Published Monthly by

American Institute of Electrical Engineers

(Founded May 13, 1884)

33 West 39th Street, New York, N. Y.

Electrical No. 3 Engineering Registered U. S. Patent Office

The JOURNAL of the A.I.E.E. for March 1932

C. E. SKINNER, President

F. L. HUTCHINSON, National Secretary

Publication Committee

E. B. MEYER, Chairman

W. S. GORSUCH F. L. HUTCHINSON

W. H. HARRISON H. R. WOODROW

Publication Staff

GEORGE R. METCALFE, Editor

G. Ross Henninger, Assoc. Editor

C. A. Graef, Advertising Manager

SUBSCRIPTION RATES—\$10 per year to United States, Mexico, Cuba, Porto Rico, Hawaii and the Philippine Islands, Central America, South America, Haiti, Spain and Spanish Colonies; \$10.50 to Canada; \$11 to all other countries. Single copy \$1.

CHANGE OF ADDRESS—requests must be received by the fifteenth of the month to be effective with the succeeding issue. Copies undelivered due to incorrect address cannot be replaced without charge. Be sure to specify both old and new addresses and any change in business affiliation.

ADVERTISING COPY — changes must be received by the fifteenth of the month to be effective for the issue of the month succeeding.

ENTERED as second class matter at the Post Office, New York, N. Y., May 10, 1905, under the Act of Congress March 3, 1879. Accepted for mailing at special postage rates provided for in Section 1103, Act of October 3, 1917, authorized on August 3, 1918.

STATEMENTS and opinions given in articles appearing in Electrical Engineering are the expressions of contributors, for which the Institute assumes no responsibility. Correspondence is invited on all controversial matters.

REPUBLICATION from ELECTRICAL ENGINEERING of any Institute article or paper (unless otherwise specifically stated) is hereby authorized provided full credit be given.

COPYRIGHT 1931 by the American Institute of Electrical Engineers.

ELECTRICAL ENGINEERING is indexed in Industrial Arts Index.

Printed in the United States of America. Number of copies this issue—

23,750

Th	is	M	ont	:h
			•	

Front Cover				
Quail, Calif., repeater station on the Los Francisco toll cable of the Pacific Telephone Company, so far from inhabited centers that community development is provided for those in	& Te	legr omp	aph lete	
The Engineer and His Responsibilities as a Citizer By C. E. SKINNER	٠.	•	•	155
The Power Age and Modern Civilization By M. I. PUPIN	•	٠	•	156
A High Speed Relay for Short Lines By S. L. GOLDSBOROUGH and W. A. LEWIS	•	•	•	157
Generator Overvoltage When Dropping Load . By E. J. BURNHAM	•	•	•	160
Calculation of Generator Overvoltage By J. W. BUTLER	•	•	•	163
Tape Armored Telephone Toll Cable By C. W. NYSTROM	•	•	•	168
Paralleling Rotor and Stator	•			171
Interconnection of Electric Power Systems	•	•	•	174
Interconnection Services Classified and Evalu By A. E. BAUHAN	ated	•	•	174
Interconnection Development and Operation By G. M. KEENAN	• *	•	•	177
Interconnection in the New England District By E. W. DILLARD and W. R. BELL	•	•	•	179
PaOhio-West Va. Interconnection By H. S. FITCH	•	•	•	189
Forecasting Population for Engineering Purposes By J. N. HOLSEN	•	•	•	185

