Medium colonel
- b. Well-advanced lieutenant colonel
- c. Well-advanced major

D. *U. S. Navy*

- a. Well-advanced captain
- b. Well-advanced commander
- c. Well-advanced lieutenant commander
- d. Very high senior lieutenant

E. *U. S. Civil Service*

- a. High average principal in professional grade

NINE THOUSAND DOLLARS WILL BUY

A. *Manufacturing enterprises*

- a. High average district manager
- b. Low average auditor or controller
- c. High average assistant purchasing agent
- d. Good salesman

B. *Universities and colleges*

- a. Low average president
- b. High dean
- c. Very exceptional professor

C. *U. S. Army*

- a. Little less than major general

D. *U. S. Navy*

- a. Little less than rear admiral (upper half)

E. *U. S. Civil Service*

- a. Maximum for head of large bureau
- b. Minimum for director of research in a department