REPORT OF THE SECRETARY – 1971

THE INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS, Inc.
345 East 47th Street, New York, N. Y. 10017

To the Board of Directors
The Institute of Electrical
and Electronics Engineers

Gentlemen:

During 1971 the members of the Board of Directors directed their attention to instituting new activities and making changes in present operations that would respond appropriate to the needs of the members and to the challenge of our time.

New programs were formulated and implemented, or are in the process of implementation, in many areas of Institute activities, all of which can best be summarized in the twelve "Inside IEEE" columns of IEEE SPECTRUM published during the year, and in the reports of the IEEE Standing Committees and Boards which appear in this Report.

A reading of these data will indicate the extent of change and activity generated during the year, to serve the membership.

Respectfully submitted,

John R. Whinnery
Secretary, 1971

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Table 1 - IEEE Membership by Region, Grade, Percentage; as of December 31, 1971

	H	F	SM	M	A	Total Grades Other Than Student	Student	Total Member-ship	Percentage
Region 1	2	941	5,667	25,502	3,654	35,766	3,998	39,764	24
Region 2		546	4,459	17,319	1,831	24,155	2,754	26,909	16
Region 3		291	2,324	9,451	889	12,955	1,980	14,935	9
Region 4		230	2,492	11,268	1,349	15,339	2,957	18,296	11
Region 5	1	187	1,964	8,886	812	11,850	2,766	14,616	9
Region 6		526	4,514	21,328	1,951	28,319	3,081	31,400	19
Region 7		63	794	4,819	1,093	6,769	1,496	8,265	5
Region 8		173	904	3,248	477	4,802	1,188	5,990	4
Region 9		13	208	1,467	253	1,941	431	2,372	1
Region 10	1	30	426	2,104	396	2,957	276	3,233	2
U.S. Possessions & Military Overseas		4	50	527	61	642	60	702	
Total	4	3,004	23,802	105,919	12,766	145,495	20,987	166,482	100

Table 2 - IEEE Membership by Grade, Percentage, 3-Year Comparison

	December 31, 1971		December 31, 1970		December 31, 1969	
	Number	% of Total	Number	% of Total	Number	% of Total
Honorary (H)	4		4		4	
Fellow (F)	3,004	2	2,951	2	2,917	2
Senior Member (SM)	23,802	14	24,229	14	24,815	15
Member (M)	105,919	64	104,053	62	101,058	61
Associate (A)	12,766	7	13,138	8	13,235	8
Student (S)	20,987	13	24,684	14	24,319	14
Total	166,482	100	169,059	100	166,348	100

Table 3 - IEEE Membership by Region, Percentage; 3-Year Comparison

	December 31, 1971		December 31, 1970		December 31, 1969	
	Number	% of Total	Number	% of Total	Number	% of Total
Region 1	39,764	24	41,361	24	41,068	25
Region 2	26,909	16	27,066	16	26,353	16
Region 3	14,935	9	14,760	9	14,482	9
Region 4	18,296	11	18,679	11	18,772	11
Region 5	14,616	9	14,828	9	14,435	9
Region 6	31,400	19	32,032	19	31,670	19
Region 7	8,265	5	8,485	5	8,378	5
Region 8	5,990	4	5,551	3	5,065	3
Region 9	2,372	1	2,499	2	2,368	1
Region 10	3,233	2	3,110	2	2,967	2
U.S. Possessions & Military Overseas	702		688		790	
Total	166,482	100	169,059	100	166,348	100

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TABLE 4 - IEEE LIFE MEMBERS BY GRADE; 3-YEAR COMPARISON

	December 31, 1971	December 31, 1970	December 31, 1969
Fellow	1,268	1,198	1,140
Senior Member	2,332	2,204	2,084
Member	1,154	1,056	1,038
Associate	40	35	32
Total	4,794	4,493	4,294

TABLE 5 - IEEE WOMEN MEMBERS BY GRADE; 3-YEAR COMPARISON

	December 31, 1971	December 31, 1970	December 31, 1969
Fellow	4	4	2
Senior Member	60	61	57
Member	350	351	316
Associate	81	85	95
Student	191	228	168
Total	686	729	638

TABLE 6 - IEEE MEMBERSHIP CHANGES, BY GRADE FOR THE YEAR ENDED DECEMBER 31, 1971

	H	F	SM	M	A	Sub-total	Student	Total
Active Membership-Dec 31,1970	4	2,951	24,229	104,053	13,138	144,375	24,684	169,059
ADDITIONS								
Elections			227	3,437	842	4,506	8,624	13,130
Arrears Paid		70	1,289	7,923	1,132	10,414	923	11,337
Reinstatements		7	176	1,489	152	1,824	157	1,981
Transfers		231	618	10,832	1,907	13,588	3,779	17,367
Total Gains	-	308	2,310	23,681	4,033	30,332	13,483	43,815
DELETIONS								
Resigned		16	336	1,318	288	1,958	236	2,194
Deceased		52	172	177	23	424	4	428
Arrears		79	1,817	16,352	3,557	21,805	4,598	26,403
Transfers		108	412	3,968	537	5,025	12,342	17,367
Total Deletions	-	255	2,737	21,815	4,405	29,212	17,180	46,392
Active Membership Dec 31,1971	4	3,004	23,802	105,919	12,766	145,495	20,987	166,482

TABLE 7 - IEEE MEMBERSHIP CHANGES; 3-YEAR COMPARISON

ADDITIONS	December 31, 1971	December 31, 1970	December 31, 1969
Elections	13,130	17,589	16,084
Reinstatements/Arrears Pd.	13,318	11,186	5,411
Transfers To	17,367	17,101	14,772
Total	43,815	45,876	36,267
DELETIONS			
Transfers From	17,367	17,102	14,772
Deceased	428	453	753
Resignations	2,194	3,512	2,092
Dues Arrears	26,403	22,098	14,668
Total	46,392	43,165	32,285
Net Increase (Decrease)	(2,577)	2,711	3,982

SECTION A

Table 8 - IEEE Membership by Region, by Section and Subsection, by Grade
December 31, 1971

REGION 1

Section	H	F	SM	M	A	Subtotal	Student	Subtotal	Section Total
Berkshire		24	110	186	10	330	14		344
Binghamton		2	72	449	52	575	50		625
Boston	1	147	837	3,866	369	5,220	471	5,691	7,111
Lynn		11	69	229	22	331	21	352	
Merrimack Valley		7	101	808	76	992	76	1,068	
Buffalo		12	175	519	60	766	62		828
Connecticut		28	171	949	136	1,284	185	1,469	3,039
Fairfield County		30	205	799	107	1,141	52	1,193	
New London		5	39	255	21	320	57	377	
Elmira-Corning		3	25	94	13	135	10		145
Ithaca		6	14	75	4	99	47		146
Long Island		77	567	2,613	397	3,654	231		3,885
Maine		8	58	198	18	282	60		342
Mid-Hudson		9	78	641	61	789	26	815	1,097
Catskill		0	22	211	32	265	17	282	
Mohawk Valley		8	50	389	40	487	37	524	647
St. Lawrence Int'l		1	13	54	13	81	42	123	
New Hampshire		11	100	551	62	724	74		798
New Jersey Coast		60	245	1,271	116	1,692	73		1,765
New York	1	69	548	2,732	826	4,176	937	5,113	6,641
Westchester		51	234	900	197	1,382	146	1,528	
North Jersey		150	829	3,567	522	5,068	462		5,530
Princeton		70	233	1,010	138	1,451	175		1,626
Providence		16	115	500	61	692	148		840
Rochester		6	136	724	85	951	91		1,042
Schenectady		68	273	524	37	902	149	1,051	1,228
Adirondack		9	41	99	13	162	15	177	
Springfield		5	38	168	50	261	110		371
Syracuse		39	172	649	58	918	66		984
Vermont		7	35	193	25	260	39		299
Worcester County		2	62	279	33	376	55		431
	2	941	5,667	25,502	3,654	35,766	3,998	19,763	39,764

SECTION A

Table 8 - IEEE Membership by Region, by Section and Subsection, by Grade
December 31, 1971

REGION 2

Section	H	F	SM	M	A	Subtotal	Student	Subtotal	Section Total
Akron		8	83	288	22	401	64		465
Allegheny Mountain		1	34	49	8	92	11		103
Baltimore		34	324	1,138	95	1,591	105	1,696	2,414
Annapolis		10	96	469	24	599	48	647	
Eastern Shore		3	13	43	5	64	7	71	
Canton		1	42	134	12	189	37		226
Central Pennsylvania		6	56	160	10	232	125		357
Cincinnati		9	98	468	49	624	49		673
Cleveland		37	329	1,067	101	1,534	174		1,708
Columbus		16	137	660	85	898	176	1,074	1,129
Zanesville			10	19	3	32	23	55	
Dayton		15	194	865	102	1,176	157		1,333
Delaware Bay		2	50	234	27	313	71		384
Erie		6	86	195	14	301	28		329
Johnstown		1	23	108	21	153	30		183
Lehigh Valley		22	172	650	153	997	239		1,236
Lima		3	39	76	5	123	44		167
North Central Ohio		1	34	87	9	131	7		138
Ohio Valley			7	62	7	76	9		85
Philadelphia		119	813	3,371	443	4,746	474		5,220
Pittsburgh		81	486	1,404	77	2,048	256	2,304	2,374
Upper Monongahela		3	7	45	2	57	13	70	
Sharon		6	69	155	17	247	48		295
Southern New Jersey		4	28	101	23	156	15		171
Susquehanna		7	64	283	45	399	73		472
Washington		151	1,136	5,034	455	6,776	421		7,197
West Virginia			29	154	17	200	50		250
	-	546	4,459	17,319	1,831	24,155	2,754	5,917	26,909

SECTION A

Table 8 - IEEE Membership by Region, by Section and Subsection, by Grade, December 31, 1971

REGION 3

Section	H	F	SM	M	A	Subtotal	Student	Subtotal	Section Total
Alabama		7	135	432	16	590	114		704
Atlanta		19	181	648	55	903	136	1,039	1,152
Macon-Warner Robins			17	39	5	61	5	66	
Rome			3	32	5	40	7	47	
Baton Rouge		1	22	121	4	148	58		206
Canaveral		9	74	526	46	655	35		690
Central North Carolina			32	235	14	281	25		306
Central Virginia		14	71	264	17	366	50		416
Charlotte		8	89	210	58	365	64		429
Chattanooga		9	66	168	19	262	12		274
Daytona		8	35	81	9	133	2		135
Eastern North Carolina		15	74	434	44	567	154		721
East Tennessee		6	68	203	8	285	119	404	475
Upper E. Tennessee		2	18	45	2	67	4	71	
Evansville-Owensboro		1	33	105	8	147	33	180	215
Paducah			2	26	4	32	3	35	
Florida West Coast		69	197	619	60	945	42		987
Fort Walton			12	110	5	127	11		138
Gainesville		5	23	111	7	146	95		241
Hampton Roads		4	51	387	23	465	59		524
Huntsville		2	74	557	35	668	17	685	735
Muscle Shoals			4	36	1	41	9	50	
Jacksonville			39	115	10	164	10		174
Lafayette		1	2	53	7	63	26		89
Lexington		1	27	122	4	154	31		185
Louisville		1	39	184	9	233	64		297
Memphis		2	53	163	22	240	121	361	433
Jackson		1	8	43	8	60	12	72	
Miami		35	162	556	113	866	54		920
Middle Tennessee			20	56	3	79	7		86
Mississippi			18	131	5	154	35	189	340
Northeast Mississippi		1	9	53	1	64	87	151	
Mobile			17	103	11	131	20		151
Nashville		3	44	161	14	222	93		315
New Orleans		7	108	421	45	581	71		652
Oak Ridge		3	41	80	4	128	7		135
Orlando		9	92	365	43	509	21		530
Palm Beach		20	66	226	34	346	11		357
Panama City			16	80	3	99	5		104
Pensacola		1	7	57	4	69	10		79
Richmond		3	47	262	21	333	18		351
Savannah			16	47	7	70	4		74
South Carolina			1	2	0	3	0	3	636
Central Savannah River			6	37	7	50	5	55	
Charleston		1	20	112	12	145	46	191	
Columbia		5	36	104	7	152	21	173	
Piedmont		1	28	133	6	168	46	214	
Virginia Mountain		5	63	177	13	258	89		347
Western North Carolina		10	18	47	8	83	6		89
Winston-Salem		2	40	172	23	237	6		243
		291	2,324	9,451	889	12,955	1,980	3,986	14,935

SECTION A

Table 8 - IEEE Membership by Region, by Section and Subsection, by Grade, December 31, 1971

