-Iowa Roads-

Historical Sketch of Developments in Administration 1838-1929.

On December 14, 1838, Robert Lucas, first territorial governor, approved an Act by the First Territorial Assembly establishing a road from Keokuk to Des Moines via Iowa City. Three men named were instructed to "locate and mark a territorial road, commencing at Keokuk, in Lee County, on the Mississippi River, thence to Horse Tail Reach on the Des Moines River, thence up the Des Moines River as near as practical to Iowa City, on said river, passing thru Farmington, New Lexington, Bentonsport, Columbus and Philadelphia in the county of Van Buren". This was the first territorial, and, in fact, the first legally established state road in Iowa.

On December 29, 1838, the Assembly recognizing the need for a general Act covering the establishment of roads, provided a measure for laying out additional territorial roads. After general instructions which were detailed, Sec. VIII provided, "when any road shall have been located and established agreeable to the provisions of this Act, the same shall be forever a public highway and shall be opened and worked by the counties thru which it shall be laid as county roads are, and no part of the expense* * * *shall be paid out of the territorial treasury".

Board of County Commissioners to Govern Counties: In 1838, the same Assembly also passed an Act providing for the election of three county commissioners, whose duty it was to be to transact all the county business and levy such taxes as were necessary.

So far as road legislation was concerned there was little change in the rather meager road administration laws until 1856.

The establishment of territorial roads, by the legislature, went merrily on. The system readily lent itself to political abuses. Places as territorial commissioners to lay out these roads, each one individually created by a special legislative act, were eagerly sought. The job was looked upon and actually was, a summer camping out vacation with plenty of authority, good pay at $2.50 per day, good hunting, good fishing, and much entertainment. Early settlers, eager to escape pioneer isolation, used every endeavor to bring the routes of these roads directly thru their communities. Each commission had authority within certain limits to locate its road virtually as it pleased. Inducements of any and every kind to influence the routing was the accepted order of the day. The system rapidly became a scandal. At the end of the 18 year period, 1838-1956, it became evident that this method of locating roads had degenerated into a mere scheme to acquire and influence votes and to pay political debts.

Territorial Road Scandal Eliminated: There had been no reference to roads in the first Iowa Constitution of 1844. In 1846, a constitution, satisfactory both to the Second Iowa Constitutional Convention and the Congress of the United States, was finally agreed upon and Iowa admitted into the Union. It is interesting to note that in these negotiations one of the supplementary features of the constitution proposed, by Congress, for the new state provided that 5% of the net proceeds of the sale of all public lands should be appropriated for building roads and canals. The territorial assembly refused to ratify this provision, asking instead, permission to use this money for school pur-

poses. This concession was finally granted by a special act of Congress. This was the only reference in the 1846 constitution, to roads.

The exceptional industry of the Fifth General Assembly in 1856 in authorizing new roads brought the territorial road business to an end. A complete stop was put to the practice a year later, in 1857, by the Third Constitutional Convention. Article 4, of Sec. 30, provided that, "The General Assembly shall not pass local or special laws in the following cases; for the assessment or collection of taxes for state and county road purposes; for laying out, opening, or working of roads or highways."

Township Trustees to Handle Township Business: In 1858 the Seventh Iowa General Assembly provided for the election of three men in each township to transact the township business and to be called township trustees. Among the duties of these trustees were, that they should divide the township into road districts and name a supervisor for each district. A township clerk was also to be named to keep the business records. All male residents of the township were to be required to do two days work on the roads. The supervisor was to "make a hand" and he was to be allowed $1.50 per day. The trustees were authorized to levy a tax for road purposes on the property of the township, not less than one mill nor more than three mills.

County Boards of Supervisors Created: Two years later, in 1860, the Eighth General Assembly, created the county board of supervisors. Under a revision in the Code following the Third Constitutional Convention, in 1857, the duties of the Board of County Commissioners established in 1838 were delegated to the county court and the board of county commissioners was eliminated. The duties of the former county com-

missioners and the county court were given to the newly established board of supervisors. Relating to roads some of these duties were, "To lay out, establish, alter or discontinue, any county roads heretofore or now laid out; to provide for the erection of bridges and levy taxes" on the property of the county for bridge work.

Township Roads Divided Into Districts: Iowa roads were all township roads. Each township system was in charge of three township trustees, whose duty it was to divide these roads into districts, place a supervisor in each district and to levy taxes on the township property for such road work as was done and for the construction of small bridges and culverts. Township road taxes were worked out under the direction of the township road supervisors, at $1.50 per day. It was not necessary to pay money to settle the road tax levies.

The newly established county boards of supervisors were authorized to alter or change roads as they deemed fit and to levy taxes for such road work as was carried out by them and for building the larger bridges.

Bridge Building During this Period Came First In Road Work: In 1880 the Eighteenth General Assembly declared that, "Whenever any county has a surplus in the bridge fund after completing all bridges * * *", the board of supervisors, "may on petition of resident freeholders, make improvements on the highways but in no case run the county into debt" for such work. It was logical that bridge building should take absolute precedence over road work. With horses, oxen and mules forming the motive power, it was possible to get over the roads in almost any condition. Stream crossings, however, were a more serious problem. Fording was most always difficult and dangerous and in some instances impossible.

It was absolutely necessary that bridges be built. Naturally that part of the work received first attention.

Road and Bridge Building Vices Develop: Few legislative changes of any particular importance occurred during the forty years between 1860 to 1900. During this period many road and bridge building vices developed. Some of these became so deeply rooted that a half century later, in spite of persistent efforts to eradicate them, they still persist. Bridge building practices particularly led to the greatest and most flagrant scandales. This business became particularly lucrative. Large bridge building companies developed. By special favors distributed to officials, certain companies were able to control all the work in particular counties. Bridge building especially in these counties soon was recognized and considered as the particular property of certain individual companies. These counties came, in time, to be jocularly referred to by all concerned as part of that particular bridge company's"farm". Hence arose the expression, with reference to the bridge building of those days as being "farmed out".

There was little road grading during these early periods as it is known today. Plans were seldom prepared in advance for work. Estimates of costs were unheard of. When it was determined to do a particular piece of work, the road superintendant was instructed to get the job done. He got together a bunch of men and teams, usually such farmers as could be drawn away from their work. They started moving dirt with scrapers with the idea of filling in low places so that the surface on which the wagons and teams traveled could be kept above water in rainy periods. Surveyors instruments were seldom, if ever, used. Distances were measured by "stepping off" and scrapers full or "wagon loads" took the place of cubic yards for measurement. There were no regular grading crews.

There was not enough money in the small township districts to buy adequate dirt moving machinery and little was available if there had been money for its purchase. There were few, if any, foremen competent to direct road work. The workers themselves were almost entirely farmers working out their road tax in the easiest way possible. Road working came naturally to be considered as a picnic time, a day off from regular farm work.

There were no motor vehicles on the Iowa roads. Horses, mules, and oxen provided motive power for wagons, spring wagons, and buggies. Eight to ten miles was a long journey. Twenty miles was a big day's journey for a farm team and wagon. There was little heavy hauling on the road except farm produce. A load of 3,000 pounds was a heavy load. The township was the road administrative unit. The road district was a section of from two to six miles of township road. Township trustees were the important road officials. Road building was strictly a local affair.

This was the Iowa road situation as it stood when an Iowa Highway Commission first entered road discussion.

Township Road District Abolished: General state dissatisfaction over road conditions led to drastic action in 1902. The Twenty-ninth General Assembly, in an effort to wipe out abuses which had developed and to improve administrative conditions in road building and especially to establish larger road building units, abolished the township road district and established the township as the unit in road administration. It provided for the consolidation of all township road districts into one township road unit and placed all the previous township road money in one township road fund. Trustees were authorized to order and direct the expenditure of this poll tax fund which was almost entirely labor. They

were given two alternatives. They could let contracts for their work to the lowest competent and responsible bidder or, as an alternative to the contract method, they might employ a road superintendent for the township to oversee and direct the township by day labor work. Trustees themselves were not permitted to take over these road contracts as either individuals or collectively. It was stipulated that no township road work should be entered upon until provision for the funds to do the work had been made in a proper tax levy placed in the hands of the county treasurer for collection. To insure proper and equal distribution of work, property tax levies and poll tax labor were to be equally distributed over the entire township. To insure work being done at the proper season it was stipulated that 75% of the township road taxes was to be expended on the roads by July 1st each year. Noxious weeds were to be cut twice each season at such times as to prevent their seeding. To expedite this work land owners might be allowed a reasonable amount for cutting the weeds. The superintendent's contract was not to exceed one year at a time. His pay was limited to $3.00 per day.

As a beginning of an accounting system the township clerk was required to render to the board of supervisors a full and itemized account of all receipts and expenditures.

Annual Report Makes Appearance: The clerk was given general custody of all township funds and all road machinery. The county auditor likewise was required to prepare and publish, in Annual Report form, a comprehensive report of all the business transacted by the county board of supervisors and it was provided that this must be such that it "could be readily understood by the taxpayers". This Annual Report began the systematic publishing, in printed book form, of the records of the business which continues today as a county financial report.

First Highway Commission Established: Two years later, in 1904, Iowa in a further effort to bring her road building activities somewhat in line with better results being secured in other states, took a vitally important step.

A legislative act by the Thirtieth General Assembly, approved by Governor A. B. Cummins, April 13, 1904, established Iowa State College of Agriculture and Mechanic Arts as an Iowa State Highway Commission. The act became effective upon publication the Des Moines Capital on the afternoon of April 15th and in the Des Moines Register the following morning, April 16th.

The Thirtieth General Assembly in the winter of 1903-4 had been working on plans for a much more elaborate Highway Commission patterned after some of the 18 Highway Commissions already existing in the older states. When it became evident that the measure could not be passed, Senator Jones of Villisca introduced the following measure which was passed and became effective as indicated:

(Supplement - Code of Iowa - Annotated - 1907)

Sec. 2674-f. Highway Commission - Duties. That the Iowa State College of Agriculture and Mechanical (mechanic) Arts at Ames, shall act as a Highway Commission for Iowa, whose duties it shall be:

1. To devise and adopt plans and systems of highway construction and maintenance, suited to the needs of the different counties of the state, and conduct demonstration in such highway construction, at least once each year at some suitable place, for the instruction of county supervisors, township trustees, superintendents, students of the college and others.

