IOWA STATE COLLEGE OF AGRICULTURE AND MECHANIC ARTS OFFICIAL PUBLICATION

Vol. XXX

JULY 22, 1931

No. 8

AUTOMOBILE OPERATING COST AND MILEAGE STUDIES

By ROBLEY WINFREY



Bulletin 106

A ENGINEERING EXPERIMENT STATION IOWA*STATE COLLEGE AMES, IOWA

Published weekly by Iowa State College of Agriculture and Mechanic Arts, Ames, Iowa. Entered as second-class matter and accepted for mailing at the special rate of postage provided for in Section 429, P. L. & R., Act of August 24, 1912, authorized April 12, 1920.

PURPOSE OF THE STATION

THE PURPOSE of the Engineering Experiment Station is to afford a service, through scientific investigation, evolution of new devices and methods, and tests and analyses of materials:

For the manufacturing and other engineering population and industries of Iowa;

For the industries related to agriculture, in the solution of their engineering problems;

For all people of the state in the solution of the engineering problems of urban and rural life.

BULLETIN 106

IOWA ENGINEERING EXPERIMENT STATION

AUTOMOBILE OPERATING COST AND MILEAGE STUDIES

Ву

ROBLEY WINEREY, Bulletin Editor



IOWA STATE COLLEGE AMES, IOWA

STATE BOARD OF EDUCATION OF IOWA

Members

Hon. George T. Baker, Pr Hon. Edw. P. Schoentge	n						Co	uncil Bluffs
Hon. Geo. W. Godfrey Hon. Thomas W. Keenan								
Hon, Anna B. Lawther								
Hon. Pauline Lewelling		vitt						
Hon. E. C. Carlson .								Des Moines
Hon. Harry M. Neas						•		Sigourney
Hon, J. H. Anderson					•			Thompson

Finance Committee

Hon, W. R. Boyd, Chairman				Cedar Rapids
Hon. W. H. Gemmill, Secretary				Des Moines
Hon, Wm. G. Noth		•		Des Moines

IOWA ENGINEERING EXPERIMENT STATION STAFF

Raymond M. Hughes, LL.D President, ex-officion
Anson Marston, C. E., D. Engr Director
Thomas R. Agg, C. E Asst. Director and Highway Engineer
Robley Winfrey, M. S Bulletin Editor
Jay B. Davidson, M. E., A. E Agricultural Engineer
Allen H. Kimball, M. S Architectural Engineer
Max Levine, Ph. D Bacteriologis
D. Quintin Anderson, M. S Junior Bacteriologis
Paul E. Cox, B. S. in Cer. E Ceramic Engineer
Cameron G. Harmon, B. S. in Cer. E Junior Ceramic Engineer
Orland R. Sweeney, Ph. D Chemical Engineer
Frank C. Vilbrandt, Ph. D Chemical Engineer
Lionel K. Arnold, Ph. D Assistant Chemical Engineer
Hilmar A. Christopherson, B. S. in Ch. E Assistant Chemical Engineer
Gussie H. Nelson, M. S Junior Chemical Enginee
Almon H. Fuller, C. E Civil Enginee
William J. Schlick, C. E Drainage Enginee
F. Ellis Johnson, A. B., E. E Electrical Enginee
John K. McNeeley, E. E Electrical Enginee
George M. Fuller, B. A Engineering Accountan
Frank D. Paine, B. S. in E. E General Enginee
Adolph Shane, E. E Industrial Enginee
Warren H. Meeker, M. E Mechanical Enginee
Earl B. Smith, M. E Mechanical Enginee
Walter L. Foster, B. C. E Railway Enginee
John H. Buchanan, M. S Associate Sanitary Chemis
William E. Galligan, M. S Assistant Sanitary Enginee
Merlin G. Spangler, M. S., C. E Associate Structural Enginee
Reuben C. Reidesel, B. S. in M. E., Instrument Make
Richard W. Bruins, B. S. in Ch. E Graduate Assistan

ACKNOWLEDGMENTS

The collection, compilation, and analyses of the many data presented in this bulletin have required the cooperation of several organizations and individuals, all of whom were generous to the author with their assistance. Especial credit is given to T. R. Agg, assistant director and highway engineer, for his timely counsel and helpful suggestions. Acknowledgment of valuable assistance and cooperation is made to the Motor Vehicle Department of Iowa, the Historical, Memorial, and Art Department of Iowa, and to the many county treasurer offices from which information was secured.

The author is also indebted to the hundreds of citizens of Iowa who furnished mileage, cost, and sale value information, without which this study could not have been made, and also to the state highway departments furnishing records of operating cost.

Engineering student employees of the Iowa Engineering Experiment Station who did most of the mathematical tabulating and calculating are G. L. Stouffer, E. W. Thorson, C. R. Reading, and E. R. Davis.

A part of the data included here were originally reported by the author in his thesis, "Registration and Mortality Studies on Iowa Automobiles," submitted to Iowa State College in July, 1926, for the master of science degree.

TABLE OF CONTENTS

]	Page
Ackn	owle	edgments					•					3
Abst	ract		•		•		•		-			5
I.	Int	roductio	n.				•					5
II.	Орс	erating C	Cost E	stim	ates							7
	1.	Collecti	on an	d Tr	eatm	ent o	f Co	st Rec	ords			7
	2.	Reducti	on of	Cost	s to (Comn	ion I	3asis				10
	3.	Operati	ng Co	st of	a C	ompo	site	Car				11
	4.	Two-ca	r Owr	iersh	ip							19
	5.	Limitat	ions o	f Ap	plica	tions	of C	ost E	stima	tes		20
	6.	Vehicle		_	-				•	•		20
III.	An	nual Mil	eage I	Estim	ates							22
	1.	Mileage	Rep	orts	from	Iowa	Owi	ners				22
	2.	Annual	Mile	age :	Estin	ated	fron	a Gas	oline	Tax	Colle	e-
		tions	•	•		•	•	•	٠	•	•	26
	3.	Estima	tes of	Life	Mile	eages	•	•	•	•	•	31
IV.	Es	timates o	of Dep	recia	ation,	Avei	age	Life,	and A	Avera	ge Ag	e 31
	. 1.	Iowa B	legisti	atio	n and	New	Car	Sales	S.		•	31
	2.	Averag	e Life	e Det	ermii	ned f	rom (Cars I	Disma	ntled	l.	34
	3.	Averag	e Lif	e De	termi	ned f	rom	the Y	car :	Mode	loft	he
		Cars	Regi	stere	d	•						37
	4.	Detern	inatio	on of	the .	Avera	ige A	Age of	Cars	Reg	istere	d 37
	5.	Depre	iation	Det	ermir	ied fi	om (Jsed (Car S	ales		40
	6.	Econor	nic L	ife							•	42