REGION 4

Section	H	F	SM	M	A	Subtotal	Student	Subtotal	Section Total
Arrowhead		2	16	89	11	118	8		126
Calumet		3	48	174	50	275	51		326
Cedar Rapids		8	65	240	21	334	48		382
Central Illinois		17	97	345	23	482	173		655
Central Indiana		16	138	620	90	864	231	1,095	1,193
Bloomington		2	15	68	10	95	3	98	
Central Iowa		7	50	159	12	228	70		298
Chicago		45	363	1,389	280	2,077	295	2,372	4,805
Fox Valley		8	174	843	93	1,118	43	1,161	
Northwest		12	195	879	117	1,203	69	1,272	
Fort Wayne		7	94	304	29	434	41		475
Illinois Valley			26	93	6	125	78		203
Iowa-Illinois		1	46	163	16	226	19		245
Madison		6	33	183	10	232	185		417
Milwaukee		27	210	904	47	1,188	221	1,409	1,521
Racine-Kenosha		1	15	63	8	87	25	112	
Nebraska		3	82	313	73	471	255		726
Northeast Michigan		3	35	167	14	219	16		235
Northeastern Wisconsin			33	193	12	238	94		332
Rock River Valley			23	150	22	195	33		228
Siouxland			16	80	16	112	25		137
South Bend		1	39	199	69	308	154		462
Southeastern Michigan		38	353	1,763	192	2,346	422		2,768
Southern Minnesota			14	170	9	193	11		204
Toledo		2	76	239	22	339	54		393
Twin Cities		19	167	1,160	66	1,412	192	1,604	1,869
Red River Valley			11	132	8	151	114	265	
West Michigan		2	58	186	23	269	27		296
		230	2,492	11,268	1,349	15,339	2,957	9,388	18,296

SECTION A

Table 8 - IEEE Membership by Region, by Section and Subsection, by Grade
December 31, 1971

REGION 5

Section	H	F	SM	M	A	Subtotal	Student	Subtotal	Section Total
Arkansas		5	40	174	19	238	44		282
Beaumont		3	22	102	14	141	54	195	256
Lake Charles			4	36	3	43	18	61	
Central Texas		25	91	531	43	690	143		833
Corpus Christi		1	25	109	28	163	89	252	294
Victoria-Port Lavaca			6	26	4	36	6	42	
Dallas	1	31	233	1,635	90	1,990	99		2,089
Denver		38	291	1,233	80	1,642	357	1,999	2,312
Black Hills			4	42	4	50	59	109	
Pikes Peak		2	29	126	11	168	36	204	
El Paso		1	32	270	13	316	132		448
Fort Worth		3	84	389	31	507	54		561
Houston		8	195	1,057	111	1,371	379	1,750	2,198
Clear Lake		1	39	310	15	365	34	399	
Freeport			10	35	1	46	3	49	
Kansas City		12	199	543	103	857	227		1,084
Oklahoma City		10	103	291	14	418	83		501
Ozark			20	93	4	117	145		262
Panhandle		1	25	54	14	94	3		97
Permian Basin			4	49	12	65	13		78
St. Louis		34	277	1,098	99	1,508	460		1,968
Shreveport		2	65	163	27	257	94	351	384
Monroe				30	2	32	1	33	
South Plains			18	64	10	92	73		165
Tulsa		6	92	244	45	387	87		474
West Central Texas		1	12	44	3	60	5		65
Wichita		3	44	138	12	197	68		265
	1	187	1,964	8,886	812	11,850	2,766	5,444	14,616

SECTION A

Table 8 - IEEE Membership by Region, by Section and Subsection, by Grade
December 31, 1971

REGION 6

Section	H	F	SM	M	A	Subtotal	Student	Subtotal	Section Total
Alamogordo-Holloman			7	42	6	55	2		57
Alaska			17	100	15	132	22		154
Albuquerque		9	100	435	41	585	88	673	790
Los Alamos-Santa Fe			28	79	4	111	6	117	
Antelope Valley			9	61	2	72	7		79
Boise			29	37	3	69	19		88
Buenaventura		6	52	438	27	523	18		541
China Lake			14	153	10	177	8		185
Foothill		12	134	625	61	832	87		919
Fort Huachuca			22	82	6	110	9		119
Hawaii		4	34	367	39	444	39		483
Idaho		1	9	73	2	85	7		92
Las Vegas			11	107	19	137	5		142
Met. Los Angeles		17	177	737	130	1,061	153		1,214
Montana				4		4	1	5	226
Billings		1	2	31		34	8	42	
Butte			13	28	3	44	7	51	
Helena		1	7	62		70	58	128	
Orange County		28	358	2,120	193	2,699	117		2,816
Phoenix		23	226	934	93	1,276	151		1,427
Portland		26	212	654	59	951	61	1,012	1,267
Eugene		3	23	108	16	150	105	255	
Richland		3	36	76	6	121	5	126	158
Walla Walla			1	26	3	30	2	32	
Sacramento		5	70	353	38	466	136	602	870
Reno		5	13	49	6	73	42	115	
San Joaquin		1	7	53	6	67	38	105	
Shasta			9	27	6	42	6	48	
San Diego		21	225	1,071	96	1,413	104		1,517
San Fernando Valley		16	370	1,304	132	1,822	71		1,893
San Francisco		52	250	914	107	1,323	128	1,451	8,362
East Bay		38	195	941	91	1,265	208	1,473	
Golden Gate		13	108	423	75	619	88	707	
Santa Clara Valley		95	585	3,491	230	4,401	330	4,731	
San Gabriel Valley		19	160	604	62	845	57		902
Santa Barbara		17	75	317	18	427	122		549
Santa Monica Bay		49	271	1,045	90	1,455	108		1,563
Seattle		22	265	1,227	97	1,611	189		1,800
South Bay Harbor		15	223	1,284	100	1,622	61		1,683
Spokane		6	31	114	12	163	95	258	275
Grand Coulee Dam			2	12	3	17	0	17	
Tucson		10	62	198	15	285	64		349
Utah		8	48	353	17	426	232		658
Vandenberg			15	139	10	164	16		180
Wenatchee			9	30	2	41	1		42
	-	526	4,514	21,328	1,951	28,319	3,081	11,948	31,400

SECTION A

Table 8 - IEEE Membership by Region, by Section and Subsection, by Grade
December 31, 1971

REGION 7

Section	H	F	SM	M	A	Subtotal	Student	Subtotal	Section Total
Central Canada Council									
Bay of Quinte		2	32	127	26	187	69		256
Hamilton			49	187	73	309	66		375
Kitchener-Waterloo		1	26	115	27	169	43		212
London			16	100	24	140	12		152
Niagara International			28	101	12	141	15		156
Toronto		19	172	1,057	271	1,519	251		1,770
Eastern Canada Council									
Canadian Atlantic			19	165	27	211	50	261	325
New Brunswick			6	47	6	59	5	64	
Montreal		12	175	988	117	1,292	347		1,639
Ottawa		17	104	751	85	957	143		1,100
Quebec		1	10	113	21	145	30		175
St. Maurice			1	27	2	30	2		32
Western Canada Council									
Northern Alberta			4	158	77	239	145		384
Regina			4	95	17	116	47		163
Southern Alberta			8	117	78	203	75		278
Vancouver		7	102	432	137	678	108		786
Victoria		3	15	54	16	88	3		91
Winnipeg		1	23	185	77	286	85		371
	-	63	794	4,819	1,093	6,769	1,496	325	8,265

SECTION A

Table 8 - IEEE Membership by Region, by Section and Subsection, by Grade
December 31, 1971

REGION 8

Section	H	F	SM	M	A	Subtotal	Student	Subtotal	Section Total
Benelux		15	70	284	42	411	200		611
Denmark		4	13	149	18	184	65		249
Egypt		2	15	33	6	56	72		128
France		34	102	349	57	542	91		633
Germany (West)		13	75	196	38	322	10		332
Greece		2	13	57	4	76	11		87
Iran			8	73	1	82	1		83
Israel		6	36	168	26	236	13		249
Middle & South Italy		1	15	131	27	174	88		262
North Italy		3	31	200	52	286	264		550
Norway		4	23	58	6	91	3		94
Spain		1	14	124	14	153	52		205
Sweden		6	70	192	31	299	105		404
Switzerland		17	69	326	30	442	76		518
United Kingdom & Republic of Ireland		60	282	662	73	1,077	51		1,128
Yugoslavia			4	7	5	16	36		52
Total Sections	-	168	840	3,009	430	4,447	1,138		5,585
Not Assigned to Sections (See Table 9)	-	5	64	239	47	355	50		405
Total Region	-	173	904	3,248	477	4,802	1,188	-	5,990

SECTION A

Table 8 - IEEE Membership by Region, by Section and Subsection, by Grade
December 31, 1971

REGION 9

Section	H	F	SM	M	A	Subtotal	Student	Subtotal	Section Total
Argentina		3	26	171	29	229	37		266
Central America			6	57	14	77	28		105
Chile			8	37	5	50	54		104
Colombia			12	97	33	142	58		200
Mexico		5	46	204	22	277	20	297	394
Monterrey			5	58	2	65	32	97	
Peru			6	40	3	49	11		60
Puerto Rico and Virgin Islands			27	214	23	264	63		327
Rio de Janeiro		3	14	125	9	151	27		178
Sao Paulo		1	12	136	29	178	25		203
Venezuela			14	146	23	183	25		208
Total Sections	-	12	176	1,285	192	1,665	380	394	2,045
Not Assigned to Sections (See Table 10)	-	1	32	182	61	276	51	-	327
Total Region	-	13	208	1,467	253	1,941	431	394	2,372

REGION 10

Hong Kong			7	134	52	193	5		198
India		2	79	281	31	393	11	404	577
Bangalore			10	37	7	54	5	59	
Tamil Nadu		1	13	42	4	60	5	65	
Uttar Pradesh			7	31	1	39	10	49	
New Zealand			9	46	18	73	10		83
Tokyo	1	25	153	791	112	1,082	125		1,207
West Pakistan			15	43	28	86	13		99
Total Sections	1	28	293	1,405	253	1,980	184	577	2,164
Not Assigned to Sections (See Table 11)	-	2	133	699	143	977	92	-	1,069
Total Region	1	30	426	2,104	396	2,957	276	577	3,233

SECTION A

Table 9 - IEEE Membership in Region 8, by Country, by Grade, December 31, 1971
3-Year Comparison

Country	H	F	SM	M	A	Subtotal	Student	12/31/71 Total	12/31/70 Total	12/31/69 Total
Albania										6
Algeria				4		4		4	2	1
Austria		1	6	9	4	20		20	22	20
Bulgaria			1			1		1	1	1
Cyprus			3	15	4	22		22	18	21
Czechoslovakia			2	8	7	17	1	18	19	14
Denmark									-	2
Ethiopia				3		3		3	-	-
Finland			1	43	8	52	28	80	74	67
Germany F.R. (Berlin)			1	5	1	7	1	8	9	10
Gibraltar				1		1		1	-	-
Greece										48
Hungary			7	2		9		9	4	4
Iceland				5	1	6		6	5	6
Iran				1		1		1	-	-
Iraq			1	3	1	5		5	5	6
Jordan			1	3		4		4	4	3
Kuwait			3	18	3	24		24	-	-
Lebanon			4	23	2	29	1	30	24	28
Libya			2	10	2	14		14	18	24
Mali, W. Africa				1		1		1	-	-
Malta				3		3		3	5	5
Monaco				1		1		1	1	1
Morocco				1		1		1	1	-
Poland		1	4	2	2	9		9	7	9
Portugal			3	12	1	16		16	16	14
Qatar, Arabian Gulf				1		1		1	-	-
Rumania			1	2	1	4		4	5	3
Saudi Arabia		1	4	18	2	25	1	26	-	-
Sudan				1		1		1	-	-
Syria				5		5		5	4	4
Tunisia				2	1	3		3	2	-
Turkey			3	34	2	39	18	57	59	70
U.S.S.R.		2	17	3	5	27		27	26	26
Yugoslavia		-	-	-	-	-	-	-	17	12
Total	-	5	64	239	47	355	50	405	348	405
Territory Assigned to IEEE Sections	-	168	840	3,009	430	4,447	1,138	5,585	5,203	4,660
Total	-	173	904	3,248	477	4,802	1,188	5,990	5,551	5,065

SECTION A

Table 10 - IEEE Membership in Region 9, by Country, by Grade, December 31, 1971
3-Year Comparison