2. To disseminate information and instruction to county supervisors, and other highway officers who make request; answer inquiries and advise such supervisors and officers on questions pertaining to highway improvements, construction and maintenance, and whenever the board of supervisors of a county adjudge that the public necessity requires a public demonstration of improved highway construction or maintenance in said county, and so request and agree to furnish necessary tools, help, and motor power for same, the commission shall furnish as soon as practicable thereafter, a trained and competent

highway builder for such demonstration, free to the county.

3. To formulate reasonable conditions and regulations for public demonstrations; and to promulgate advisory rules and regulations for the repair and maintenance of highways.

4. To keep a record of all the important operations of the highway commission, and report same to the governor at the close of each fiscal year. (30 GA., Ch. 105)

At a meeting of the Iowa State College Board of Trustees, probably the first one after these dates but the date of which cannot now be ascertained because no record appears in the college minutes, the new work assigned to the college was turned over to the Divisions of Engineering and Agriculture. Anson Marston, who had recently been made Dean of Engineering, and C. F. Curtiss, Dean of Agriculture, the heads of these two divisions, thus became the first Iowa Highway Commissioners. This information is gleaned from a paragraph in the Annual Report of Dean Marston to President A. B. Storms of Iowa State College covering the college work of the engineering departmentfor the year 1904.

College Course in "Road Making": In the records of a meeting of the Board of Trustees held on July 14, 1904, is found this reference to the establishment of "a course in road making" and to the "division of good roads appropriation", as follows:

"Course in Road Making:

Upon the recommendation of the Farm Committee, the President of the College, the Dean of Engineering and the Dean of Agriculture were authorized to arrange a course in road construction and work as provided for in Section I of the law enacted by the last General Assembly, the course to be given during the week following commencement week next year.

Division of Good Roads Appropriation:

The sum of $3,500 of the Good Roads Fund, the same being the amount available for the current year, was ordered divided equally between the Civil Engineering and the Agricultural Departments, and Deans Marston and Curtiss were authorized to administer this fund for good roads experimentation.

Fee:

A fee of $2.00 per student was fixed for this course in road making."

Under date of December 1, 1905, in the Twenty-first Annual Report of Iowa State College to the Board of Trustees, Albert B. Storms, President, says:

"The policy of making the College a State Highway Commission for the investigation of the general subject of good roads, has, we believe, proven a wise measure. The problem, being essentially one of engineering and agriculture, it would seem eminently appropriate that the men having charge of this division of the work at the College should constitute such a commission. Considering the meager appropriation made for this work, we believe the results are very creditable indeed. For the most part, of course, they are tentative and preliminary. While such an appropriation and such a commission is of no financial advantage or otherwise to the college, except indirectly, the College authorities are nevertheless, very glad to be able to render this service to the State. Ultimately the State must be prepared to adopt some comprehensive and adequate plant and to make adequate provision for the construction of substantial roadways throughout the State. Unless civilization itself is stayed, this feature of progress must soon receive serious attention and support."

Dean Marston Asks $10,000 Per Year: Embodied in this same report of President Storms' was the following paragraph written by A. Marston, Dean of the Division of Engineering:

"In recognition of the facilities for good roads work afforded by this cooperation of engineering and agriculture in our college, the last legislature passed a law making the college the State Highway Commission, and this work was assigned by the trustees jointly to the divisions of Engineering and Agriculture. The details of the work will be given in an elaborate separate report to the Governor, as required by law, but it may be said here that as the work develops it proves of the utmost importance to Iowa, and the possibilities of our doing service to the public in this line seem unlimited if the work is given proper financial support by the state. We cannot doubt that such support will be given. The financial support to carry our careful and conservative plans already prepared should be made $10,000 per annum."

Bureau of Information and Study: A study of the text of this act indicates plainly that the new Commission was intended by the legislature to be merely a bureau of information and that its first principal work was to make a general study of the road problem in Iowa.

Iowa State College had, for a number of years, taken a direct interest in the road problem and had gathered considerable statistical information. It was altogether logical to think of the State College in the capacity of a Highway Commission bureau of Information when the more elaborate measure failed. This college work had been done largely as thesis studies by the students of the Divisions of Engineering and Agriculture. In 1903, A. B. Chattin, CE '03, and Fay McClure, CE '03, civil engineering students made a large number of tests of tractive resistance offered by different types of road surfaces under varying conditions. Agricultural students had made a study in Woodbury County of the relationship which existed between market prices and road conditions. In 1904, L. T. Gaylord and T. H. MacDonald, seniors in civil engineering, took up and continued this work, arranging for the keeping of records for the entire year at six different market points covering market variations and road conditions. H. M. Bainor, MSA '04, a farm mechanics graduate student made a scientific experimental study on the effect of wide and narrow tires on tractive resistance.

Good Roads Fund for College Experimentation: The legislative act establishing the Highway Commission did not provide funds for the use of the Commission. When it became evident that no separate fund would be appropriated for this purpose, college authorities, under the direction of Dean Marston, succeeded in having a provision for a fund of $7,000, $3,500 annually, inserted in the Iowa State College budget for

good roads experimentation work.

Dean Marston Hunts for Experienced Engineer: Shortly after the appropriation of $3,500 for the year 1904 for good roads experimentation became available, the board of trustees authorized Dean Marston to make an extensive trip for the purpose of becoming acquainted with the work of Highway Commissions already established and of securing an engineer to take charge of the Highway Commission work. Dean Marston visited Highway Commissions and departments in the States of New York, Massachusetts, New Jersey and Maryland. He also visited the U.S. Bureau of Public Roads at Washington, D. C., and studied the work in the experimental laboratory. He secured the desired information but not the engineer. On his return he reported that with the funds available the Commission could not expect to secure anything more than a fairly competent instrument man with Highway Commission experience. In conjunction with Dean Curtiss, he recommended the employment of T. H. MacDonald, an Iowa State College man, who had graduated in Civil Engineering in the class of 1904. Mr. MacDonald was hired. He was paid $600 out of the good roads experimentation fund. He also was placed on the payroll of Iowa State College as Assistant Professor with assignment for road investigation work. His pay from the college was also $600, making his pay at the rate of $100 per month, or $1,200 per year, from the two sources.

Study of Iowa Road Problem: The study of the Iowa road problem supported by the General Assembly really began with the employment of Mr. MacDonald. Dean Marston and Mr. MacDonald made a number of trips together to study road construction work at various points in the state. For instance, Greene County, under the direction of J. W. Holden of Scranton, then a county supervisor but who later became a Highway

Commissioner, was attracting attention with it's graveled roads. Trips were made to Greene County to study these graveled roads and secure pictures. Trips were made to Cerro Gordo County particularly to study culvert building. These trips were made by train to the nearest railroad destination and continued by buggy and spring wagon. Mr. MacDonald had spent part of his boyhood on a horse ranch in Wyoming and it soon became common practice, particularly when he made trips alone, to carry a saddle, hire a hore, and thus make horseback inspection trips.

On one of the first investigation studies made in Calhoun county to secure information as to the average amount of work secured by the county per dollar of expenditure, Mr. MacDonald rode up and down the roads noting whatever construction work had been done, estimating it's value and when the field inspection was completed, searched thru the records in the county offices to learn, if possible, what had been paid for the work. And it may be said here that this was more often impossible. Dean Marston, in an interview concerning the early work of the Highway Commission, states with reference to this work of invesitgation, that about $100 work of actual work was usually accomplished for every expenditure of $1,000.

Dean Marston and Mr. MacDonald also made many trips giving a series of good roads talks in which they used the steropticon with views of work accomplished in other states by more advanced methods than in vogue in Iowa. Mr. MacDonald at first ran the lantern and Dean Marston did the talking but later Dean Marston, as he states, decided that it was unnecessary for him to "tag along". Mr. MacDonald from that time on both ran the lantern and did the lecturing.

Good Roads Trains Demonstrated Road Work: The Burlington and the C. & N. W. railroads, during 1904-1905, each ran roads trains over their lines in Iowa. The purpose wazparticularly to advocate the use of the split log drag, commonly known as the King drag, on the dirt roads. MacDonald accompanied these trains and assisted in the lecturing and work of demonstration where stops were made. Numerous road school were also held. A one-week road school was held at Ames, June 12-17, 1905.

Work in the Ames office during the first two-year period consisted of preparing and publishing accounts of the investigations made in the various counties on the methods of handling road and bridge construction and finances; studies particularly of geological condis conditions as they affected the soil of individual counties with reference to road building;; experimental work carried out in the college laboratories, and the making of such plans for bridges and culverts as were requested by the boards of supervisors. A determined campaign was made to have both supervisors and township trustees prepare accurate and comprehensive reports cobering the work accomplished and the expedditures made.

Motor Vehicles Appear in Legislative Acts Along With New Highway Commission : Motor vehicles first appeared in the legislative records of the state in 1904. On April 12th, the Thirteenth General Assembly required the registration of motor vehicles and regulated their use on the highways. The registration fee was $1.00. The certificate of registration was a round aluminum tag about 3 1/2 inches in diameter. The number plates were required to be affixed to the car, front and rear, as at present. Speed in the business sections of the towns and villages was " not to exceed one miles in six minutes"; in the outer limits of towns, " one mile in four minutes; in the country districts, speed was limited to"20 miles per hour". Good brakes, a horn and lamp, were required. It was stipulated that drivers of t the cars must stop to allow teams to pass and, when necessary, to assist drivers of teams by leading horses past the motor vehicles.

The years 1905- 1906 were almost a duplication of the Commission years 1904-1905. The same class of work was carried out except that the demands upon the Commission were increasing and the work was expanding rapidly. Prof. J. B. Davidson succeeded C.J.Zintheo in charge of road machinery at the college.