Ab	stracts of Milwau	ke	e	Dis	tric	ct l	Me	eti	ng	Pa	pe	rs	188
	A General Method of G	asec	ous .	Tube	. Co	ntro	l—Si	tansbi	ury				188
	The Proximity Effect and Heatin												189
	Electrical Instruments in th												189
	Toll Switching Plan for W												189
	Police Teletypewriter Con	nmu	ınica	tion	—Pi	erce							189
	Weather Resistant Insulation	on f	or L	ine	Wir	es—	Hard	ling,	Carte	r & (Olsor	۱.	190
	Development of the Wauk	ega	ın St	atio	n of			ic Se therr					190
	Electrical Design Features	of	Wai	ıkeg	an S	Statio	on	Willi	ams				190
	115,000-Kw. Turbo-Alter	nat	or—	Wil!i	amso	n •	•		•				190
	The Mercury Arc Rectifier	Αŗ	plie	ed to	Α-	C. R	y. El	ectri	ficat	ion-	-Mai	rti •	191
	Mercury Arc Rectifier v	ersu	s R	otary	, C	onve	rter	Aut	oma	tic R	ailw	ay	
								Su	bsta	tions	-W	ard	191
	The 60-Cycle Primary Tran					n of ight							191
	Insulator Sparkover—Lloyd						•					•	191
	An Improved Type of Li	miti	ng (3ap	for S	Statio	on A	Ч _{рра}	aratu	s/	ustin	•	192
	Design and Economic Sel	ecti	ion	of S	Susp	ensi	on I						
										< & A		ald	192
	Normal Frequency Arcov	er '	Valu	ies o	f In:	sulat	ors-	-Frey	& H	awle [,]	· •	•	192
Ne	ws of Institute an	d	Re	late	şġ	A	ctiv	/iti	28	•			193
	Letters to the Editor			•	•	•		•	•	•	•		208
	Local Institute Meetin	gs			•		•						216
	Employment Notes												220
	Membership												222
	Engineering Literature												223
	Industrial Notes												224
	Officers and Committee		•	· (Fo	or co	mple	• te list	ing s	e n.	• 71-7	• 6,:Jai	• nuar	y 1932
	Officers and Committee	.63		iss	ue ol	FELEC	CTRIC	CĂL	ENG	INEÉ	RÍNC	3.)	, ., 02

F. L. HUTCHINSON, for the past twenty years national secretary and executive manager of the A.I.E.E., died suddenly, February 26. This sad event occurred during the closing of forms for this issue of ELECTRICAL ENGINEERING, but we believe that the readers will pardon the resulting delay. p. 202-203

WOUND-ROTOR induction machines may be given special characteristics by connecting their rotors and stators in parallel. p. 171-173

WIDE flexibility in distance measuring characteristics is claimed for a new high speed relay developed especially for short power lines. p. 157-160

GENERATOR overvoltage may increase rapidly following sudden loss of load, especially in hydro units; a method for calculating this rise, with a typical example, is given in this issue (p. 163-167). Tests show that such overvoltages can be limited to safe values by the use of suitable equipment. p. 160-163

MANY A.I.E.E. leaders have received recent recognition in the form of promotions and special awards. p. 209-214

AS modern civilization lived up to its lofty mission? Dr. M. I. Pupin, 1932 John Fritz Medalist, raises this question and gives his answer to it. p. 156-157

TAPE armored telephone toll cable buried directly in the ground possesses several advantages over other types of line; special equipment has been developed for laying this cable. p. 168-171

ENGINEERS through local relief committees, have taken special measures to combat unemployment. Reports of surveys conducted by local A.I.E.E. sections indicate that conditions vary widely. p. 205-207

POPULATION forecasts when carefully and intelligently made fill a real need in the planning of engineering projects. Such forecasts are especially valuable to the telephone industry in planning future plant expansion. p. 185-188

Lakes District meeting to be held March 14-16 at Milwaukee; a few minor changes have been made in the program (p. 202). All of the technical papers to be presented are abstracted in this issue. p. 188-192

NTERCONNECTION of power systems, to be most advantageous, should be carried out only after a most careful study of the problems of each of the systems involved. Interconnection services are classified and evaluated, and the development and operation of interconnected systems discussed from various angles, in a group of four articles. p. 174-185

A.I.E.E. winter convention attracted 1,429 registrants, but this was only one of the many factors attesting its success. A report covering the many features of the convention including President Skinner's opening address, two medal presentations, fourteen committee meetings, and the board of directors meeting, may be found in this month's news section. Discussion at technical sessions will be treated in a later issue. p. 193-202