Country	H	F	SM	M	A	Subtotal	Student	12/31/71 Total	12/31/70 Total	12/31/69 Total
Argentina										1
Bolivia			1	10		11	1	12	6	9
Brazil			7	43	23	73	9	82	95	60
British Guiana			2	4	1	7	2	9	6	8
Costa Rica										12
Cuba			2	2		4		4	4	4
Dominican Republic				4		4		4	4	1
El Salvador				3	1	4		4		9
Ecuador			3	14	3	20	39	59	44	17
Guatemala				1		1		1	1	6
Haiti				1		1		1	1	
Honduras										2
Netherland Antilles			5		1	6		6	9	7
Nicaragua					1	1		1		11
Panama			1	16	4	21		21	18	18
Panama Canal Zone				13	2	15		15	3	12
Paraguay			1	2		3		3	1	1
Puerto Rico				1		1		1	1	
Surinam			1	3		4		4	3	4
Uruguay					2	2		2	2	2
Venezuela										
West Indies		1	14	60	23	98		98	75	73
Total	-	1	37	177	61	276	51	327	273	257
Territory Assigned to IEEE Sections	-	12	171	1,290	192	1,665	380	2,045	2,226	2,111
Total	-	13	208	1,467	253	1,941	431	2,372	2,499	2,368

SECTION A

Table 11 - IEEE Membership in Region 10, by Country, by Grade, December 31, 1971
3-Year Comparison

Country	H	F	SM	M	A	Subtotal	Student	12/31/71 Total	12/31/70 Total	12/31/69 Total
Afghanistan				5	5	10		10	10	10
Australia		2	49	312	24	387	50	437	407	355
Bahrein			1	1		2		2	2	1
Basutoland										
Botswana			1	1		2		2		
Burma				6		6		6	3	4
Cambodia				1	1	2		2	5	6
Cameron									4	3
Ceylon			7	2	2	11		11	14	13
China			4	42	1	47	16	63	49	31
Congo			2	2		4		4	2	4
Dahomey			1			1		1	1	1
Ethiopia				3	5	8		8	5	
Fiji Islands				1		1		1		
Ghana			2	5	1	8		8	4	6
Guam			2	5		7		7	5	
Hong Kong							5	5	164	131
India				1		1		1	1	
Indonesia				5	1	6		6	11	10
Iran									1	55
Ivory Coast			1	2		3		3	3	2
Isle of Malta			1			1		1		
Japan				1		1		1		
Kenya			3	10	4	17		17	18	25
Kuwait			1	3	1	5	1	6	32	22
Liberia				2	1	3		3	3	3
Macao				1		1		1	1	1
Madagascar										1
Malawai				1		1		1	1	1
Malaysia			5	70	19	94		94	83	64
Mali									1	1
Mauritius				2	1	3		3	2	1
Mogadishui Somalia										
Muscat									1	1
Nepal				1		1		1	2	3
New Guinea			2	2		4		4	2	2
Nigeria			5	35	19	59	2	61	52	37
Pakistan (East)			3	8	3	14		14	16	26
Pakistan (West)									2	1
Phillipines			7	17	8	32	4	36	34	41
Quatar					1	1		1	1	3
Rhodesia			2	5	1	8		8	8	10
Ruanda				1		1		1	2	1
Sabah				1		1		1	1	1
Samoa							1	1	1	
Saudi Arabia			2	3		5		5	27	29
Sierra Leone				3		3	1	4	4	8
Solomon Islands					1	1		1	1	2
Somalia										1
South Africa			14	43	13	70		70	68	67
South Korea			5	36	5	46	4	50	43	29
Sudan				1		1		1	4	6
Swaziland				1		1		1	1	
Tanzania				3	2	5		5	5	6
Thailand			6	28	14	48	8	56	54	37
Togo					1	1		1	1	1
Tonga			1			1		1	1	1
Trucial Oman				1		1		1	1	1
Uganda									6	4
Viet-Nam			1	16	6	23		23	14	9
Zambia			5	9	3	17		17	17	11
Ryuku Islands				1		1		1		
Total	-	2	133	699	143	977	92	1069	1,201	1,089
Territory Assigned to IEEE Section	1	28	293	1405	253	1980	184	2164	1,909	1,878
Total	1	30	426	2104	396	2957	276	3233	3,110	2,967

SECTION B

Table 1 - IEEE Student Branches and Student Branch Membership, 1971

Thirty-four Student Branches were established during 1971. The total number of Student Branches is now 393 operating as follows:

315 - IEEE Four-Year Student Branches
75 - IEEE Less Than Four Year Student Branches*
3 - IEEE Section Student Branches

School	Section Location	Region	Membership*** 1971
*Academy of Aeronautics	New York	1	18
**Ains Shams University	Egypt	8	5
Air Force Institute of Technology	Dayton	2	32
Akron, University of	Akron	2	75
Alabama, University of	Alabama	3	51
Alaska, University of	Anchorage	6	61
Alberta, University of	North Alberta	7	138
*Algonquin College of Applied Arts & Technology	Ottawa	7	30
Arizona State University	Phoenix	6	101
Arizona, University of	Tucson	6	58
Arkansas, University of	Arkansas	5	166
**Arkansas, University of, at Little Rock	Arkansas	5	10
Auburn University	Alabama	3	62
Bologna, University of	North Italy	8	50
Boston University	Boston	1	13
Bradley University	Illinois Valley	4	81
Bridgeport, University of	Connecticut	1	50
Brigham Young University	Utah	6	85
*British Columbia Institute of Technology	Vancouver	7	30
*British Columbia Vocational School	Vancouver	7	5
British Columbia, University of	Vancouver	7	70
*Bronx Community College (Day Division)	New York	1	41
*Bronx Community College (Evening Division)	New York	1	29
Brooklyn, Polytechnic Institute of (Day Division)	New York	1]	181
Brooklyn, Polytechnic Institute of (Evening Division)	New York	1]	
*Broome Technical Community College	Binghamton	1	30
Brown University	Providence	1	28
Bucknell University	Central Pennsylvania	2	13
Buenos Aires, Instituto Tecnologico de	Argentina	9	5
Buenos Aires, University of	Argentina	9	2
Cairo, University of	Egypt	8	65
Calgary, University of	Southern Alberta	7	43
California State Polytechnic College (Kellogg-Voorhis Campus)	Foothill	6	103
California State Polytechnic College (San Luis Obispo)	Santa Barbara	6	117
California State College at Long Beach	South Bay Harbor	6	43
California State College at Los Angeles	Metropolitan Los Angeles	6	36
California, University of (Berkeley)	San Francisco	6	214
California, University of (Davis)	Sacramento	6	58
California, University of (Irvine)	Orange County	6	28
California, University of (Los Angeles)	Santa Monica Bay	6	103
California, University of (Santa Barbara)	Santa Barbara	6	52
California Western University	Santa Monica Bay	6	4
Capitol Institute of Technology	Washington	2	36
Carabobo, Universidad de	Venezuelan	9	17
Carleton University	Ottawa	7	26
Carnegie Mellon University	Pittsburgh	2	70
Case Western Reserve University	Cleveland	2	65
Catholic University of America	Washington	2	20

School	Section Location	Region	Membership***
Catholic University of Louvain	Benelux	8	73
**Centennial College of Applied Arts & Technology	Toronto	7	--
** *Central Piedmont Community College	Charlotte	3	33
*Central Technical Institute	Kansas City	5	25
Chalmers University of Technology	Sweden	8	45
** *Chattanooga State Technical Institute	Chattanooga	3	15
**Chile, Universidad Catolica de	Chile	9	17
Christian Brothers College	Memphis	3	55
Cincinnati, University of	Cincinnati	2	51
Citadel, The	South Carolina	3	37
Clarkson College of Technology	Mohawk Valley	1	52
Clemson University	South Carolina	3	55
Cleveland State University	Cleveland	2	73
*Cogswell Polytechnical College	San Francisco	6	15
Colorado State University	Denver	5	42
Colorado, University of	Denver	5	178
Colorado, University of, Denver Center	Denver	5	35
Columbia University	New York	1	118
Concepcion, Universidad de	Chile	9	31
Connecticut, University of	Connecticut	1	59
Cooper Union	New York	1	25
**Copenhagen, IEEE Student Branch in	Denmark	8	48
Cornell University	Ithaca	1	65
Dayton, University of	Dayton	2	24
*Dayton, University of, Technical Institute	Dayton	2	8
*Del Mar College	Corpus Christi	5	34
Delaware, University of	Delaware Bay	2	42
Denver, University of	Denver	5	34
Detroit Institute of Technology	Southeastern Michigan	4	12
Detroit, University of	Southeastern Michigan	4	56
** *DeVry Institute of Technology (Arizona)	Phoenix	6	32
*DeVry Institute of Technology (Illinois)	Chicago	4	78
*DeVry Institute of Technology (Canada)	Toronto	7	3
Drexel University (Day Division)	Philadelphia	2	98
Drexel University (Evening College)	Philadelphia	2	47
Duke University	North Carolina	3	31
Ecole Polytechnique	Montreal	7	160
**Ecole Polytechnique Federale	Switzerland	8	19
Ecole Superieure d'Electricite	France	8	1
Ecole Superieure d'Ingenieurs d'Electrotechnique et d'Electronique	France	8	11
*Electronics Institute of Technology	Southeastern Michigan	4	12
Escola Politecnica Universidade de Sao Paulo	Sao Paulo	9	18
*Escuela Politecnica Nacional		9	21
Escuela Superior de Ingenieria Mecanica	Mexico	9	--
**Escuela Superior Politecnica del Litoral		9	18
Escuela Tecnica Superior de Ingenieros de Telecomunicacion	Spain	8	40
*Escuela de Tecnicos	Venezuela	9	--
Evansville, University of	Evansville-Owensboro	3	25
Fairleigh Dickinson University (Day Division)	North Jersey	1	50
Fairleigh Dickinson University (Evening Division)	North Jersey	1	20
*Fayetteville Technical Institute	Eastern North Carolina	3	21
Florida Institute of Technology	Canaveral	3	55
**Florida Technological University	Orlando	3	8
Florida, University of	Gainesville	3	113
*Franklin Institute of Boston	Boston	1	45
*Franklin University	Columbus	2	9
Fresno State College	San Francisco	6	51
Gannon College	Erie	2	13
*Gaston College	North Carolina	3	1
General Motors Institute	Northeastern Michigan	4	23
Genova, University of	North Italy	8	25
George Washington University	Washington	2	40

School	Section Location	Region	Membership***
Georgia Institute of Technology	Atlanta	3	130
Gonzaga University	Spokane	6	16
** *Grossmont College	San Diego	6	14
Grove City College	Sharon	2	28
Hartford, University of	Connecticut	1	37
Hawaii, University of	Hawaii	6	24
Heald Engineering College	San Francisco	6	38
Helsinki, Technical University of		8	25
Hofstra University	Long Island	1	15
Houston, University of (College of Engineering)	Houston	5	75
Houston, University of (College of Technology)	Houston	5	119
Howard University	Washington	2	26
*Hudson Valley Community College	Schenectady	1	13
Idaho, University of	Spokane	6	51
Illinois Institute of Technology	Chicago	4	77
Illinois, University of (Chicago Circle)	Chicago	4	79
Illinois, University of (Urbana)	Central Illinois	4	193
Indiana Institute of Technology	Fort Wayne	4	22
*Instituto Radiotecnico A. Beltrami	Middle & South Italy	8	1
Instituto Superior de Electronica	Argentina	9	1
Iowa State University of Science & Technology	Central Iowa	4	79
Iowa, University of	Cedar Rapids	4	45
John Carroll University	Cleveland	2	9
Johns Hopkins University, The	Baltimore	2	52
Kansas State University of Agriculture & Applied Science	Kansas City	5	65
Kansas, University of	Kansas City	5	39
**Katholieke Universiteit te Leuven	Benelux	8	23
Kentucky, University of	Lexington	3	39
Lafayette College	Lehigh Valley	2	35
Lamar University	Beaumont	5	55
La Plata, Universidad Nacional de	Argentina	9	6
LaSalle College	Philadelphia	2	43
Laval University	Quebec	7	9
Lawrence Institute of Technology	Southeastern Michigan	4	69
Lehigh University	Lehigh Valley	2	68
Liege, University of	Benelux	8	62
**Lille, University of	France	8	13
**Ljubljana, University of		8	36
*Los Angeles Pierce College	San Fernando Valley	6	1
*Los Angeles Trade-Technical College	Santa Monica	6	20
Louisiana Polytechnic Institute	Shreveport	5	29
Louisiana State University at Baton Rouge	Baton Rouge	3	24
Louisiana State University at New Orleans	New Orleans	3	23
Louisville, University of	Louisville	3	46
Lowell Technological Institute	Boston	1	64
Loyola University of Los Angeles	Santa Monica Bay	6	17
** *Loyalist College of Applied Arts & Technology	Bay of Quinte	7	12
Lund University - Lund Institute of Technology	Sweden	8	21
McGill University	Montreal	7	90
McMaster University	Hamilton	7	45
**McNeese State University	Beaumont	5	10
Maine, University of	Maine	1	49
Manhattan College	New York	1	76
Manitoba, University of	Winnipeg	7	59
Marist College	Mid-Hudson	1	--
Marquette University	Milwaukee	4	99
Maryland, University of	Washington	2	225
Massachusetts Institute of Technology	Boston	1	228
Massachusetts, University of	Springfield	1	80
Memphis State University	Memphis	3	38
Merrimack College	Boston	1	18
Mexico, National Polytechnic Institute of	Mexico	9	1
Mexico, Universidad Nacional Autonoma de	Mexico	9	7