COMMOSSION RECOMMENDS LARGER ADMINISTRATIVE UNITS ; The second annual report of the Commission called attention to the fact that Iowa was at the foot of the list of the states

in the amount of money provided for its Highway Commission. Iegislative recommendations were headed by a suggestion that one mill of the total tax levied by the township trustees be taken from the trustees and given to the county board of supervisors. This was recommended on the ground that better results could be secured from roaf funds when centralized in the larger units.

A second legislative recommendation was that every county should be required to employ a competent engineer. The reports that no adequate returns, from the money which was estimat estimated to total more than $4,000,000 spent in the state, could be expected unless the money was expended and the work done under the direction of trained road and bridge experts. Standard plans for use on all new construction was urged.

In closing, the report added: " It is the aim to build up an engineering bureau of practical men who can go into any part of the state , at the call of the proper authorities , and be prepared to help them in any work they may have in mind".

$10,000 Per Year For Investigations and Expemses: On April 13, 1906, the Thirtyfirst General Assembly increased the annual appropriation for the Highway Commission to $10,000 for the biennial period, allowing the Commission $$5,000 per year for expenses. With the additional funds, experimenting was begun in college laboratories on the use of concrete for culverts. This work developed rapidly. During the year, methods of constructing concrete dulverts were demonstrated in actual practice at the annual road school. Also during the year, there were added to the testing laboratory , for use of the new Commission, a four-cylinder deval abrasion machine, a Page-Johnson cementation machine, and equipment for a 100,000 pound beam test. This equipment was used largely for testing, free of change, samples of materials sent in by the various counties. The beam-testing machine especially was secured to test experimental concrete beams which were made in the laboratory.

Annual Road School Established: The Annual Road School was held at Ames, August 13-18, and was supplemented by a number of raod schools held at various places in the state, particularly in Cedar, Iowa, O'Brien, Benton, Story, Dickinson and Calhoun counties. The annual road school continued every year at Ames until the attendance beca me so large that effective work could not be accomplished. They were abandoned in 1918. These activities, together with talks at conventions, participation in the Interstate Good Roads Convention at Chillicothe, Missouri, and with the Iowa Good Roads Association, occupied the time of

new Commission and its engineer.

It is interesting to note that in this year Mr. MacDonald drew $100 per month, or $1200 for the year's work. It should also be kept in mind that the finances of the Commission were handled entirely through Iowa State College and that all traveling expenses were reported in itemized form to, and were allowed by, the Board of Trustees of the college. Tis method of handling the Commission's finances continued until 1919.

Road Card in Census Data: The third report, covering the years 1907-1908, showed the rapidly expanding work of the Commission. Data secured and tabulated from the road information card inserted into the state census of 1905, from reports by rural carriers, and from studies of market price fluctuations as affected by road conditions and by Iowa geology and topography as it affects road building, occupied most of the time of the lone highway engineer. Road improvement, the report states, was beginning to " pass the agitation period and had reached the stage of education". During the biennial period, sixteen farmers institutes were held at which complete road programs were put on by the Commission. A pamphlet entitled "Road and Bridge Improvement in Iowa for 1908" was published and distributed to 10,0(men interested in road improvement in Iowa. Other publications were: "Standard I-Beam Bridges ," Use of the Road Drag", "Oil and Tar As Used in Road Building", " Small Culverts, Steel and Concrete" and " Bridge Specifications, Concrete and Steel".

Engineer F. R. White Hired as Inspector: Plans for specially designed bridges and culv culverts were prepared for twenty-six individual counties. Demonstration schools were held in several countiesunder the direct supervision of the Commission. A high-truss steel bridge consisting of six 135-ft. spans was designed for a location in Van Buren County on the Des Moines River. It was known as the Kilbourne bridge. F. R. White, a graduate of the Class of 1907, Iowa State College, was employed the following year (1908) as inspector in charge of th construction of this bridge. Mr. White's connection with the Highway Commission was almost unbroken from that date. He served as inspector on bridge and culvert work in a number of counties until 1910. He was then out of the Commission work for about one year. In 1911, he was given a place in the office as road engineer, under Mr. MacDonald.as road engineer. In this position, he continued until the resignation of Mr. MacDonald to accept the position as Chief of the Bureau of Public Roads in 1919. Mr. White then became Chief.

Another large bridge fpr a location on the Des Moines River was designed for Wapello County, the same year. The 1907 Road School was held in Council Bluffs, and the 1908 school in Waterloo.

Permanent Road First Mentioned : Permanent roads were first mention in the 1907-08 report. "Without doubt", the report states," Iowa is ready for permenent roads in certain districts, and a number of miles have already been built, though these have not conformed to the best practice. The idea that has been so often advanced that permanent roads will be opposed by the farmers who are most benefited is apparentlt not to be relied upon, as the letters....." Reading further- "The type of road which has been used in Scott County has been a heavy broken stone base covered with a wearing coat of gravel. This road was built in 1907 at a cost of $7,670 per mile. Des Moines County is building 3 1/2 miles...." From this, it appears that the permanent roads referred to were not really pavement but macadem, a type which under present motor vehicle traffic conditions in Iowa has been abandoned. In the days of the horse-drawn vehicle, with its comparatively slow movement and light loads, these proved satisfactory. There is, however, this sentance in the report as a brief review of this type of construction: "There is now considerable discussion which has resulted from the detructive effect of automobiles on stone roads as to the best means of preserving the road surface under such traffic." Pethrolithic pavement is mentioned as something promising. It consisted of a mixture of asphaltic oil, earth, gravel and broken stone.

Early Iowans Preferred Education to Roads: An interesting statement, in view of the action of the First Constitutional Convention in demanding that a clause in the proposed new constitution, which provided money for road building, should be altered to provide money for educational purposes instead, is the following: " The building of roads is as natural and inevitable as the establishment of an educational system. The Commission can increase its usefulness by building more and more expensive types of roads as an object lesson, however, not neglecting the dirt roads."

A chapter in the report, devoted to drainage, ends with the conclusion, "No matter if the ultimate end of road building is a graveled or a broken stone road, the foundation will always be earth, and the life of the finished road will depend upon the thoroughness with which the foundation is drained and will be kept drained. "

The 1908 report urges legislation permitting cash payment to be made to farmers for road dragging, thereby getting away from the volunteer dragging which had been the main standby on the township roads. The report estimates that $250 would be rewuired for eacl eqch township to keep the roads properly dragged by this method. The report also urged the employment, by the trustees , of a superintendenh to look after the dragging of the township roads and at an annual wage of $600. The limitation of $5 per mile per annum was pointed out as a serious defect in the state drag law then in vogue. Mandatory dragging by t the contract system was urged as the panacea for the dragging problem. The report also urged the relocation of roads to avoid ~~deep~~ steep grades.

Commission Asks $20,000 Per Year: After a summary tabulation of what other states were doing for their higheay departements and the amount of money annually set aside for road building, the 1908 report urges that the powers and duties of the Commission be increased. The report closes with this daring proposal : "for carrying on work of this nature, in any adequate manner, there should be appropriated not less than $20,000 per abbum".

Without faltering, the Commission continued by advocating a county engineer in every c county, the advertisement of all road and bridge lettings, the concentration of all funds in the hands of county supervisors rather than in the hands of twonship trustees, the taking of two mills from the township road funds and giving them to the county supervisors to controlexpenditue of, roadside tree planting, the destruction of roadside weeds, a mandatory road drag law, a state reward for new construction work built according to the state's standard plans, and an act collecting an annual road tax from automobile owners. Recipts from such tax were to be set aside for use by the Highway Commission in encouraging road improvement and for offering rewards for improved road construction.

In 1907, Mr. MacDonald drew an annual salary of $1,400. In 1908, this was increased to $1,800 Total expenses for the year were $5,149.64.

Motor-Vehicle Registration Fee $5 per Year : In 1907, the Tjirty-Second General Assembly raised the gegistration fee for motor vehicles to $5 per year. Dealers in automobiles had now become so numerous that rpovision was made for dealers' registration licenses for which the charge was $10 per year.

There was no provision in any legislative act for the publication of Highway Commission reports. In March, 1907 , in a concurrent resolution, the Thirty-Second General

Assembly stated, " Whereas, the said reports (Highway Commission Annual Reports of 1906, 1907-08,) contain a large amount of information of special interest and value to the farmers and to the builders of roads, therefore, be it resolved that 10,000 copies of said annual repotts be printed in phamplet form."

Apparently, there were no reports prepared covering the years in the next two biennial periods, 1909-10 and 1911-12,. That the Commission was actively functioning is evident from the legislative action taken by the Thirty-third General Assembly in 1909, the Thirty-fourth in 1911, and the Thirty-fifth in 1913.

Permanent Roads Through Improvement Districts: On April 1, 1909, the Thirty-third Gen General Assembly provided for the building of permenent roads by the establisment of improvement districts. Wherever petitions by the residents within the county on the majority of acres of land within a proposed district was presented, the supervisors were given the authority to establish such districts and to levy one-half the cost, 50%, of the proposed construction against the property, the assesments to be payable in installments. The supervisors were authorized to levy a two mill tax on all assessable propetty within the county, including property in cities and in incorporated towns. In counties where the mulct tax, whic which was tax levied for the sale of intoxicating liquors, was collected, part of this liquo tax might be used,in addition to the two mill fund, for carrying out such road improvement work.

Township Roads Again Divided Into Districts: In March 17, 1909, another Thirty-third General Assembly act became effective. It provided for that township trustees, when properly petitioned, might abandon the action which consolidated roads into one ddistrict and again divide them into two or more districts in which the electors might select a road superintendent for a period of two years. When such districts were formed, the trustees were to determine how much of the township road tax was to be paid in cash and how much in labor, with the provision that two-thirds of the amount of tax payable in labor should be worked out before July 1st of each year. In this same law, trustees were authorized to contract for thr road dragging at 50 cents per mile , giving preference to the occupants of the adjoining land. All main roads and mail routes were to be kept dragged. The leaving of lose weeds and sod in the middle of the road was forbidden. An attempt was made to improve conditions by giving legislative instructions in regard to tarveling on frequently dragged roads. It was made unlawful for persons to travel on the south half of an east and we

west road and on the east half of a north and south road, after a rain, until the road had dried. A fine of not less than $1.00 or more than $10 was provided for persons driving on the wrong side of the road , and for succeeding offenses at $5 minimun and $25 maximum.

Engine drivers were required to stop their engines and to assist drivers of teams when passing. Engine drivers were also required, for the first time, to place heavy planks ahead when crossing bridges and culverts.

Township Schools of Instruction : A township school of instruction wasprovided for road work and for administration. This was to be called by the broad of supervisors sometime between November and April. Expenses were to be allowed all officers attending and all experts taking part. Provision was made for the purchase of machinery by providing that one mill of the levy upon the county roads for drainage fund might be used for the purchase of equipment. Provision was also made that any township so desiring might add an additional mill levy for work to be done on its particular roads. A one mill levy over all property in the county, outside of cities of first class and special charter cities, was provided for as a drainage fund. One-half of the net proceeds of the road fund tax on city property was required to be returned to the cities for use on city streets.

Motorcycles came under the Iowa law February 26, 1909, with a required registration fee of $2.00. The motor vehicle registration book in the state secretary's office, it was provided, should give way to a card index system. It was made illegal for anyone to operate a motor vehicle on a public highway without a number or with any number other than that assigned by the Secretary of State. Dealers with two places of business were required to hav have two dealers' licenses.

Township Road Dragging Mandatory: Township road work was about as unsatisfactory during this period, as was proved later ,and as was evident by the numerous changes through legislationcovering handling of roads by township trustees. In April 11,1911, the Thirty-fou fourth General Assembly provided that trustees must divide township roads into permenent road dragging districts and must number them in consecutive order as specified in the act. Number oneroad district was specified to be located in the northeast corner of the township, and each section was to be numbered following the general principle applying to the number- of sections in the townships. A road superintendent, whose pay was to be $2.50 per day with and eight hour day,with expenses paid, was to be township road drag superintendent. His duty

was to notify road draggers who were under contract when and where to drag. The dragger was supplied with report cards on which to state when the roads were dragged. Also, a complete record of the dragging known as the road dragging record.

Cities and Towns Keep Road Extensions Dragged: Cities and towns were required to keep their main traveled roads into and through their town limits properly dragged. The fine for failure to perform this duty was not less than $10 or more than $25, with succeeding fines $25 and $50 respectively. This act also forbad the placing of water breaks or ditches across the highway either as an obstruction to speeding by motor vehicles or for drainage.

In 1911, motor vehicles had the distinction of rewuiring seven pages in the session laws of the Thirty-fourth General Assembly. The "chauffeur" first made his legislative appearance, horse power became the basis for registration fees with its computation being based upon the number of engine cylinders, stroke and diameter of pistons in this session. The registration was placed at $8 per car of 20 h.p. as a minimum and 40 cents per h. p. for cars of greater power.

Electric vehicles were taxed $15 and motorcycles at $5 each. Cars registered four times had their tax reduced to one-half for succeeding registrations. Registration fees were in lieu of other taxes. Car owners migh operate their cars for 15 days after purchase before putting on their license numbers. Care and prudence were prescribed as a proper limitation placed on speed,with a maximum of 25 miles per hour . The minimum age limit of operators was set at 15 years of age. Local road authorities were given authority to set aside a section of road for motor vehicle speed contests.

County Motor Vehicle Funds: The SECERTARY OF STATE collected registration fees and turned them over to the State Treasurer. Eighty-five percent of all the money paid to the State Treasurer was to be apportioned to the counties in the ratio of the number of townships in each county, and the fund thus provided was to be known as the County Motor Vehicle Fund. It was to be used exclusively for grading, draining, dragging and gaveling of public highways outside limits of cities and towns, and for the building of concrete cilverts. This fund was entirely under control of the County Supervisors.

Three Man Highway Commission: On April 9, 1913, pursuant to an act by the Thirty-fifth General Assembly, Iwa State College ceased to finction as the Highway Commission. In its stead, there came into being a three-man highway commission. It was established on

the basis of state control or state supervision , without state aid or state funds. The Dean of Engineering of Iowa State College was named as an ex-officio member. The other two me members were to be appointed by the Governor from opposing political parties. Anson Marston, Dean of Engineering at the college, with Dean C. F. Curtiss of the Agricultural Division, Had functioned as commissioners on behalf of the college since April 16,1904. He became the first member of the new Commission. J. W. Holden of Scranton, Iowa, Pres. of the State Assoc. of County Supervisors and for six years member of the Greene County Board of Supervisors, a Republican, and H. C. Beard of Mt. Ayr, an attorney and a Democrat, were named by Governor Clarke to the Commission. Dean Marston was chosen chairman at their first meetin at Ames, April 16th.

One of the first official acts of the new Commission was to take over the organization of the former Commission as it stood. Aside from the desk, tables, drawers, laboratory testing equipment, a kodak and some stationary, there was a personnel of eight peopleattached to the Commission and headed by T. H. Mac Donald.

The work of the Commission was divided into four departments: office, design, field and education. The Act of the Thirty-fifth General Assembly not only established an entirely ne Highway Commission but provided a complete improvement plan for state roads. This was based upon the idea of dividing the roads of the state into general systems. One was to be in charge by the County Supervisors; the other in chage by the township trustees. The supervisc were to determine and levy the taxes which were to provide the money for improving the inter-county system. Individual boards of trustees of the 1600 townships of the state were to levy and control the expenditure of the tax money for the improvement of the township rds.

It was to be the duty of the Highway Commission, among other things, to prepare the standard plans for road and bridge building and to direct and supervise all permanent constructionon both systems of roads.

In effect, the law left the trustees and the supervisors in charge of the roads and of the funds,but directed them to work largely under the direction and supervision of the State Highway Commission.

County Engineers Required: Personal direction of the actual road work in the various counties was placed chiefly in the hands of a county engineer, whom the law stipulated should be appointed and hired by the supervisors but who might be discharged by the

Highway Commission if proven incompetent.

To say that both supervisors and trustees resented the intrusion of the Commission and of the county engineers upon their particular domain in the field of road building and ma maintenance is putting it mildly. The order was receivedin a friendly spirit in very few cour counties. To make matters, there were not enough competent road engineers to fill the need for county engineers, even if they could have been adequately placed where most needed. Many boards hired engineers only under protest. Many made no effort to secure, or appanently did not even want, a competent man. Some hired such an engineer for a very few months of the year.

Inter-County Road System: The first big job laid at the door of the Commission was the selection and the designation of the system of roads to be known as the inter-county system. This system was to consist of not less then 10 % nr more than 15 % of the roads of the state which up to this time had all been township roads. The system, when completely laid out, was to provide connections between all main market centers of each county and was to provide through and inter-county highways which joined up with roads in adjacent counties or states. While the supervisors and the county engineer were instructed to select a tentative set of roads for their individual counties, it was the duty of the Highway Commission , in addition to helping the counties select the roads, to see that the entire system dovetailed into a complete state system of roads.

Official County Road Maps: The next step,following the selection of the inter-county system, was to prepare a complete map of each individual county showing, in addition to all other information ordinarily shown on county maps, the county's share of the inter-county system of roads. It was stipulated that this map was to be kept up to date by the Commission and that copies be officially on file in the Highway Commission office and in the office of the respective county recorder.

Standard Road and Bridge Plans: The Commission was to prepare standard road and bridge plans for all the state. Where standard plans were not suited or adapted to the work in hand, it was stipulated as the duty of the Commission to prepare special plans or designs. All permanent construction work on both the county and township systems was to be done in accordance with standard state plans. To providee for ample publicity for all work contemplated, it was stipulated that, on all work to cost over $1,000/ $300 or more, a resolution of necessity setting forth the work planned should be passed by the board of supervisors

before the work was started. Work estimated to cost $1,000 or more was required to be advertised and contracted for after competitive bidding. Contracts for work costing over $2000 were required to be approved by the Highway Commission. After the contract was let, the construction work was carried out under the supervision of Highway Commission inspectors and engineers, as well as under the supervision and inspection of the county engineers and the boards of supervisors. It is not to be wondered at that in the first few years under this system there was a constant effort on the part of many boards of supervisors to dodge the letting of contracts in the prescribed manner and to escape from the constant inspection and supervision. Many county engineers also resented the provision of the new law which required that standard plans, instead of the county engineer's plans, were required for the work.

Survey of the County Road System: One of the duties prescribed for the newly established county engineer was a complete syrvey of all of the roads selected for the inter-count system. It was stipulated that he should lovate all the corner stones, establish right of way lines and bench marks, and keep a complete record of all data and necessary information in a book to ne known as the County Road Book.

Township Roads : Township trustees were one more directed to consolidate all township roads into one district. All townsgip funds were again established as one single township road fund. Township trustees were to hire a township road superintendent. A duty of the superintendeent was to select from all the roads of the township the most important roads, and to classify these as "draggable" roads. He was under bond to see that these particular roads were dragged. Dragging could be contracted for. One of the superintendent's particular duties was to have every mile of draggable road under definite contract and arrangements such that it would be dragged at such times as he would give the order. If construction work was to carried out on the township system, the trustees were instructed to appeal to the supervisors for the services of the county engineer to lay out and plan the work. The county engineer was also to have more or less supervision on the progress of the work. State standard plans were to be used on township construction work just as on the inter-county system. All bridges of four feet in width on the township system were to be built and maintained by the county board of supervisors with county funds. Township trustees and township funds took care of the smaller culverts.

Railroad Crossing Danger Elimination : There was no startling legislation advance during the 1915-16 biennial period. In 1915, the Thirty-sisth General Assembly required that the members of the new Commission be placed under $5,000 individual bond. They were forbidden to send out and to pay expenses of road lecturers. This resulted from the employment by the Commission of a State Senator to make talks in explanation of the road law to railroad officials when the demand became so great that the members of the Commission and the engineers were unable to attend to their own duties and still meet all these requests. The Commission was instructed and empowered to take up the elimination of danger at railroad crossings , to negotiate with railroad officials, and to make plans and designs for danger elimination of specific crossings.