School	Section Location	Region	Membership***
Miami, University of	Miami	3	25
Michigan State University	Southeastern Michigan	4	82
Michigan Technological University	Northeast Wisconsin	4	75
Michigan, University of	Southeastern Michigan	4	108
** *Middlesex County College	Princeton	1	29
Milwaukee School of Engineering	Milwaukee	4	93
Minnesota, University of	Twin Cities	4	127
Mississippi State University	Mississippi	3	109
Mississippi, The University of	Memphis	3	25
Missouri, University of (Columbia)	St. Louis	5	76
Missouri, University of (Rolla)	St. Louis	5	279
*Mohawk College of Applied Arts & Technology	Hamilton	7	22
*Mohawk Valley Community College	Mohawk Valley	1	7
Monmouth College	New Jersey Coast	1	20
Montana State University	Montana	6	64
Monterrey, Instituto Tecnologico y de Estudios Superiores de	Mexico	9	31
** *Morris, County College of	North Jersey	1	16
Nebraska, University of (Lincoln)	Nebraska	4	166
*Nebraska, University of (Omaha)	Nebraska	4	38
Nevada, University of	Sacramento	6	42
Newark College of Engineering (Day Division)	North Jersey	1	129
Newark College of Engineering (Evening Division)	North Jersey	1	48
New Brunswick, University of	Canadian Atlantic	7	24
** *New Hampshire Technical Institute	New Hampshire	1	22
New Hampshire, University of	New Hampshire	1	33
New Haven, University of	Connecticut	1	37
New Mexico Highlands University	Albuquerque	6	21
New Mexico State University	El Paso	5	81
New Mexico, University of	Albuquerque	6	53
New York, City College of the City University of	New York	1	175
*New York City Community College	New York	1	23
New York Institute of Technology	New York	1	39
*New York, State University of (Alfred)	Buffalo	1	20
New York, State University of (Buffalo)	Buffalo	1	54
*New York, State University of, Agricultural & Technical Institute (Canton)	Mohawk Valley	1	27
*New York, State University of, Agricultural & Technical College (Farmingdale)	Long Island	1	4
New York, State University of (Stony Brook)	Long Island	1	45
New York University (Day Division)	New York	1]	149
New York University (Evening Division)	New York	1]	
North Carolina Agricultural and Technical State University	Central North Carolina	3	11
North Carolina State University	North Carolina	3	128
**North Carolina, University of, at Charlotte	Charlotte	3	19
North Dakota State University	Twin Cities	4	82
North Dakota, University of	Twin Cities	4	25
** *North Seattle Community College	Seattle	6	21
Northeastern University	Boston	1	156
*Northern Alberta Institute of Technology	Northern Alberta	7	7
**Northern Arizona University	Phoenix	6	10
*Northern College of Applied Arts & Technology	Canadian Atlantic	7	27
**Northern Illinois University	Rock River Valley	4	30
Northrop Institute of Technology	Metropolitan Los Angeles	6	70
Northwestern State University of Louisiana	Shreveport	5	46
Northwestern University	Chicago	4	58
Norwich University	Vermont	1	9
Notre Dame, University of	South Bend	4	37
Nova Scotia Technical College	Canadian Atlantic	7	27
Oakland University	Southeastern Michigan	4	10
*Ohio Institute of Technology	Columbus	2	54
Ohio Northern University	Lima	2	58

School	Section Location	Region	Membership***
Ohio State University	Columbus	2	72
Ohio University	Columbus	2	45
*Oklahoma City University	Oklahoma City	5	1
Oklahoma State University	Tulsa	5	76
Oklahoma, University of	Oklahoma City	5	47
Old Dominion College	Hampton Roads	3	42
Oregon State University	Portland	6	98
*Oregon Technical Institute	Portland	6	33
Ottawa, University of	Ottawa	7	67
*Pacific States University	Metropolitan Los Angeles	6	3
Pacific, University of	Sacramento	6	31
Padova, University of	North Italy	8	79
Paris, Institut Superieur d'Electronique de	France	8	35
PMC Colleges	Philadelphia	2	19
Pennsylvania State University	Central Pennsylvania	2	210
** *Pennsylvania State University, Capitol Campus	Susquehanna	2	34
Pennsylvania, University of	Philadelphia	2	99
Pittsburgh, University of	Pittsburgh	2	108
Politecnico di Milano	North Italy	8	69
*Pontificia Universidad Javeriana	Colombia	9	7
*Port Arthur College	Beaumont	5	1
Portland State University	Portland	6	15
**Portland, University of	Portland	6	14
Prairie View A & M College	Houston	5	69
Pratt Institute	New York	1	52
Princeton University	Princeton	1	41
Puerto Rico, University of	Puerto Rico & Virgin Islands	9	60
Purdue University	Central Indiana	4	220
Quebec, University of, at Chicoutimi	Quebec	7	10
Queen's University	Bay of Quinte	7	37
*Queensborough Community College	New York	1	45
*RCA Institutes, Inc.	New York	1	78
*Radio College of Canada	Toronto	7	10
*Radio Engineering Institute	Nebraska	4	43
*Red River Community College	Winnipeg	7	20
Rensselaer Polytechnic Institute	Schenectady	1	123
Rhode Island, University of	Providence	1	42
Rice University	Houston	5	54
Richmond College of the City University of New York	New York	1	12
Rio de Janeiro, Universidad Federal do	Rio de Janeiro	9	19
Rochester Institute of Technology	Rochester	1	60
Rochester, University of	Rochester	1	37
Rome, University of	Middle & South Italy	8	68
Rose Polytechnic Institute	Central Indiana	4	33
Royal Institute of Technology	Sweden	8	11
Royal Military College of Canada	Bay of Quinte	7	9
Rutgers State University	Princeton	1	51
*Ryerson Polytechnical Institute	Toronto	7	61
Sacramento State College	Sacramento	6	70
*St. Clair College of Applied Arts & Technology	Southeastern Michigan	4	11
St. Joseph's College	Philadelphia	2	--
*St. Lawrence College of Applied Arts & Technology	Bay of Quinte	7	12
St. Louis University	St. Louis	5	13
*San Diego College of Engineering	San Diego	6	9
San Diego State College	San Diego	6	41
**San Fernando Valley State College	San Fernando Valley	6	28
San Francisco State College	San Francisco	6	23
San Jose State College	San Francisco	6	86
Santa Clara, University of	San Francisco	6	31
Santander, Universidad Industrial de	Colombia	9	9
Saskatchewan, University of	Regina	7	48

School	Section Location	Region	Membership***
Seattle University	Seattle	6	30
Sherbrooke, University of	Montreal	7	21
Shizuoka University, Graduate School	Tokyo	10	24
*Sinclair College	Dayton	2	11
Sir George Williams University	Montreal	7	53
South Alabama, University of	Alabama	3	12
South Carolina, University of	South Carolina	3	14
South Dakota School of Mines & Technology	Denver	5	58
South Dakota State University	Twin Cities	4	47
South Florida, University of (Section Student Unit)	Florida West Coast	3	29
Southeastern Massachusetts University	Providence	1	62
*Southern Alberta Institute of Technology	Southern Alberta	7	35
Southern California, University of	Metropolitan Los Angeles	6	84
**Southern Colorado State College	Denver	5	18
Southern Methodist University	Dallas	5	50
*Southern Technical Institute	Atlanta	3	6
Southern University	Baton Rouge	3	26
*Southwest Missouri State College	Kansas City	5	47
Southwestern Louisiana, University of	Baton Rouge	3	32
Spring Garden College	Philadelphia	2	24
Stanford University	San Francisco	6	179
Steubenville, College of	Canton	2	16
Stevens Institute of Technology	North Jersey	1	54
*Stout State University	Twin Cities	4	12
Swarthmore College	Philadelphia	2	8
Switzerland Section Student Branch	Switzerland	8	6
Syracuse University	Syracuse	1	48
Technische Hogeschool Twente	Benelux	8	25
*Temple University, College of Engineering Technology	Philadelphia	2	48
Tennessee A & I State University	Nashville	3	12
Tennessee Technological University	Nashville	3	46
Tennessee, University of	East Tennessee	3	146
Texas A & I University	Corpus Christi	5	54
Texas A & M University	Houston	5	92
Texas Technological College	South Plains	5	108
Texas, University of, at Arlington	Central Texas	5	55
Texas, University of, at Austin	Central Texas	5	118
Texas, University of, at El Paso	El Paso	5	34
Toledo, University of	Toledo	4	35
**Torino, Politecnico de	North Italy	8	13
Toronto, University of	Toronto	7	129
Trieste, Universita Degli Studi di	North Italy	8	23
Tri-State College	Fort Wayne	4	16
Tucuman, Universidad Nacional de	Argentina	9	6
Tufts University	Boston	1	41
Tulane University	New Orleans	3	23
Tulsa, University of	Tulsa	5	16
Tuskegee Institute	Alabama	3	13
Union College	Schenectady	1	53
*Union County Technical Institute	North Jersey	1	20
*Union Technical Institute	North Jersey	1	27
United Kingdom & Republic of Ireland Section Student Branch	United Kingdom & Republic of Ireland	8	12
United States Air Force Academy	Denver	5	3
United States Coast Guard Academy	Connecticut	1	13
United States Naval Academy	Washington	2	12
United States Naval Postgraduate School	San Francisco	6	52
Universidad de Cauca	Colombia	9	--
**Universidad de Los Andes	Colombia	9	6
**Universidad de San Carlos	Central America	9	17
Universidad Distrital Francisco Jose de Caldas	Colombia	9	12
Universidad Nacional de Colombia	Colombia	9	15

School	Section Location	Region	Membership***
Universidad Nacional de Ingenieria	Peru	9	4
Universidad Nacional del Sur	Argentina	9	13
Uppsala, University of	Sweden	8	15
Utah State University	Utah	6	48
Utah, University of	Salt Lake City	6	96
*Valparaiso Technical Institute	South Bend	4	92
Valparaiso University	South Bend	4	40
Vanderbilt University	Nashville	3	35
Venezuela, Universidad Central de	Venezuela	9	7
*Vermont Technical College	Vermont	1	19
Vermont, University of	Vermont	1	16
Villanova University	Philadelphia	2	31
Virginia Military Institute	Virginia Mountain	3	6
Virginia Polytechnic Institute	Virginia Mountain	3	105
Virginia, University of	Central Virginia	3	41
*Virginia Western Community College	Virginia Mountain	3	11
*Voorhees Technical Institute	New York	1	24
*Ward Technical College	Connecticut	1	27
Washington State University	Spokane	6	39
Washington University	St. Louis	5	69
Washington, University of	Seattle	6	128
Waterloo, University of	Kitchener-Waterloo	7	57
Wayne State University	Southeastern Michigan	4	51
*Wentworth Institute	Boston	1	17
** *Westchester Community College	New York	1	50
Western Michigan University	West Michigan	4	24
Western New England College	Springfield	1	26
**West Pakistan University of Engineering & Technology	West Pakistan	10	12
West Virginia Institute of Technology	West Virginia	2	39
West Virginia University	Pittsburgh	2	43
Wichita State University	Wichita	5	51
Windsor, University of	Southeastern Michigan	4	29
*Wisconsin State University	Madison	4	21
Wisconsin, University of, at Madison	Madison	4	211
Wisconsin, University of, at Milwaukee	Milwaukee	4	40
Worcester Polytechnic Institute	Worcester	1	56
**Wright State University	Dayton	2	17
Wyoming, University of	Denver	5	47
Yale University	Connecticut	1	12
Youngstown University	Sharon	2	22

* IEEE Less than four year Student Branches
** Established in 1971
*** Membership as of December 31, 1971