The Commission was also instructed to assist individual counties in fighting patent suits filed for infringement of certain alledged patents, particularly on bridge building plans. The State, through the attorney general, was also instructed to give assistance in these cases. Counties singlehanded were often quite helpless. The Commission was given authority to change or alter the inter-county road system in order to shorten routes, to eliminate curves, and to accomplish advisable stream channel changes.

The law also provided that the Annual Report covering the activities of the Commission was to be in the Governor's hands by Jan. 1st each year, and that it should be followed each year by Feb. 1st. by a summarization of the work accomplished by the individual counties in the state.

Support Fund for the Commission: Eight percent of the motor vehicle fees were directed to be paid by the State Treasurer to the Treasurer of Iowa State College as a support fund for the State Highway Commission. None of this money was to be used for road construction It was provided solely for the maintenance and expenses of the Commission organization in their accomplishing th ework specified to be done by it in its advisory and supervisory capacity. It should be noted that under the act creating the Highway Commission, the Commission handled none of the funds raised by direct taxation for the building of roads and bridges, either in county or in township. Taxation for these purposes was entirely a function of local taxing authorities. The expenditure and use of these funds did, however, come under the direct supervision of the Commission through the establishment of standard plans for road work and through the enforcement of the provisions of the law as it applied to both the county and to the township work.

The total receipts for the establishment of the Commission in 1913, until June 1,1914, the end of the first fiscal year, were $109,385.00. Expenditures were $74,132. This left an unexpended balance of $35,253.00.

Tourist Road Registration: Another act of the Thirty-fifth General Assembly provided for the registration of tourist routes. This came in deference to the good work being accomplished by many volunteer organizations which promoted motor vehicle routes between important traffic centers. The act permitted the organizations sponsoring certain roads to register their roads, thus protecting the routing, the marker design and color, and the wording of their particular road slogan. The fee for the registration was $5.00. Registration protected the marker against imitation by other organizations and prevented the use of that particular road by any other organization for a rival tourist route. The River-to-River Road from Davenport to Council Bluffs through Des Moines, organized in 1908-09, was the first and perhaps best known of these routes. These organizations were largely made up of volunteer members who associated themselves into a loose organization , with general and county officers, usually called"chairmen ", who were local boosters for the road improvement. These organizations increased in number until there were more than 100 functioning in the state between the years 1913- 1915. They performed a very valuable service. None of these organizations had or provided funds of their own for the building of the road. They secured results by centering persuasave or cajoling efforts upon the officials who had the expenditure of money in charge, and in urging and spurring them to greater efforts upon the particular roads in which the boosters were interested. The work accomplished was chiefly in securing better maintenance upon dirt roads. This was usually accomplished by means of road dragging. In many instances, there resulted quite startling demonstrations of what could be accomplished on the Iowa dirt roads with this simple means and with the small amount of funds available. These organizations, whose work was very valuable at this stage in Iowa's road development, quickly passed out of existence when a more adequate legislation ,directed at the proper road officials, accomplished the same results. A very few still continue to function. An unfortunate outcome with these organizations , with the passing of the original tourist volunteer organizations, was that there developed several different species of professional organizers who preyed upon cities and towns by promising heavily traveled tourist routes with high sounding titles through almost any series of towns upon

payment of sums of money by these towns for the privilege of being on the routing.

The use of prisinoers upon the highways in prison camps for road work was also provided for in an act by the Thirty-fifth Assembly. Prisoners were paid a stipulated amount, above the expense of their board and keep, all of which was kept for them until the time of their release. While this law has remained on the statute books, little use of prisoners has been made in road camps, largely because prison labor could provide only " a drop in the bucket" in the work of road construction. After several years of experience with the setup, Mr. MacDonald discontinued the prison labor camps by declaring that the trouble and bother incident to prison labor did not justify the effort and that the chief value or benefit incident to prison labor camps was in the beneficial effect upon the men in the camps by reason of the outdoor living and their employment at healthful labor.

All roads adjoining state owned property were placed in charge of the State Executive Council with instructions to the Council to name a state supervisor. The Chief Engineer of the State Highway Commission was officially named as the supervisor of these ro roads and has continued as such since that time.

County Road Cash Fund: The County Boards of Supervisors were ordered to take over all culvert building of culverts over 36 inches in diameter on the township roads. They were authorized to put all county road fund money into one account to be known as the "County Road Cash Fund". They were authorized, with the advice and assistance of the Commission, to make additions to the county road system whenever all the roads in the then existing county road system had reached a certain definite stage of improvement.

The Executive Council was given authority, by the Thirty-Sixth General Assembly, to either contract for the making of motor vehicle license plates or to have them made in the state penal institutions. A penalty of 10% was added to all motor vehicle fees not paid by May 10th of each year. The County Attorney was instructed to make these collections. Also, 10% additional was added for each month of delinquency after May 10th. An experiment was made in that number plates might remain on vehicles for a period of three years.

As evidence of the expansion of its work and its usefulness, the Highway Commission, during the year 1915, designed 459 bridges and culverts valued at $1,182,000 and for 76 individual counties; checked designs submitted by county engineers for 456 structures in 78 counties; passed upon 172 bridge contracts,49 materials contracts,; surveyed 49 railroad

crossing projects; held 37 railroad crossing conferences; passed upon plans for 459 miles of grading; and, in carrying out a special lakebed survey plan under orders from the state legislature, made a survey of 20 Iowa lakes. The 1915 Annual Report states: "The season of 1915 has demonstrated the limitation of earth-s urfaces on main traveled roadways. The state is now facing the problem of some weather and traffic rssisting surfacing for the main traveled roads. The insistent demand is increasing, not from pleasure seekers but from business men whose principal method of transportation is denied them when roads are impassable".

The 1915 Annual Report urged these recommendations:

1. A patrol system of maintenance for the inter-county road system.
2. A system of bonding to enable counties to do road and bridge work more rapidly than with the current funds.
3. Motor vehicle fees to be set aside as a state fund for permanent road work.
4. Regulation for motor traffic on highways to prevent accidents.
5. Discontinuance of speed contests on public highways.
6. High tension electric lines to be forbidden on highway right of way.

The fact that during 1916 the Highway Commission planned and checked 880 miles of grading, 472 bridge structures and 32 railroad crossing improvements is evidence that the expansion of work by the Commission continued without abatement.

Federal Aid For Road Building Accepted: On April 14, 1917, the Thirty-seventh General Assembly instructed the Highway Commission to "do the things required " by Congress for the acceptance of federal aid. In 1916, Congress had appropriated $75 million to be divided and apportioned among the states over a period of five years. For Iowa, this meant approximately $146,000 per year. Several things were required of a state for accepting same. The federal aid allotment must be matched dollar for dollar by the state. The State Treas. was instructed to meet this requirement by setting aside from the motor vehicle registration fund proceeds an amount equal to the federal aid allotment. This fund must be allotted to the county in proportion to the number of townships in the county and in the same manner as the motor vehicle license fees were apportioned.

Federal Aid System of Roads: Another requirement in the acceptance of federal aid was that the state should select and designate a system of main roads on which, when the system so selected was approved by the federal government, the federal aid money could be used. In Iowa, the legislature instructed the Highway Commission to designate a system of not less than 2,000 or more than 6,000 miles to be known as the Federal Aid System.

This system was the beginning of the Iowa Primary Road System.

Federal Aid Engineering Fund: The same act also established a fund designated as the Federal Aid Engineering Fund. Providing for this fund, the Commission at beginning of each year was instructed to make an estimate of the cost of engineering work on all projects on which federal aid was to be used. The State Treas. was instructed to set aside this amount from the motor vehicle license fees to be used for this specific purpose. The expense of engineering on federal aid projects was therefore not paid out of the Highway Commission Support Fund matching federal aid funds.

The same legislature instructed the Board of Control to make a study of cement manufacturing with the idea of possibly establishing a state plant. Also, road oiling was added to the methods of maintenance for which certain money might be spent. Railroads were authorized to reduce rates on road building materials. Citizens were given the option of working two days on the road at $2.50 per day or of paying their poll tax in cash.

Road Improvement Associations: It had become common practice for the communities desiring to improve roads leading into market centers to sponsor what was known as "gravel-bees". For these events, a superintendent was selected for the day and citizens either came in person and worked or.....

(Note: The next sheet is numbered 36 and should be changed to number 30 with each sheet thereafter also to be changed into sequence following.)

donated funds which were used to employ someone else to do the work for them. At times two and three hundred people with teams and road working equipment gathered to put the more important roads into good condition. When the enthusiasm for actually participating in the road work wore off, subscription papers were circulated and sums of money collected to hire the work done. Taking advantage of the willingness of citizens to assist the road building funds, the legislature authorized the boards of supervisors and the township trustees to accept sums of money from road improvement associations formed to improve certain sections of road and to appropriate county road funds not exceeding $150.00 per mile to be used with the subscription funds.

Glaring headlights on motor vehicles were placed under the ban. It was made illegal for anyone to use bulbs stronger than four candle power unless equipped with lens, or manufactured devices to deflect the light beam and hold it to a level not exceeding 42 inches from the road surface at a distance of 75 feet in front of the car. The operation of cars by minors again attracted attention and it was made illegal for any person under 15 years of age to operate a car unless with the permission of the owner and unless accompanied by a person of mature age. The owner of the car was made liable for any damage. Garages were required to register all cars left in their places over night, the garage record to show car engine numbers. Alteration or obliteration of engine numbers were declared to be prima facie evidence of larceny of said motor vehicle. Violation of the garage registration lead to a fine of $100.00.

Unexpended balances in the Highway Commission Support Fund were instructed to be returned to the state treasury and apportioned to the counties with the registration fees money.