SECTION C

TABLE 1 - GROUP/SOCIETY MEMBERSHIP, DECEMBER 31, 1971; 4-YEAR COMPARISON

Code No.	Group/Society Name	Students	Members	1971 Total	1970 Total	1969 Total	1968 Total
1	Audio & Electroacoustics	926	4,225	5,151	5,299	5,075	4,572
2	Broadcasting	305	1,923	2,228	2,187	2,090	2,009
3	Antennas & Propagation	629	4,032	4,661	5,026	5,203	4,937
4	Circuit Theory	2,150	7,221	9,371	10,277	10,167	8,868
5	Nuclear Science	335	1,972	2,307	2,475	2,510	2,453
6	Vehicular Technology	195	2,345	2,540	2,505	2,359	2,192
7	Reliability	87	2,400	2,487	2,604	2,638	2,486
8	Broadcast & Television Receivers	288	2,255	2,543	2,529	2,430	2,299
9	Instrumentation & Measurement	405	3,962	4,367	4,737	4,848	4,732
10	Aerospace & Electronic Systems	574	6,886	7,460	8,445	9,092	9,150
12	Information Theory	1,115	4,634	5,749	5,863	5,209	4,558
13	Industrial Electronics & Control Instrumentation	337	3,110	3,447	3,527	3,473	3,293
14	Engineering Management	524	6,020	6,544	6,816	6,725	6,293
15	Electron Devices	1,641	6,974	8,615	9,588	9,959	9,175
16	Computer	2,927	14,404	17,331	17,631	16,862	14,982
17	Microwave Theory & Techniques	832	5,456	6,288	6,787	6,920	6,370
18	Engineering in Medicine & Biology	1,382	4,689	6,071	5,661	5,206	4,614
19	Communications	1,182	8,636	9,818	9,842	9,631	8,972
20	Sonics & Ultrasonics	114	1,254	1,368	1,385	1,357	1,246
21	Parts, Hybrids & Packaging	55	1,811	1,866	2,003	2,108	2,176
23	Control Systems	1,456	5,607	7,063	7,555	7,425	6,769
25	Education	195	2,073	2,268	2,174	1,966	1,880
26	Professional Communication	200	1,822	2,022	2,165	2,202	2,103
27	Electromagnetic Compatibility	36	1,689	1,725	1,830	1,877	1,719
28	Systems, Man & Cybernetics	957	4,157	5,114	5,497	1,463	1,225
29	GeoScience Electronics	224	1,487	1,711	1,757	1,707	1,571
31	Power Engineering	1,230	14,589	15,819	14,979	13,873	12,897
32	Electrical Insulation	43	1,286	1,329	1,329	1,246	1,139
33	Magnetics	141	2,085	2,226	2,316	2,134	2,019
34	Industry Applications	309	5,896	6,205	5,794	5,287	4,713
35	Manufacturing Technology	56	479	535	-	4,762	3,987
		20,850	135,379	156,229	160,583	157,804	145,399
	Students Enrolled in Groups/Societies			10,466	11,894		
	Other Grades Enrolled in Groups/Societies			77,071	80,528		

TABLE 2-1971 GROUP/SOCIETY MEMBERSHIP BY REGION, BY SECTION, BY GROUP AND SOCIETY

SECTION C

REGION 1 Section	Total Affiliates	Total Members	G-A&E G - 1	G-B G - 2	G-AP G - 3	G-CT G - 4	G-NS G - 5	G-VT G - 6	G-R G - 7	G-BTR G - 8	G-IM G - 9	G-AES G - 10	G-IT G - 12	G-IECI G - 13	G-EM G - 14	G-ED G - 15	S-C S - 16	G-MTT G - 17	G-EMB G - 18	S-COM S - 19	G-SU G - 20	G-PHP G - 21	S-CS S- 23	G-E G - 25	G-PC G - 26	G-EMC G - 27	S-SMC S - 28	G-GE G - 29	S-PE S - 31	G-EI G - 32	S-MAG S- 33	S-IA S - 34	G-MfgT G - 35
Berkshire		189	2	1	2	2	1	2	4	1	5	7	-	1	11	4	12	-	4	1	1	9	8	-	4	6	4	2	75	13	4	3	-
Binghamton	1	518	13	5	9	26	5	3	26	9	8	35	13	4	26	26	110	15	17	10	7	12	27	4	12	18	18	4	28	5	10	9	4
Boston	44	5,981	201	44	216	319	62	75	102	53	204	324	280	103	268	366	833	323	288	362	67	97	261	55	50	51	232	75	369	32	112	124	33
Lynn	2	331	8	1	7	18	5	2	8	3	13	23	6	17	13	26	37	13	7	15	4	7	16	2	5	5	9	4	29	7	5	16	-
Merrimack Valley	4	917	18	4	30	67	14	7	21	12	30	54	42	9	43	64	119	73	34	69	5	17	45	12	9	6	24	10	48	5	12	13	1
Buffalo	6	789	17	15	22	39	5	17	9	31	19	39	41	23	32	21	81	21	31	29	4	9	56	5	12	5	26	8	59	11	12	87	3
Connecticut	8	1,203	45	18	23	66	28	12	12	19	58	38	33	56	41	51	118	37	69	47	15	15	56	14	14	10	39	8	154	12	13	78	4
Fairfield County	4	938	36	18	17	62	14	11	20	19	30	42	27	20	39	53	115	36	44	81	20	22	12	7	11	14	30	14	62	10	15	34	3
New London	-	344	24	3	15	17	8	2	7	3	7	7	27	4	24	15	32	5	15	19	6	4	19	7	7	7	25	5	16	6	2	5	1
Elmira-Corning	1	113	2	5	1	3	2	3	3	3	4	3	2	2	3	11	5	3	3	4	1	6	6	1	2	1	5	1	6	3	7	10	2
Ithaca	2	200	7	2	6	18	2	2	1	2	5	2	15	4	6	30	23	16	10	8	1	-	9	4	1	-	11	2	7	1	2	3	-
Long Island	11	3,203	101	51	132	167	41	51	97	54	77	311	111	48	156	135	338	219	120	180	36	56	125	31	49	57	99	32	196	18	45	58	12
Maine	2	262	10	9	7	14	5	2	3	5	7	5	5	9	11	12	17	10	14	12	3	2	6	7	7	1	2	4	44	4	2	22	1
Mid-Hudson	5	657	14	6	5	53	3	7	12	6	12	7	17	11	33	95	200	8	9	28	3	8	15	10	6	-	15	2	38	5	12	8	9
Catskill	-	170	3	2	2	9	1	-	3	2	3	1	3	1	6	7	57	-	3	11	1	4	6	1	1	4	5	3	9	-	15	4	3
Mohawk Valley	3	445	11	2	15	18	2	5	31	3	9	51	17	3	31	17	79	17	9	37	1	3	13	3	7	28	12	6	10	1	-	4	-
St. Lawrence Int'l	-	85	1	-	-	5	1	-	1	1	1	2	7	4	3	3	8	-	1	6	1	-	8	11	1	-	6	1	7	1	2	3	-
New Hampshire	-	688	26	5	35	50	4	12	8	7	19	43	22	12	34	19	79	52	20	49	4	7	25	13	12	11	20	8	55	12	11	12	2
New Jersey Coast	5	1,569	41	12	51	87	17	27	23	13	30	74	102	8	63	110	184	88	39	301	15	26	32	14	25	50	69	8	30	3	12	11	4
New York	36	4,523	200	100	89	292	70	50	63	110	90	163	176	80	191	196	566	144	298	357	33	33	171	52	81	34	174	30	425	40	43	159	13
Westchester	-	1,277	54	25	21	63	18	16	16	21	43	49	39	25	58	75	227	40	70	93	15	21	26	14	19	9	31	14	92	11	26	42	4
North Jersey	21	4,438	124	56	85	264	46	71	93	86	152	205	141	91	231	251	514	177	160	346	32	73	175	45	70	43	121	30	431	54	74	176	21
Princeton	10	1,451	46	23	23	83	21	17	15	36	38	38	56	23	48	186	201	70	73	79	13	20	50	20	30	10	51	10	83	9	39	32	8
Providence	2	727	48	9	21	42	6	6	13	6	19	32	41	26	23	40	66	13	33	30	14	14	32	10	9	4	25	23	68	17	10	23	4
Rochester	5	812	41	13	10	37	8	17	20	12	20	20	31	26	52	46	83	14	47	81	18	11	22	13	18	5	22	3	70	8	12	28	4
Schenectady	6	962	19	11	18	34	30	10	11	8	28	16	10	19	33	81	61	31	30	30	10	8	40	20	7	11	31	9	213	12	21	98	2
Adirondack	1	166	4	1	2	11	6	-	4	-	6	2	5	7	8	8	12	6	3	5	-	2	9	1	1	-	5	2	35	5	2	14	-
Springfield	2	245	9	10	13	12	4	-	2	10	4	3	13	4	5	12	31	15	10	7	1	1	10	12	2	-	11	2	30	6	-	6	-
Syracuse	2	940	37	15	63	74	8	10	15	30	15	76	59	8	40	86	90	59	20	26	6	18	21	9	11	12	32	1	56	3	3	36	1
Vermont	1	249	1	3	6	24	4	2	12	-	10	4	3	5	5	33	33	4	20	8	5	5	11	6	2	3	9	2	15	2	7	5	-
Worcester County	3	355	11	6	3	24	3	2	2	4	11	6	9	3	10	27	55	14	25	7	3	3	9	14	3	5	9	2	64	3	10	8	-
	187	34,747	1,174	475	949	2,000	444	441	657	569	977	1,682	1,353	656	1,547	2,106	4,386	1,523	1,526	2,338	345	513	1,321	417	488	410	1,172	325	2,824	319	540	1,131	139

TABLE 2-1971 GROUP/SOCIETY MEMBERSHIP BY REGION, BY SECTION, BY GROUP AND SOCIETY

SECTION C

REGION 2

Section	Total Affiliates	Total Members	G-A&E G - 1	G-B G - 2	G-AP G - 3	G-CT G - 4	G-NS G - 5	G-VT G - 6	G-R G - 7	G-BTR G - 8	G-IM G - 9	G-AES G - 10	G-IT G - 12	G-IECI G - 13	G-EM G - 14	G-ED G - 15	S-C S - 16	G-MTT G - 17	G-EMB G - 18	S-COM S - 19	G-SU G - 20	G-PMP G - 21	S-SC S - 23	G-E G-25	G-PC G - 26	G-EMC G - 27	S-SMC S - 28	G-GE G - 29	S-PE S - 31	G-EI G - 32	S-MAG S - 33	S-IA S - 34	G-MfgT G - 35
Akron	1	333	14	4	15	20	2	7	1	3	6	5	2	15	6	11	32	7	7	8	-	3	18	2	2	1	7	5	74	3	1	51	1
Allegheny Mountain	-	61	3	1	-	3	-	1	2	4	1	1	-	3	4	7	2	1	-	3	1	7	-	1	1	-	-	-	7	-	5	3	-
Baltimore	6	1,515	43	14	52	69	25	14	39	12	37	130	76	19	75	72	129	84	61	94	6	14	47	13	18	20	40	12	171	8	18	102	1
Annapolis	1	493	11	3	19	37	8	6	14	7	8	65	15	5	24	34	42	27	6	25	3	4	20	3	8	34	13	6	22	5	8	10	1
Eastern Shore	-	41	3	2	2	-	-	1	1	2	-	3	1	-	2	1	3	1	-	2	-	-	1	-	1	-	-	-	14	-	-	1	-
Canton	1	165	6	5	4	12	2	4	2	3	3	4	4	10	5	9	7	2	6	8	1	-	2	-	-	3	2	1	43	1	1	14	1
Central Pennsylvania	2	332	14	6	16	23	8	6	5	6	5	19	22	8	7	20	32	16	13	18	7	2	19	9	3	2	13	3	19	2	2	5	2
Cincinnati	-	499	30	14	4	33	6	13	2	3	14	6	13	27	16	18	49	5	23	13	2	5	35	11	2	7	13	-	79	4	4	47	1
Cleveland	10	1,360	51	30	14	62	32	37	17	14	57	28	21	80	46	48	110	24	72	47	18	11	69	13	14	8	46	6	177	15	11	176	6
Columbus	5	1,083	21	3	56	54	14	21	11	12	36	40	41	39	41	61	124	42	37	90	9	10	79	20	13	5	46	10	88	4	23	31	2
Zanesville	-	12	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	1	-	-	6	1	-	2	-
Dayton	9	1,260	30	5	43	59	12	15	22	14	27	123	50	13	115	78	205	33	39	46	4	9	73	12	15	17	59	6	69	8	20	35	4
Delaware Bay	1	286	10	3	4	17	2	2	1	-	7	5	5	9	7	9	35	11	14	5	2	4	13	2	1	2	12	6	45	16	5	32	-
Erie	1	189	4	-	-	7	-	2	5	1	3	12	2	3	13	3	10	2	5	6	1	2	11	2	7	5	3	2	28	3	3	43	1
Johnstown	-	123	5	4	1	8	5	1	1	3	1	5	2	4	4	5	10	1	1	3	1	1	4	2	1	-	-	1	33	2	-	14	-
Lehigh Valley	3	735	22	8	4	34	20	8	8	9	20	13	13	17	15	115	62	27	16	23	11	12	16	19	10	1	6	6	158	5	16	39	2
Lima	-	85	1	-	1	5	1	3	-	-	3	10	1	4	5	7	4	3	2	4	-	1	3	2	1	1	3	-	11	2	-	7	-
North Central Ohio	-	97	3	-	3	2	-	-	1	-	2	1	2	2	3	1	8	2	2	21	1	-	2	3	1	1	1	1	22	1	1	10	-
Ohio Valley	-	38	-	1	-	3	-	-	-	-	1	1	1	1	-	2	3	-	-	1	-	-	1	-	-	-	2	-	13	-	-	8	-
Philadelphia	33	4,642	160	93	96	237	40	75	103	99	116	295	171	85	215	156	561	147	225	303	34	96	157	71	69	54	168	34	439	36	81	207	19
Pittsburgh	8	1,989	44	23	14	93	49	26	17	15	59	26	36	72	76	111	177	22	63	51	24	9	89	28	30	8	78	10	429	42	46	216	6
Upper Monongahela	2	59	3	1	2	1	1	-	-	1	3	2	-	-	1	4	7	2	5	4	1	-	1	2	-	-	1	-	9	3	-	5	-
Sharon	1	204	6	3	3	13	1	2	-	2	4	3	4	13	7	6	15	2	4	3	-	-	9	6	2	-	5	1	53	9	3	24	1
Southern New Jersey	-	91	5	1	4	5	-	3	4	1	4	12	-	2	5	5	10	1	3	2	-	-	3	1	1	-	4	-	11	1	-	3	-
Susquehanna	3	310	13	12	4	20	10	6	7	20	8	11	4	9	18	20	16	18	8	15	8	5	6	3	2	4	3	-	36	3	4	15	2
Washington	63	7,311	255	134	361	325	134	161	123	79	190	684	402	62	479	280	783	306	254	789	57	56	238	56	94	155	290	120	275	21	60	74	14
West Virginia	-	121	6	3	5	2	-	2	2	-	2	1	1	6	6	3	5	4	5	6	1	-	6	1	1	-	-	1	25	1	1	25	-
	150	23,434	763	373	727	1,144	372	416	388	310	617	1,505	889	508	1,196	1,086	2,441	790	872	1,590	192	251	922	282	297	329	815	231	2,356	196	313	1,199	64

SECTION C

TABLE 2-1971 GROUP/SOCIETY MEMBERSHIP BY REGION, BY SECTION, BY GROUP AND SOCIETY

REGION 3

Section	Total Affiliates	Total Members	G-A&E G - 1	G-B G - 2	G-AP G - 3	G-CT G - 4	G-NS G - 5	G-VT G - 6	G-R G - 7	G-RTR G - 8	G-IM G - 9	G-AES G - 10	G-IT G - 12	G-IECI G - 13	G-EM G - 14	G-ED G - 15	S-C S - 16	G-MTT G - 17	G-EMB G - 18	S-COM S - 19	G-SU G - 20	G-PHP G - 21	S-CS G - 23	G-E G -25	G-PC G - 26	G-EMC G - 27	S-SMC S - 28	G-GE G - 29	S-PE S - 31	G-EI G - 32	S-MAG S - 33	S-IA S - 34	G-MfgT G - 35
Alabama	-	465	10	5	16	17	2	6	1	4	4	10	17	11	19	9	36	11	18	63	1	-	19	18	6	2	7	3	127	4	2	17	-
Atlanta	3	904	33	20	46	45	8	10	4	10	24	50	33	16	28	20	78	42	36	101	2	3	45	10	11	18	33	6	108	8	5	49	2
Macon-Warner Robins	3	962	34	20	47	47	8	10	4	10	24	55	34	18	30	23	80	46	36	104	2	3	46	10	13	20	33	7	124	14	6	52	2
Rome	-	31	1	-	1	-	-	-	-	-	-	-	-	1	1	1	1	-	-	1	-	-	-	-	1	1	-	-	14	6	-	2	-
Baton Rouge	2	108	2	2	1	4	2	-	-	-	2	-	4	3	5	7	6	-	4	6	-	-	14	7	-	-	3	3	19	-	1	12	1
Canaveral	1	467	10	5	22	26	2	4	18	1	15	64	21	1	51	31	49	18	15	43	3	1	9	1	7	5	7	3	29	1	2	3	-
Central North Carolina	-	144	7	2	7	6	1	2	2	-	4	10	8	6	9	5	27	7	3	6	1	1	8	2	5	-	1	-	6	2	1	4	1
Central Virginia	1	404	8	7	12	22	10	31	4	5	6	10	13	12	16	16	34	13	19	36	3	9	33	7	6	6	13	1	29	2	7	12	2
Charlotte	1	265	6	6	3	9	2	2	3	-	7	1	2	6	6	9	11	1	4	32	-	1	6	4	3	-	-	-	102	9	2	26	-
Chattanooga	1	185	2	2	3	2	-	3	1	1	2	-	1	4	3	3	4	2	2	20	-	1	3	3	-	-	1	-	114	1	1	6	-
Dayton	-	89	2	-	1	2	-	-	3	-	2	7	1	-	5	1	24	1	2	8	-	-	4	1	-	2	6	2	14	-	-	1	-
Eastern North Carolina	5	611	18	9	18	24	5	9	4	13	19	17	36	13	18	25	91	23	47	61	5	7	16	17	5	3	22	6	48	3	11	18	-
East Tennessee	-	259	10	1	4	16	9	1	3	1	7	2	4	4	8	10	23	4	6	13	-	1	17	3	2	-	5	2	85	1	-	17	-
Upper E. Tennessee	-	39	2	1	1	2	-	1	2	2	1	-	-	3	-	1	5	-	-	-	-	-	1	-	-	-	1	-	7	-	-	8	1
Evansville-Owensboro	-	113	5	1	1	11	4	2	1	4	3	2	2	3	7	10	6	4	3	3	-	3	5	2	2	-	2	1	15	-	2	9	-
Paducah	1	14	1	-	1	1	-	-	-	-	-	1	-	2	-	-	2	-	-	-	1	-	1	-	-	-	-	-	3	-	-	1	-
Florida West Coast	1	750	23	15	11	35	11	23	22	9	17	34	18	13	32	25	52	36	15	89	3	9	29	5	7	9	8	12	134	4	15	34	1
Fort Walton	-	91	2	1	4	4	-	2	2	2	3	9	3	1	8	6	8	6	4	5	-	-	6	-	1	3	1	3	7	-	-	-	-
Gainesville	2	279	15	3	7	24	4	1	1	1	5	8	16	1	8	32	40	10	23	14	-	-	16	10	-	2	14	1	18	-	3	2	-
Hampton Roads	3	342	12	3	10	22	11	6	8	23	8	28	8	8	22	24	30	15	6	14	2	2	14	4	8	3	8	5	25	1	1	11	-
Huntsville	4	478	7	-	21	15	10	3	19	1	15	72	16	5	35	9	72	24	16	20	3	5	58	4	6	7	20	5	5	-	1	4	-
Muscle Shoals	-	27	3	1	-	2	-	-	-	-	1	-	-	-	2	1	2	-	1	4	-	1	-	-	-	-	1	2	2	-	-	3	1
Jacksonville	-	99	-	3	2	2	1	3	3	1	2	2	3	1	7	-	8	2	2	9	1	-	3	1	-	-	1	-	35	2	-	5	-
Lafayette	-	60	1	3	3	3	-	-	-	-	-	3	2	3	1	3	3	1	2	3	-	-	4	4	-	-	2	-	16	-	-	3	-
Lexington	-	113	3	-	2	6	1	1	-	1	3	3	3	1	4	5	15	2	12	5	2	1	10	2	1	3	7	-	12	1	-	6	1
Louisville	-	123	5	4	3	3	-	5	-	2	2	2	4	6	3	2	10	5	6	9	-	1	8	3	2	2	3	-	20	-	2	11	-
Memphis	9	306	11	6	17	16	6	5	2	4	5	5	6	4	7	10	20	16	29	7	1	4	7	11	2	4	6	4	70	3	3	14	1
Jackson	-	31	3	-	-	-	-	1	1	-	-	1	2	-	-	1	2	1	-	9	-	1	-	-	-	-	-	-	8	-	-	-	1
Miami	2	662	32	9	11	38	8	14	13	8	22	28	16	13	31	17	50	11	40	40	9	8	17	3	8	3	14	12	154	5	6	21	1
Middle Tennessee	-	56	-	1	-	2	-	-	-	-	3	12	-	4	2	3	5	-	3	-	1	-	1	-	-	-	-	-	9	-	-	10	-
Mississippi	-	104	3	2	3	5	1	2	-	1	5	1	-	3	2	4	8	1	9	9	-	-	2	1	1	2	3	5	28	1	1	1	-
Northeast Mississippi	2	103	3	1	6	8	-	1	-	2	2	1	3	1	1	6	20	2	6	2	1	-	12	2	4	-	2	1	13	-	1	2	-
Mobile	-	51	2	2	-	3	1	1	-	1	1	1	1	2	2	-	6	1	-	2	-	-	5	2	-	-	-	-	12	-	-	6	-
Nashville	-	196	8	11	6	17	-	5	1	-	2	-	3	4	5	9	14	10	7	14	1	3	17	6	1	1	6	-	30	1	4	10	-
New Orleans	7	472	14	10	16	17	2	7	3	9	12	21	11	11	25	15	30	13	27	46	2	1	17	6	7	7	9	10	97	1	1	24	1
Oak Ridge	1	105	1	-	2	5	35	-	-	1	3	1	4	3	2	7	9	1	4	1	-	-	2	1	3	-	-	2	13	1	1	1	2
Orlando	1	405	13	4	9	15	7	12	4	5	11	41	11	7	14	16	55	25	9	51	7	1	29	6	3	12	8	1	16	1	3	6	3
Palm Beach	1	240	5	1	2	15	3	1	3	3	4	8	4	5	20	27	46	5	6	9	2	5	7	3	5	4	7	7	25	2	3	3	-
Panama City	-	73	3	-	1	2	2	1	-	-	-	6	4	-	5	4	8	2	3	4	3	-	6	2	3	1	6	1	5	-	1	-	-
Pensacola	-	60	1	1	1	5	-	1	2	1	2	4	1	4	1	-	4	1	5	3	1	-	5	-	-	-	2	1	9	-	1	4	-
Richmond	1	228	5	5	6	11	2	5	1	2	9	8	2	11	11	5	15	10	4	15	1	-	12	-	3	2	4	3	60	2	-	14	-
Savannah	-	38	1	3	1	1	1	1	-	-	-	2	-	2	-	2	2	1	-	1	-	-	-	3	-	1	-	-	11	1	1	3	-
South Carolina	-	5	1	-	-	1	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-
Central Savannah River	1	30	-	-	-	1	-	-	-	-	-	2	-	1	2	1	2	-	4	-	-	-	3	1	1	-	-	1	6	-	-	5	-
Charleston	-	64	5	2	-	4	1	1	-	1	1	3	2	1	5	2	7	2	7	4	-	-	2	1	1	1	2	-	8	-	-	1	-
Columbia	-	95	-	5	3	5	2	7	-	2	1	1	1	1	6	4	8	1	2	6	-	3	6	4	2	-	6	-	12	-	1	5	1
Piedmont	-	107	3	1	1	6	2	2	1	1	1	3	1	4	4	4	12	2	6	2	1	4	8	4	-	-	5	2	12	2	-	13	-
Virginia Mountain	-	196	2	2	4	9	4	-	1	4	3	3	4	14	19	4	15	3	7	5	-	-	20	8	3	-	9	-	31	1	1	31	1
Western North Carolina	-	37	-	2	1	-	-	3	-	1	3	2	-	2	1	1	1	-	-	1	-	2	1	1	-	-	-	-	7	1	-	6	1
Winston-Salem	1	97	2	3	2	5	1	1	-	1	3	7	3	1	7	5	7	8	8	10	1	-	2	2	4	1	2	3	5	-	3	-	-
	54	11,183	340	185	339	541	169	196	137	138	269	551	329	240	493	425	1,064	389	463	910	60	81	557	185	137	125	290	115	1,759	81	93	498	24