Patrol System of Maintenance: Accepting legislative recommendations in the 1916 Annual Report, the Thirty-seventh General Assembly, in 1917, established the road patrol system of road maintenance. Supervisors were instructed to divide the county roads into patrol districts and hire a road patrolman to spend his entire time on his section of the road and to be responsible for its maintenance, which consisted mainly of road dragging. It was provided that he must drag every road at least once every week.

Dean Marston who had been commissioned a Major of Iowa Engineers in the World War on October 16, 1917, was automatically succeeded as Highway Commissioner by Dean S. W. Beyer, who was advanced by Iowa State College to Dean of the Engineering Department.

There were many changes in county engineers thruout the state due to enlistments in the War and calls to service. A change was made in the Highway Commission organization. The three district system of dividing the state was changed to five districts, and two more district engineers appointed. Federal Aid Paving Project No. 1 was planned and carried out in Cerro Gordo County. This consisted of four miles of Type A concrete. Camp Dodge road, a section of monolithic brick highway 4.5 miles in length between the Des Moines city limits and Camp Dodge was planned and built under the direction of the Highway Commission.

Work during 1918 was greatly hampered by war conditions. The engineering force which had been built up was seriously crippled by enlistments. The transportation situation was difficult and road building materials were extremely high in price.

First Iowa Road Map - 1918: During 1918 the Commission completed the first Iowq road map. This was the map showing the inter-county system of 6,000 miles which the legislature had authorized the Commission to select. This map carried the information that the inter-county system

had a total of 6,000 miles, the county road system of 10,000 miles and the township road system of 88,000 miles. Traffic census figures gathered during the year indicated the following proportion of traffic on the roads: local 46%, interurban and inter-county 47%, tourist or interstate 6½%. Horse drawn traffic was found to be 14% of the total, the balance 86% was motor vehicle traffic. There was an average of 300 vehicles per day on county roads. An enterprise of the Commission during this period was the planning and supervision of the city street construction thru and adjacent to the state capitol grounds, in Des Moines.

Assessment Against Adjacent Property Recommended: Legislation recommended by the Commission at this period included a special assessment against adjacent property for financing hard surfacing; road guides, signs and markers, were proposed for the inter-county system with the work of erecting the guides and markers to be in charge of the Commission. There were suggested motor truck regulations and restrictions against incompetent and reckless drivers. Also, there were restrictions proposed against indiscriminate issuing of county funding bonds. There was a protest against the township unit as being too small for economically handling road work. However, there was the fear expressed that the "county unit may be too big". "Township administration of funds," says the Report, "is fast becoming an economical impossibility under the conditions that exist at present."

Because of the difficulty of securing draftsmen, a Women's Drafting Room was established by the Commission. Notable progress from a legal standpoint was made during this year in the winning of a series of patent rights suits in which the Commission had participated, which held the Thatcher, Bone and Luten patents invalid.

Primary Road System Established: The Thirty-Eigth General Assembly in 1919 gave Iowa a long boost toward road improvement. The law established

a primary road system of 6,400 miles; a Primary Road Fund to finance construction and maintenance; and a comprehensive plan by which the entire system was to be improved.

The primary road system selected was the same as designated two years previously as the federal aid system though somewhat enlarged. It was specified that it should provide connecting highway links between all the larger towns and market centers. It did, in fact, link up practically every town of 1,000 population, or over.

Source of Primary Road Fund: The primary foad fund was to consist of the automobile registration fees, the federal aid allotments and the proceeds from the special property paving assessments effective only where improvement projects called for pavement and which were to total 25% of the cost of the pavement slab. The expenditure of the primary road fund was left in the hands of the supervisors but all expenditures had to be approved by the Commission. Work contracted for to be paid for from the primary road fund was to be done according to standard Highway Commission plans and Highway Commission engineers were to be in direct supervision of all construction. The supervisors were given authority to anticipate two years allotments from the primary road fund thru a system of anticipation bonds the principal of which was to be retired by the current annual primary road fund allotments to the county. The primary road fund was apportioned to the counties on the basis of area by ratio of townships. Before proceeding with any hard surfacing project the proposed improvement had to be subjected to a vote of the electors of the county.

It was also provided that if a county desired to proceed faster with any surfacing improvement than the current annual revenues would permit, the people of the county would vote authority to the

Board of supervisors to issue primary road improvement bonds but it was stipulated that both questions, that of hard surfacing and of issuing bonds to pay for the surfacing, should be authorized by balloting separately upon both proposals.

Special Assessments on Adjacent Property: Special assessments on adjacent property were permitted only on hard surfacing projects. They could be assessed over any area extending 1½ miles on each side of the road to be improved. Two options were provided counties in voting hard surfacing improvement projects. The county could bote general blanket authority to the Boards of supervisors to hard surface the primary roads of the county or it could lay out a definite program of improvement and authorize the work to be undertaken as a program of improvement on certain definitely specified roads.

The patrol system was definitely established for the maintenance of the primary road system. The work was to be carried out under the direction of the board of supervisors.

The Highway Commission Support Fund was reduced to 2½% of the registration fees. This reduction was made possible by the fact that the license fees had so greatly increased that 5%, as previously provided, made a fund larger than was needed.

Secondary Improvement Districts: Secondary roads were divided into county and township roads. Supervisors were authorized on petition to establish county secondary road improvement districts and to assess 25% of the cost of the work of improvement against the district benefited. The improvement was limited to drainage, grading, or graveling. The balance, or 75%, was to be paid from county funds.

Supervisors and township trustees jointly could establish

township road improvement districts for certain specified township roads with the township paying 50% of the cost of the improvement, the county cash funds 25%, and a property assessment over the benefited district of 25%.

The tax rebate on wide tires was eliminated.

Township trustees were permitted to levy a two mill tax for a Road Drag Fund. By the end of the year, 26 counties had voted favorably on proposals for hard surfacing primary roads. Thirteen had turned down the proposal. Thirteen counties also had voted to issue bonds to expedite this work totaling $18,475,000. Nine counties had turned down bonds totaling $8,050,000. Black Hawk County was the first to vote on primary road bonds and the Waterloo-Cedar Falls brick pavement was the result of the first primary road improvement election.

During the year government War equipment was turned over to the Commission valued at $721,000.00.

A significant change in the Highway Commission organization was the establishment of a separate maintenance department.

Black Hawk County First to Vote Road Bonds: Following the passage of the primary road improvement law, Black Hawk County was the first to hold an election. The election day was June 3, 1919. There was a favorable majority on the proposal to hard surface the county primary road system of 526. On the question of issuing $1,500,000 bonds to pay for this improvement, there was a majority of 461.

Including Black Hawk County, there were 39 county elections held on the hard surfacing project in which 26 voted favorably and 13 voted negatively. Approximately 1700 miles of pavement were made possible by the action of the 26 counties voting favorably.

On the proposal to issue bonds there were 22 elections in 1919.

They carried in 13 counties, authorizing a total of $18,475,000. The bond proposal lost in 9 counties.

Primary Road System Established: Acting under the new law, the primary road system of approximately 6,400 miles was selected and established. This connected every county seat and every market place in the state with a population of 1,000 or more.

Different projects for improvement were outlined on 1,536 miles, or approximately one-fourth of the system. Surveys were completed bringing the total mileage surveyed at the end of the year to 1,100 miles or approximately one-sixth of the system.

Fifty-six projects involving federal aid under the federal aid allotment were prepared and submitted to the federal bureau involving the improvement of 899 miles of road estimated to cost $8,919,357.00. Nineteen of these federal aid projects were contracted and placed under construction involving 232 miles of road. Practically all this work was drainage, grading and bridging. Twenty-five stream gaging stations were placed thruout the state in conjunction with the U.S. geological Survey and the State Geological Survey. Participation in this work was for the purpose of securing data on flood and stream conditions upon which the size of bridges and culverts then being constructed in large numbers by the Commission, could be determined.

As an indication of the increase of work in the department as a result of the new law, it is interesting to note that on December 1, 1918, there were 62 people on the Commission's force exclusive of the commissioners. On December 1, 1919, there were 156 people employed. Supervision of the field work of the Commission which had been handled thru six district offices had been increased to nine district offices with a district engineer in

charge of each. The organization of the Commission at this time was as follows: J. W. Holden, Scranton, Iowa, (republican), as Chairman of the Highway Commission, Wm. Collinson, Chariton, Iowa (democrat) member of the Commission, and Anson Marston, Dean of Engineering of Iowa State College, Ames, Iowa, as ex officio member of the Commission. Chief Engineer Fred R. White headed what was termed the Administration Department. The other departments were - Accounting, Road Management, Road Surveys and Plans, Construction, Maintenance, Bridges, Drainage, Materials and Tests, State Parks and Institutional Roads.

First Changes in Commission Personel: T. H. MacDonald, who had been employed by the Commission in 1904 following his graduation at Iowa State College and who had acted as Chief Engineer for The Commission since his employment, resigned in May of 1919 to become successor to Logan Waller Page, deceased, as Chief of the U. S. Bureau of Public Roads, Washington, D.C. Fred R. White, who had come to the Commission shortly after his graduation in 1907, as bridge inspector and who had later been employed as Head of the Road Department succeeded Mr. MacDonald as Chief Engineer.

H. C. Beard of Mount Ayr, Iowa, who had been appointed commissioner in 1913 at the time of the organization of the three man commission resigned on January 1, 1919, to accept the position of Assistant District Attorney for the Southern Division of Iowa. Mr. Collinson, named above, was appointed to fill out Mr. Beard's term which expired July 1, 1919, at which time Mr. Collinson was named for the four year term.

Lt. Col. Anson Marston, who had returned to Ames following the close of the World War and the discharge of the Engineering Division of which he was in command, resumed his duties as Dean of the Engineering Division at Iowa State College thus automatically resuming his place as

highway commissioner as successor to S. W. Beyer who had officiated during Mr. Marston's absence.

During 1920, two counties, Webster and Worth, voted on the hard surfacing proposal, Worth favorably, Webster unfavorably. On the bond issue proposition there was but one election, that in Webster County, in which the proposition was voted down. During the year, a total of $1,460,000 in county-primary road bonds was issued as follows:

Cerro Gordo	$340,000
Floyd	335,000
Polk	350,000
Scott	435,000

Field surveys were made for 1792 bridges and culverts, plans for 1,074 bridges, surveys were made for the improvement of 13 railroad crossings, and plans prepared for 20 railroad crossings. Twenty-one crossing projects were satisfactorily adjusted and agreements reached between the public and the railroad companies regarding the work and costs. This work resulted in the elimination of 8 crossings, the separation of grades in 5 crossing projects, and other improvements in 16 projects. Road surveys were made for the improvement of 1,089 miles and plans completed for 1,164 miles. The following construction was accomplished:

Paving	46.58 Miles
Graveling	102.52 "
Grading	409.82 "

Road material tests were made on 7,132 carloads of material.

On December 1, 1920, there were 245 people on the Commission's force exclusive of commissioners and part time help.

Highway Commission Contingent Fund Established: The Thirty-ninth General Assembly, in 1921, resulted in several rather important additions to the 1919 primary road legislation. Special assessments for paving were permitted to be levied against state owned lands adjacent to roads in improvement districts. A contingent fund was established in the

State Treasurer's Office against which the Highway Commission could issue checks for such bills and expenses as in the ordinary course of business required quick payment such as for freight, part time help, miscellaneous supplies for office and laboratory purposes, etc. This contingent fund was later reimbursed out of the primary road funds for all money which had been checked out.

Condemnation of land and gravel pits was permitted with a limitation of five acres.

Use of primary road funds was authorized for the improvement of extensions of primary roads within cities and towns where special assessments against the property could not bear the expense of the special assessment.

Sleights were required to be of the standard width of 4 ft. and 8 inches.

An improvement in secondary legislation was an act permitting the county supervisors, upon request of the township trustees in any individual township, to take over the improving by grading and draining of the township road system. Money for this improvement was to be levied by the township trustees and turned over to the county board of supervisors to pay for the work mutually planned between the two and carried out by the supervisors.

In the year 1921 primary construction work was carried out as follows:

Paving	165.4 Miles
Graveling	367.7 "
Grading	1,050.9 "

On December 1, work was under way on 151 projects located in 92 counties. Field surveys had been made for 1,624 bridges and culverts, plans prepared for 2,925. In additiona, 834 bridge, road and material contracts

were checked in the Commission office and approved for the benefit of individual counties. Road surveys were made for the improvement of 1,005 miles and plans completed for 1,455 miles.

Dubuque County voted unfavorably on both the question of hard surfacing and of issuing bonds for $1,500,000. During the year 1921 primary road bonds were issued totaling $3,104,000.

The Highway Commission force showed little increase during the year, the total employed on December 1, 1921, being 253.

Special Property Assessment Reduced: The Fortieth General Assembly in 1923 cut the special property assessment of 25% of the pavement slab cost against adjacent property to 12½% and authorized the repayment to all who had made payments under the 25% act, of the excess over 12½%. All assessments which had not been paid were ordered reduced before collection.

In it's 1922 Annual Report the Highway Commission recommended that the entire special assessment against abutting property be eliminated.

The Highway Commission for the primary road system and the boards of supervisors for the county system, were given authority to remove advertising signs and billboards from the highway right of way.

Boards of supervisors were given authority to condemn city and town property in order to improve primary road extensions.

Primary-Secondary Road Improvement Districts: Authority was granted to the Highway Commission and boards of supervisors, when the improvement of the primary road system in any county had reached a certain definite stage, to spend a portion of the primary road funds each year on the improvement of the secondary road system. These were called Primary-Secondary Road Improvement Projects. All work carried

out on the secondary road system and paid for by the primary road funds was to be planned and designed by the Highway Commission engineers and carried out under the same supervision as road construction work on the primary road system.

A gasoline tax was recommended by the Highway Commission in it's 1922 Annual Report. This was the first mention, in official form, of the gasoline tax in Iowa. A bill to this effect passed both the House and Senate but was vetoed by Governor N. E. Kendall in 1923, as unconstitutional.

Authority was granted the Highway Commission to accept a suitable site in the town of Ames which was offered as a donation to the state upon which to erect Highway Commission offices, the cost of same not to exceed $125,000 and not more than $50,000 to be spent in any one year on it's construction. The money was to be taken from any balance left in the Commission's maintenance fund which was left over after the year's expenses were paid.

The following year, the special session of the Fortieth General Assembly made several important legislative advances.

Combined Primary and Secondary Improvement Programs: The Fortieth General Assembly provided that "in counties with a population exceeding 70,000 or over, an election might be held upon a combined proposal to issue primary road bonds for grading, drainage, bridging, and paving the primary road system, and for grading, bridging and drainage on the secondary road system. In counties having less than 70,000 population, the same dual program could be voted upon but separate ballot boxes were to be provided for voters outside of cities and towns, and in order to pass, the project must carry in both the city and town districts and the outside districts.

Supervisors were authorized to spend not to exceed $25,000 of the county money on inter-county bridges.

The supervisors were to take care of construction and maintenance on all bridges and culverts on the county system and all such construction work on the township system except for culverts 36 inches in diameter or less.

Commissioners and supervisors were jointly authorized to confer with officials from other states on interstate bridges.

Supervisors were given authority and discretion to employ one or more engineers. Under previous legislation they were compelled to employ a county engineer.

Complete surveys and plans for improvement for all parts of the county road system were provided for. These were to be made by the county engineer and all such plans were to have the approval of the Highway Commission.

Supervisors were authorized to condemn land for gravel pits and the supervisors and engineers were required to maintain the county road system in good condition by dragging.

Additions to the county road system were permitted by the boards of supervisors upon approval of the Highway Commission.

The opening of highways to state parks by the Highway Commission was authorized.

A county road tax of one mill covering all the property in the county was established but one-half of all collections on city property was to bw turned back to towns and cities.

A county road building tax of not more than two mills was established on all county property for county road work.

A county road building tax of not more than two mills was established on all county property for county road work.

A county drainage tax of not to exceed one mill on all county property was established.

A county bridge and culvert tax of not to exceed 5 mills on all property except in cities controlling their own bridge levies, was authorized.

On decmeber 1, 1924, the condition of the primary road system was as follows:

Paving	502.3	Miles
Graveling	2,164.4	"
Grading	1,934.4	"
Ungraded	2,058.6	"
	6,659.7	"

The 1924 Annual Report of the Commission proudly states that "One can now travel from Des Moines to the county seats of forty-four counties by direct route and be on gravel or pavement all the way."

On December 1, 1924, there were $11,322,500 of primary road bonds and $3,169,500 of primary road anticipation certificates outstanding. The bonds had been issed by eleven counties and the certificates by 69 counties.

The same report recommends again, a gasoline tax of 2¢ per gallon, one-third of which was to be used on the primary roads and two-thirds to go to the township and county roads divided equally.

State Road System Recommended: Most important of the recommendations of the 1924 Annual Report is that the primary road system be made a state road system with the Highway Commission having full control and supervision over both primary roads and primary road funds. The chief argument for this proposal was that the Iowa primary road law might be coordinated with the federal aid road law with which it did not comply.

Secondly, it would secure uniformity of construction and maintenance of all primary roads. It was pointed out that under the county unit system under which the Iowa system was being administrated, any one county could block the improvement of any important cross state road to the detriment of the people, not only of Iowa, but of other states. Also, the failure of any one county to properly maintain it's portion of the primary road system might jeopardize the right of all other counties to receive federal aid money, one of the federal aid requirements being that the state must forever maintain, in proper condition, any road on which federal aid money had been used to assist in construction.

Highway Commission Office Building: On June 1, 1924, the Highway Commission and it's force of engineers and assistants moved into the new building which had been constructed under the authorization given by the Fortieth General Assembly in 1923. On december 1, 1924, there were employed 255 people on the Commission force, 103 of the number being engaged in construction work.

Primary Road Maintenance Turned Over to Highway Commission: An important step given highway legislative progress was made by the Forty-first General Assembly in 1925 when it turned over to the state Highway Commission, the maintenance of the primary road system. All authority over maintenance was removed from the boards of supervisors who had previously been in full control of this work. Funds necessary to carry out this maintenance were given to the Highway Commission.

Primary Road Development Fund: The Primary Road Development Fund, another important movement towards state control of the primary road system was established. This was to consist of all federal aid allotments turned over to the state together with an equal amount of of the primary road fund. This fund was also entirely under the authority of

the Highway Commission and could be expended by the Commission on any part of the primary road system irrespective of county lines and entirely independent of the individual boards of county supervisors.

The state was given authority, thru the Highway Commission, to purchase property or materials either corporate or personal which might be needed for the construction and maintenance of any part of the primary road system.

Three Year Road Building Program: With the establishment of the primary road development fund in the hands of the Highway Commission to spend on any part of the primary road system if desired, it became possible for the Commission to arrange a definite program of construction over a term of years. Following negotiations with each of the 99 individual counties, the Commission devised what became known as the Three Year Road Building Program. In this program it was mutually agreed between the boards of supervisors and the Commission as to the exact amount of the county's share of the primary road fund which would be used in connection with money which the Commission could supply from it's own development fund for road construction in each particular county during each of the three years, 1926, 1927 and 1928. The program included grading, draining, and bridging of 1,154 miles, the graveling of 2,731 miles and the paving of 46 miles. This work was so planned that at it's completion it provided a connecting system of highways extending over the entire state providing outlets for every county seat in the state and constituting eight roads east and west and five roads north and south completed by grading, drainage, bridging and paving or graveling. The work planned called for an expenditure of $27,868,000.