SECTION C

TABLE 2-1971 GROUP/SOCIETY MEMBERSHIP BY REGION, BY SECTION, BY GROUP AND SOCIETY

REGION 4

Section	Total Affiliates	Total Members	G-A&E G - 1	G-B G - 2	G-AP G - 3	G-CT G - 4	G-NS G - 5	G-VT G - 6	G-R G - 7	G-BTR G - 8	G-IM G - 9	G-AES G - 10	G-IT G - 12	G-IECI G - 13	G-EM G - 14	G-ED G - 15	S-C S - 16	G-MTT G - 17	G-EMB G - 18	S-COM S - 19	G-SU G - 20	G-PHP G - 21	S-CS S - 23	G-E G-25	G-PC G - 26	G-EMC G - 27	S-SMC S - 28	G-GE G - 29	S-PE S - 31	G-EI G - 32	S-MAG S - 33	S-IA S - 34	G-MfgT G - 35
Arrowhead	-	55	2	1	-	3	-	4	-	-	-	3	-	1	1	4	4	-	1	1	-	-	2	-	-	-	-	-	15	-	1	12	-
Calumet	-	200	3	7	4	17	9	5	-	4	5	4	3	9	5	6	16	9	4	6	1	-	9	3	3	-	2	1	34	3	-	28	-
Cedar Rapids	3	267	10	2	5	17	2	3	6	4	5	16	11	6	14	6	49	9	19	15	1	1	12	2	2	1	11	3	22	-	4	7	2
Central Illinois	9	723	26	13	27	51	10	7	4	3	12	16	32	18	15	52	109	32	22	27	10	5	47	13	3	2	37	9	91	2	3	23	2
Central Indiana	4	1,023	43	18	18	83	7	11	9	45	25	21	66	13	33	63	109	23	31	49	7	11	58	36	11	5	44	7	125	8	9	33	2
Bloomington	4	79	3	2	1	7	3	2	-	6	1	3	1	-	6	7	5	1	4	-	-	1	1	-	1	1	-	-	16	3	2	2	-
Central Iowa	3	272	5	2	8	17	6	2	1	2	4	10	4	6	5	7	34	15	14	12	2	-	18	21	3	-	9	2	48	-	5	10	-
Chicago	21	2,343	112	32	56	135	50	53	27	83	47	40	65	71	132	103	222	65	121	147	19	30	84	29	31	16	64	11	308	26	29	125	10
Fox Valley	5	921	34	8	6	58	26	28	11	36	17	10	8	17	60	30	177	16	18	93	5	11	20	4	12	8	18	5	120	9	6	45	5
Northwest	5	1,166	61	17	16	69	15	43	18	88	36	26	20	32	87	44	96	30	36	66	16	18	17	5	19	18	18	9	120	15	28	79	4
Fort Wayne	4	340	11	5	7	16	3	10	4	28	7	15	13	4	16	12	18	21	8	24	1	6	4	5	3	4	9	3	45	13	7	13	5
Illinois Valley	-	107	2	1	2	8	2	1	2	-	2	4	1	7	12	3	11	1	2	2	-	-	2	3	3	-	2	1	18	2	1	12	-
Iowa-Illinois	-	149	4	-	1	7	-	-	2	1	1	3	5	4	5	7	11	3	5	4	3	1	8	3	4	-	4	-	49	1	1	11	1
Madison	1	538	17	6	13	38	7	4	3	10	17	9	13	9	17	33	83	15	43	27	2	1	36	24	8	1	26	7	53	1	4	9	2
Milwaukee	7	1,260	32	23	8	63	11	17	16	12	36	25	17	48	52	46	100	22	74	44	12	18	71	15	16	11	27	11	206	21	37	166	3
Racine-Kenosha	-	115	5	2	-	13	1	4	1	1	3	2	1	8	8	8	9	1	3	3	2	-	8	-	-	2	2	2	9	1	5	11	-
Nebraska	-	530	13	15	9	51	4	9	2	14	14	15	8	11	12	32	45	11	23	40	4	3	14	8	10	5	9	9	117	1	1	20	1
Northeast Michigan	1	148	3	-	5	5	6	5	2	-	9	3	2	4	2	8	7	4	3	5	2	4	5	2	2	3	5	1	19	7	4	21	-
Northeastern Wisconsin	-	249	11	6	5	17	2	5	4	3	6	6	3	11	11	11	21	5	3	7	1	-	16	13	-	2	4	-	48	4	5	19	-
Rock River Valley	-	208	11	3	2	26	1	3	4	2	9	5	2	16	8	13	16	2	5	10	2	1	9	2	2	2	4	1	22	3	4	18	-
Siouxland	-	60	7	5	1	2	1	-	-	2	-	1	-	1	2	2	1	2	1	6	-	-	2	-	-	-	1	1	17	-	2	3	-
South Bend	4	335	26	8	9	21	6	4	6	2	8	10	16	7	11	22	26	11	15	19	1	1	19	9	3	-	7	3	26	3	8	26	2
Southeastern Michigan	14	2,657	87	32	73	148	34	106	18	26	67	62	95	73	66	130	327	92	102	108	18	17	144	51	27	16	105	24	404	10	34	156	5
Southern Minnesota	-	175	9	4	1	11	2	8	2	3	4	-	3	4	9	9	48	-	15	6	-	4	5	1	4	1	8	1	5	-	2	5	1
Toledo	1	342	13	2	3	22	3	8	2	5	12	5	6	25	7	25	29	6	13	3	6	6	28	9	3	-	14	-	38	4	4	38	3
Twin Cities	18	1,668	55	17	18	109	14	15	28	14	38	55	55	25	62	83	346	27	73	95	6	18	89	23	23	14	51	9	164	13	77	49	3
Red River Valley	-	183	3	6	5	16	3	3	3	5	1	7	8	2	5	3	17	3	8	9	1	1	7	6	4	3	4	5	38	2	1	4	-
West Michigan	-	220	8	7	4	19	1	9	3	5	6	8	4	9	15	11	16	2	6	12	1	2	6	5	4	2	4	2	22	5	4	18	-
	104	16,332	616	244	307	1,049	229	369	178	404	392	384	462	441	678	780	1,952	428	672	840	123	160	741	292	201	117	489	127	2,199	157	288	963	51

TABLE 2-1971 GROUP/SOCIETY MEMBERSHIP BY REGION, BY SECTION, BY GROUP AND SOCIETY

SECTION C

REGION 5 Section	Total Affiliates	Total Members	G-A&E G - 1	G-B G - 2	G-AP G - 3	G-CT G - 4	G-NS G - 5	G-VT G - 6	G-R G - 7	G-BTR G - 8	G-IM G - 9	G-AES G - 10	G-IT G - 12	G-IECI G - 13	G-EM G - 14	G-ED G - 15	S-C S - 16	G-MTT G - 17	G-EMB G - 18	S-COM S - 19	G-SU G - 20	G-PHP G - 21	S-CS S - 23	G-E G - 25	G-PC G - 26	G-EMC G - 27	S-SMC S - 28	G-GE G - 29	S-PE S - 31	G-EI G - 32	S-MAG S - 33	S-IA S - 34	G-MfgT G - 35
Arkansas	1	162	10	3	3	6	3	2	1	2	3	2	2	2	5	5	8	1	7	2	1	-	2	1	-	-	1	2	62	5	3	18	-
Beaumont	1	104	5	3	1	6	3	1	-	2	3	2	5	11	2	4	9	1	2	4	-	-	7	2	1	-	1	-	22	1	-	6	-
Lake Charles	-	36	-	-	1	-	1	-	-	-	1	2	2	3	1	1	3	1	1	-	1	-	3	1	-	-	-	-	8	-	-	6	-
Central Texas	8	1,016	54	11	42	49	17	10	8	13	25	42	49	18	29	40	169	28	74	39	13	6	40	19	14	19	40	29	90	4	10	10	5
Corpus Christi	1	147	7	4	4	12	1	2	-	3	2	4	4	3	3	6	15	6	1	6	1	-	7	3	-	1	1	2	40	-	-	9	-
Victoria-Port Lavaca	-	27	-	-	-	1	-	-	-	-	1	-	-	3	3	1	2	1	-	-	-	-	2	-	2	-	-	-	6	-	-	5	-
Dallas	6	2,065	57	34	91	130	25	38	41	26	40	130	77	19	111	149	234	145	51	116	18	22	84	23	22	9	57	50	206	7	15	32	6
Denver	10	1,678	48	22	91	110	27	19	13	17	76	83	54	30	47	81	193	83	97	110	8	6	73	26	13	25	47	35	174	5	21	41	3
Black Hills	-	57	-	2	1	6	1	1	-	-	1	5	-	-	1	3	11	1	-	-	-	-	6	5	1	-	1	1	7	-	1	2	-
Pikes Peak	1	196	12	3	5	14	3	2	5	3	5	12	7	1	4	11	29	5	13	11	1	1	11	6	2	4	9	1	6	1	3	4	2
El Paso	1	353	8	3	19	20	4	6	5	7	15	23	19	3	16	10	43	8	11	21	5	3	18	11	7	2	17	9	28	1	2	8	1
Fort Worth	2	464	13	6	19	21	6	8	3	10	8	48	13	9	18	18	47	12	14	17	2	3	30	5	1	4	13	3	103	-	2	8	-
Houston	15	1,486	66	17	29	80	20	18	9	8	33	55	78	34	49	63	216	24	70	70	12	6	87	14	10	5	47	96	163	7	14	84	2
Clear Lake	4	279	2	-	6	13	4	2	3	1	8	33	7	10	17	4	42	6	16	20	1	2	20	-	4	3	9	3	22	1	2	16	2
Freeport	-	31	1	-	-	1	-	-	-	-	1	-	-	4	-	-	2	-	-	1	-	-	-	-	1	-	-	-	13	1	-	6	-
Kansas City	3	800	30	16	23	53	14	10	8	12	15	32	26	16	36	38	62	26	37	67	6	5	20	25	16	7	24	8	128	7	5	22	6
Oklahoma City	1	364	13	7	9	31	2	6	3	7	11	20	8	5	13	16	48	6	10	22	1	1	18	5	3	1	8	3	65	1	8	12	1
Ozark	-	110	2	2	5	8	1	-	-	1	3	6	4	2	-	6	12	3	2	6	1	-	7	6	1	1	2	2	20	-	1	-	6
Panhandle	-	50	-	-	-	3	-	1	-	-	1	1	1	4	2	1	5	1	2	-	-	-	3	3	2	-	1	-	17	-	-	1	1
Permian Basin	-	25	1	-	3	-	-	-	-	-	1	-	2	1	-	1	3	-	1	-	1	-	2	1	1	-	-	-	6	-	-	1	-
St. Louis	10	1,722	34	17	36	121	16	19	23	12	32	121	73	32	58	86	200	53	95	76	3	11	113	30	24	12	54	12	195	23	16	121	4
Shreveport	-	207	8	3	3	3	-	3	7	5	5	1	4	7	6	8	10	2	6	10	-	2	6	5	4	2	2	-	77	2	-	14	2
Monroe	-	13	1	1	1	-	-	-	-	1	-	-	-	-	-	-	2	-	-	1	-	-	-	-	-	-	-	-	4	-	-	2	-
South Plains	-	115	2	1	3	7	3	2	1	-	3	4	3	1	12	12	8	7	4	4	-	1	7	5	-	-	4	2	16	-	-	3	-
Tulsa	1	372	17	9	9	24	7	3	2	5	7	8	14	6	4	14	27	5	9	10	4	2	22	9	5	2	11	17	93	1	2	24	-
West Central Texas	-	35	1	1	-	-	-	1	-	-	-	1	-	-	6	-	2	-	-	10	-	1	1	-	-	1	1	-	7	-	-	2	-
Wichita	-	203	11	3	4	26	3	3	-	4	2	10	5	1	8	9	18	6	17	3	2	-	13	5	3	3	6	-	28	1	-	8	1
	65	12,117	403	168	408	745	161	157	132	139	302	645	457	225	451	587	1,420	431	540	626	81	72	602	210	137	101	356	275	1,606	68	105	465	42