Federal System of Interstate Highways: Complaints from the public of confusion resulting from the activities of literally hundreds of tourist

route organizations led to the appointment by the U. S. Bureau of Public Roads on March 2, 1925, of a joint board on interstate highways. The appointment of this board had been suggested to the Bureau by the American Association of State Highway Officials at it's meeting in San Francisco on November 20, 1924. This board was instructed to "undertake the selection and designation of a comprehensive system of thru interstate routes", and to devise a uniform scheme for designating and marking this system. This action was deemed necessary by the highway officials because the tourist organizations were organizing routes entirely without correlation of any kind. Routes were duplicated in a confussing manner. In one instance there were as many as eleven different trail markingson one single section of road. In most cases the organization of these routes was the result of entirely selfish efforts to exploit good roads sentiment and provide salaries for paid officials of the route organizations. In most instances all that a community got from it's money outlay to these organizations was a more or less careless and inadequate marking of the routing thru the community.

This interstate or federal system, when completed by the joint board, approximated 3% of the entire total road system of the individual states, giving a system of some 50,000 miles for the entire United States. The Iowa portion was approximately 3,000 miles. The selection of the U. S. system and the assignment of U. S. numbers to these routes thru the states made it advisable for the Iowa State Highway Commission to make a complete revision of the Iowa primary road numbers which had by this time been established so that the Iowa numbering system might conform to the federal system without confusing duplication of road system numbers. This work of renumbering and remarking was begun in 1925 and completed in

the following year, 1926.

Following the completion of the numbering system, the Highway Commission proceeded with the selection of route markers and road direction signs on the entire primary road system using as a standard state marker a circle with the number enclosed and the work "Iowa" for the primary roads. The federal standard marker consists of a U. S. shield with the name of the state and road number enclosed.

Authority over Primary Road System to Highway Commission: The Forty-second General Assembly in 1927 gave the State Highway Commission complete authority over the primary roads. This authority was previously in the hands of the county boards of supervisors. With this also went complete authority over the primary road funds. By this act the Commission was given full authority to improve in any manner which it deemed advisable, any portion of the primary road system irrespective of county borders.

Five Man Highway Commission: With the increased authority also came the change in the Highway Commission organization itself. The three man Highway Commission with one member exofficio the Dean of Engineering of Iowa State College, was abolished and in it's stead there was established a five man Highway Commission all members of which were appointed not more than three of whom could be of the same political party. These members of the Commission were to be appointed by the Governor by and with the consent of the Senate. In accordance with this act the new Commission began to function on July 1, 1927. The personel of the new Commission and additional information will be found in a supplementary tabulation at the close of this article.

Three Cent Gasoline Tax: An additional 1¢ of gas tax was added to the 2¢ tax which had been previsously established. This additional

1¢ was to be added to the primary road fund to supply funds which were to be used to repay individual counties for bridges and culverts built on the primary road system out of county funds. Any balance left over after making these refunds to the county was to accrue to the primary road fund.

The Highway Commission was given authority to completely mark and signboard the primary road system. Also, primary roads were designated as arterial highways. Traffic entering a primary road from a county road was required to come to a full stop. The speed of motor vehicles again came under regulative measures the chief of which was a limitation of 25 miles per hour in the suburban districts of cities and towns.

Highway Commissioners Given Annual Salary: The special session of the Forty-third General Assembly in 1929 gave the five Highway Commissioners an annual salary of $4,000 per year with all necessary traveling expenses. From the first establishment of the three man Commission, in 1913, the commissioners had been allowed a fee of $10.00 per day, with traveling expenses. This had remained unchanged until the act of the Forty-third General Assembly.

The Commission was given authority to locate primary roads thru cities and towns, also authority to condemn right of way when necessary thru cities and towns. Permission was also given to mark lateral roads into the business district of cities and towns from the main line of a primary road. An important measure was that which gave authority to the Commission to regulate traffic loads on the primary roads and to vary these in accordance with seasonable changes, also to regulate and establish traffic rules governing the use of motor vehicles on the primary roads. The limitation of forty miles per hour for motor vehicle

speed on the primary road system was removed.

Bonding Limitation Raised to 4½ Percent: The Forty-third General Assembly also raised the limit of bonded indebtedness in a county from 3% to 4½% of the actual valuation of all property in the county. This act made it possible for many counties which had previously voted bond issues insufficient to improve their primary road system as desired, to hold bond elections for additional issues to complete their system.

Railroad commissioners were given full authority to regulate public carriers, both freight and passenger, as to rates, routes and service.

The Forty-third General Assembly following the decision of the State Supreme Court that the $100,000,000 bond issue act which had been favorably voted upon at the general state election in November 1928, was unconstitutional, took the first step in changing the Iowa constitution in such manner that if the amendment is adopted bond issues in excess of $250,000 can be voted and issued by the state of specific purposes. The program of road improvement as provided in the state bond act was incorporated in the text of the constitutional amendment.

Supervisors Control Secondary System: Under the terms of the Bergman Act passed by the Forty-third General Assembly, an important step was made toward the improvement of the secondary road system consisting of county and township roads. All authority previously existing in the hands of the township trustees was by this act authorized to be transferred on January 1, 1930, to the county boards of supervisors. The township roads were to be continued as township roads but all township authority over these roads was eliminated. County supervisors will not only construct and maintain both county and township roads but will levy all taxes for the improvement of both systems. All construction, either

bridge or culvert must, however, be in accordance with state standard plans and subject to the same general requirements as to supervision and inspection as had prevailed on the county road system.

Township Trustees Pass From Road Building Picture: With the development of the motor vehicle and the increased range of travel which it provides over the horse drawn vehicle, all roads have gradually, year by year, lost more and more of their strictly local significance. Local administration of both maintenance and construction has become gradually more and more difficult and insufficient. The transition from smaller to larger units has been forced by necessity. Well located township or community roads of the early days became the county roads of subsequent days, then became primary, or state, roads and finally developed into federal or U. S. roads, and important sections of great trans-state, interstate and trans-continental highways. Always better results have been secured as roads passed from smaller into larger units of administration.

When the new Iowa secondary law becomes effective January 1, 1930, the township trustees, first of the Iowa road officials, who for many years were supreme in authority over all Iowa roads, will pass almost entirely out of the road building picture. Township roads will still retain their old name. The supervisors will be in control of the secondary system composed of 12,277.06 miles of county and 84,245.70 miles of township roads. The first Iowa territorial road from Keokuk to Des Moines, established by a territorial legislative act in 1838 and laid out by three commissioners the following year, has grown and developed into a total Iowa road system of 103,283.86 miles. It has passed thru many phases of road administration from local settlers train under township trustees and local superintendents, to the Iowa State Highway Commission with state and federal supervision and control.

The Highway Commission, first established in 1904 as an advisory and information bureau, is already in full and complete authority over the primary road system of 6,761.1 miles of the most important traffic routes in the state which includes the entire Iowa mileage of the U. S. interstate system.

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-Summary Tabulation-

Organization and Personel - Iowa State Highway Commission
1904 to 1929

Iowa State College Officiating as Highway Commission:

Year	Members	Address	Named By:	Politics	End of Term
1904	Anson Marston	Ames	Bd. of Trustees, I.S.C.	Dean of Engr.	Ex Officio
	C. F. Curtiss	Ames	Bd. of Trustees, I.S.C.	Dean of Agric.	Ex Officio

Three Man Highway Commission:

1913	Anson Marston	Ames	Ex Officio	Dean of Engr.	July 4,1927 Resigned
	J. W. Holden	Scranton	Governor	Republican	July 1,1926
	H. C. Beard	Mt. Ayr	Governor	Democrat	Jan. 1,1919 Resigned
1917	S. W. Beyer	Ames	Ex Officio succeeded Dean Marston during World War		
1919	Anson Marston	Ames	Ex Officio succeeded Dean Beyer return from World War		
1919	Wm. Collinson	Chariton	Governor to succeed H. C. Beard	Democrat	April 20,1926 Died
1926	Carl C. Riepe	Burlington	Governor to succeed Wm. Collinson, deceased	Democrat	July 1,1931

Five Man Highway Commission:

1927	Carl C. Riepe	Burlington	Governor	Democrat	July 1,1931
	*Herbert E. Dean	Ocheyedan	Governor & Senate	Republican	July 1,1929
	*T. J. O'Donnell	Dubuque	Governor & Senate	Democrat	July 1,1929
	C. L. Niles	Anamosa	Governor & Senate	Republican	July 1,1931
	H. A. Darting	Glenwood	Governor & Senate	Democrat	July 1,1931

*H. E. Dean and T. J. O'Donnell reappointed for new terms beginning July 1, 1929.

-Summary Statement-

Iowa Gasoline Tax - March 1925 to January 1929

Year Levied	Tax Per Gallon	Gross Receipts	Portion Primary	Portion County	Portion Township
1925	2¢	$3,215,404.88	$ 931,144.40	$ 931,144.40	$ 931,144.40
1926	2¢	5,033,892.97	1,598,000.00	1,598,000.00	1,598,000.00
1927	3¢	7,362,138.21	3,043,389.26	1,802,000.00	1,802,000.00
1928	3¢	8,535,628.00	4,785,387.19	1,791,000.00	1,791,000.00

Iowa Motor Vehicle Registration
1904 - 1928

Year	No. Cars Registered	Gross Collected	Portion to Primary Funds
1904	931	$ 959.00	
1905	799	978.00	
1906	1,022	1,313.00	
1907	1,947	7,020.00	
1908	3,156	20,880.00	
1909	5,501	36,608.00	
1910	10,422	65,608.00	
1911	28,154	259,736.00	
1912	45,715	485,300.00	
1913	71,794	646,469.00	
1914	105,413	1,040,135.00	
1915	147,078	1,533,053.00	
1916	198,587	1,776,170.00	
1917	254,462	2,249,655.00	$ 438,526.80
1918	278,313	2,547,596.00	434,653.61
1919	363,079	3,077,445.00	577,218.48
1920	437,378	7,507,202.00	6,794,142.72
1921	465,325	7,719,127.00	7,211,922.34
1922	503,821	7,800,097.27	6,464,632.67
1923	513,115	8,827,062.00	7,811,868.10
1924	611,002	8,979,463.20	7,976,302.47
1925	659,327	9,621,645.77	8,597,901.03
1926	700,193	10,208,674.84	9,078,379.03
1927	706,160	10,371,698.77	9,249,175.80
1928	733,466	10,692,767.00	9,605,429.70

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