SECTION C

REGION 6

TABLE 2-1971 GROUP/SOCIETY MEMBERSHIP BY REGION, BY SECTION, BY GROUP AND SOCIETY

	Total Affiliates	Total Members	G-A&E G-1	G-B G-2	G-AP G-3	G-CT G-4	G-NS G-5	G-VT G-6	G-R G-7	G-BTR G-8	G-IM G-9	G-AES G-10	G-IT G-12	G-IECI G-13	G-EM G-14	G-ED G-15	S-C S-16	G-MTT G-17	G-EMB G-18	S-COM S-19	G-SU G-20	G-PHP G-21	S-CS S-23	G-E G-25	G-PC G-26	G-EMC G-27	S-SMC S-28	G-GE G-29	S-PE S-31	G-EI G-32	S-MAG S-33	S-IA S-34	G-MfgT G-35
Alamagordo-Holloman	-	38	1	-	1	2	1	2	-	-	-	4	-	1	4	-	5	-	3	-	1	-	7	1	2	-	-	-	2	-	-	1	-
Alaska	-	126	1	4	5	8	3	3	1	2	4	3	-	4	4	7	5	3	2	20	1	-	1	7	3	2	2	4	23	-	-	4	-
Albuquerque	4	491	10	6	19	27	51	6	11	3	25	22	16	4	17	52	37	19	15	17	4	5	25	9	7	12	17	11	33	3	3	3	2
Los Alamos-Santa Fe	3	89	2	-	1	6	30	-	-	-	5	2	-	2	2	7	16	1	2	3	-	1	5	-	1	1	1	1	-	-	-	-	-
Antelope Valley	-	30	1	-	-	2	-	-	1	1	3	4	-	-	2	2	4	-	1	3	-	-	3	-	-	1	1	-	-	-	-	1	-
Boise	-	53	-	-	-	3	-	2	-	-	1	-	-	-	-	-	2	-	1	3	1	-	1	-	2	-	-	2	32	1	-	2	-
Buenaventura	5	497	17	3	18	38	-	5	11	6	20	49	26	3	36	27	69	30	12	23	3	5	22	5	9	14	17	3	13	1	8	3	1
China Lake	-	154	3	2	6	21	-	4	6	1	4	14	5	1	6	11	9	17	2	7	1	3	15	-	2	2	5	-	4	1	-	2	-
Foothill	6	813	29	14	28	53	16	17	14	12	25	61	30	14	44	32	78	44	36	41	6	9	32	11	9	15	23	10	66	4	14	26	-
Fort Huachuca	1	88	1	2	4	3	1	4	-	2	4	8	2	1	4	2	10	3	2	19	1	-	-	-	1	2	5	3	2	-	1	1	-
Hawaii	1	415	14	4	16	23	3	8	3	3	17	16	23	8	16	8	46	7	14	47	6	1	18	3	13	17	14	11	38	2	3	12	1
Idaho	1	57	2	-	2	3	16	2	1	-	6	1	1	3	1	1	2	-	1	3	-	-	2	-	-	-	1	1	5	-	-	3	-
Las Vegas	1	104	2	1	9	1	4	2	1	-	3	7	2	4	3	2	4	5	4	14	1	-	4	-	2	2	2	1	21	2	-	1	-
Met. Los Angeles	8	1,188	34	18	32	68	15	26	7	20	29	46	43	22	36	51	143	44	49	63	7	10	55	14	26	13	34	13	183	12	27	46	2
Montana	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-
Billings	-	19	-	1	-	1	1	-	1	-	-	2	-	-	-	1	2	-	-	-	-	1	-	-	1	-	-	1	7	-	-	-	-
Butte	-	22	-	-	1	1	-	-	-	-	-	1	-	-	2	2	-	-	1	1	-	-	1	-	-	-	1	1	8	-	-	2	-
Helena	-	68	-	-	5	4	2	-	-	-	1	2	1	1	1	5	10	4	1	6	1	-	5	3	2	-	4	1	6	-	-	3	-
Orange County	19	2,545	59	23	82	161	36	34	52	25	74	223	95	48	133	158	407	105	89	135	20	36	133	24	19	32	83	25	92	13	54	65	10
Phoenix	10	1,395	28	16	35	114	19	24	30	23	23	60	42	19	49	129	182	84	32	62	8	19	35	29	26	16	34	21	169	6	22	36	3
Portland	3	784	21	9	10	49	11	11	7	2	34	11	12	11	21	31	51	14	26	25	4	8	24	7	13	8	20	8	284	7	4	38	3
Eugene	1	238	10	4	4	19	5	2	1	3	8	4	10	4	7	16	32	6	8	4	1	1	11	10	2	1	14	6	33	-	3	8	1
Richland	1	84	-	-	-	2	12	-	2	-	4	1	1	4	3	2	6	2	4	3	4	-	3	-	2	-	-	2	19	2	-	6	-
Walla Walla	-	24	-	-	1	2	-	1	-	-	1	-	1	-	-	2	1	1	1	1	-	-	1	1	1	1	1	1	5	-	-	1	-
Sacramento	-	469	12	8	12	42	14	13	4	6	11	19	12	5	15	20	54	12	27	37	-	1	29	10	6	2	15	5	51	-	1	24	2
Reno	1	77	3	2	1	6	2	-	-	1	3	1	1	3	3	3	10	-	3	5	-	1	4	-	2	-	1	1	17	-	2	2	-
San Joaquin	2	34	2	2	-	3	1	1	1	1	2	-	-	1	-	-	5	-	2	2	1	1	1	-	1	1	-	-	4	-	1	1	-
Shasta	-	94	5	5	3	5	3	6	2	5	4	3	1	3	5	2	3	3	3	2	1	1	2	4	2	1	1	1	11	1	1	4	1
San Diego	16	1,530	53	8	66	99	34	18	34	13	38	123	83	16	64	73	221	77	67	127	20	18	55	7	17	17	46	20	61	6	21	25	3
San Fernando Valley	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
San Francisco	11	1,422	44	30	51	94	24	39	13	21	24	53	38	24	59	102	108	90	51	121	19	9	46	21	18	15	61	16	146	8	28	43	6
East Bay	16	1,384	45	8	30	108	92	18	12	14	47	23	31	27	33	96	192	40	91	52	4	8	67	17	13	7	52	12	139	6	18	77	5
Golden Gate	2	569	13	6	12	28	7	10	1	7	10	10	6	9	25	22	42	17	32	31	1	-	12	4	8	8	9	2	177	3	3	54	-
Santa Clara Valley	39	5,077	145	43	153	386	74	67	88	70	149	253	201	68	223	572	721	366	172	292	42	77	218	58	46	39	195	45	105	9	116	67	17
San Gabriel Valley	9	931	35	6	26	49	19	16	20	7	37	61	47	12	35	52	129	27	32	55	12	13	27	13	9	4	29	24	77	6	21	28	3
Santa Barbara	1	566	28	4	27	47	8	9	5	8	11	32	29	5	13	40	77	32	26	27	6	7	28	14	6	4	22	5	19	1	15	10	1
Santa Monica Bay	20	1,685	45	12	48	102	21	19	33	19	28	147	108	18	68	111	254	80	74	110	12	23	116	13	20	26	84	15	26	3	32	15	3
Seattle	7	1,477	51	18	80	90	19	20	12	12	36	122	50	20	73	61	136	38	74	72	16	21	69	15	24	40	40	22	152	5	8	77	4
South Bay Harbor	12	1,699	43	12	69	93	19	23	34	16	34	182	87	17	72	113	244	105	46	104	4	30	110	14	24	23	54	12	31	2	37	43	2
Spokane	2	176	2	3	5	13	4	6	2	3	3	2	4	3	5	3	16	2	4	6	-	-	13	9	-	1	3	5	45	2	1	10	1
Grand Coulee Dam	-	10	1	-	-	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7	-	-	-	-
Tucson	4	357	11	4	18	19	2	8	5	7	9	19	14	3	15	33	39	12	17	22	4	4	12	14	1	24	18	4	16	-	1	1	1
Utah	3	582	35	14	20	48	6	9	7	5	17	13	22	10	15	33	110	20	45	22	1	1	26	11	4	3	28	11	31	-	5	7	3
Vandenberg	-	131	6	2	1	4	2	-	1	3	4	35	3	4	21	2	14	2	5	5	-	-	8	-	2	-	-	2	2	-	1	2	-
Wenatchee	-	24	1	1	1	-	-	-	-	-	1	-	-	-	2	2	1	-	1	-	-	-	2	-	-	-	-	-	11	-	-	1	-
	210	27,618	815	295	902	1,848	577	435	423	322	759	1,639	1,047	402	1,137	1,888	3,498	1,312	1,078	1,592	213	314	1,248	348	346	354	937	328	2,174	106	451	755	75

TABLE 2-1971 GROUP/SOCIETY MEMBERSHIP BY REGION, BY SECTION, BY GROUP AND SOCIETY

SECTION C

REGION 7 Section	Total Affiliates	Total Members	G-A&E G - 1	G-B G - 2	G-AP G - 3	G-CT G - 4	G-NS G - 5	G-VT G - 6	G-R G - 7	G-BTR G - 8	G-IM G - 9	G-AES G - 10	G-IT G - 12	G-IECI G - 13	G-EM G - 14	G-ED G - 15	S-C S - 16	G-MTT G - 17	G-EMB G - 18	S-COM S - 19	G-SU G - 20	G-PHP G - 21	S-CS S - 23	G-E G - 25	G-PC G - 26	G-EMC G - 27	S-SMC S - 28	G-GE G - 29	S-PE S - 31	G-EI G - 32	S-MAG S - 33	S-IA S - 34	G-MfgT G - 35
Bay of Quinte	-	270	5	2	10	22	4	3	2	1	9	5	14	12	8	11	15	8	11	13	3	5	20	5	5	2	7	1	24	3	5	35	-
Hamilton	2	319	13	2	5	20	3	2	2	11	4	4	9	12	11	18	34	9	9	16	2	1	18	1	4	1	5	2	53	8	5	34	1
Kitchener-Waterloo	-	245	12	3	8	19	2	3	5	12	3	3	11	3	5	18	32	9	4	12	-	1	19	10	4	-	12	-	20	6	4	5	-
London	-	144	10	3	2	11	-	1	-	1	5	1	1	9	8	4	8	-	6	5	3	1	4	2	4	-	5	2	27	3	3	14	1
Niagara Internationsl	-	130	8	-	3	8	1	-	-	2	2	5	2	10	1	6	7	3	5	7	1	5	4	4	2	-	3	2	23	1	-	15	-
Toronto	-	1,881	62	33	40	111	19	42	22	48	52	43	40	63	74	84	162	41	91	104	7	14	69	34	26	17	50	25	320	28	26	126	8
Canadian Atlantic	2	250	12	3	8	18	-	5	2	4	6	5	4	11	11	8	20	10	11	19	2	-	12	9	1	1	4	8	41	-	1	14	-
New Brunswick	-	24	-	-	1	2	-	1	-	-	1	-	1	-	-	2	1	1	1	1	-	-	1	1	1	1	1	1	5	-	-	1	-
Montreal	8	1,727	46	30	42	95	16	32	21	26	56	40	58	46	66	52	146	67	90	154	12	12	102	31	26	7	71	15	229	21	8	99	11
Ottawa	6	1,104	52	15	39	60	19	15	13	15	46	60	55	14	59	71	134	55	22	132	2	8	48	13	22	11	41	16	37	7	7	14	2
Quebec	-	224	7	7	9	10	2	3	3	2	8	2	7	6	10	7	19	10	6	15	4	2	20	4	5	2	7	2	27	4	1	12	1
St. Maurice	-	15	-	1	1	1	-	-	-	2	1	-	1	2	-	-	1	1	-	1	-	-	-	-	-	-	-	-	3	-	-	-	-
Northern Alberta	4	359	15	7	8	22	5	7	3	5	9	8	8	11	9	25	33	17	24	26	4	1	27	4	7	1	16	8	31	3	3	12	-
Regina	-	161	8	-	-	7	1	1	4	-	5	1	1	5	9	5	13	2	11	9	-	-	11	3	9	-	6	1	36	2	3	8	-
Southern Alberta	-	210	17	3	1	14	2	4	1	7	5	5	4	8	8	9	21	6	7	12	-	-	22	3	2	-	9	4	25	-	-	11	-
Vancouver	1	638	22	14	16	22	5	18	3	6	15	12	11	30	19	30	52	23	24	54	2	3	29	10	13	7	11	5	127	7	3	45	-
Victoria	-	51	1	1	1	1	1	4	-	-	3	1	1	3	2	-	4	-	1	2	-	-	2	1	1	1	1	5	9	-	-	5	-
Winnipeg	-	343	10	6	16	27	4	6	5	4	9	6	7	9	7	15	20	16	20	25	3	2	16	6	3	-	8	2	67	5	-	16	3
	23	8,095	300	130	210	470	84	147	86	146	239	201	235	254	307	365	722	278	343	607	45	55	424	141	135	51	257	99	1,104	98	69	466	27

TABLE 2-1971 GROUP/SOCIETY MEMBERSHIP BY REGION, BY SECTION, BY GROUP AND SOCIETY

SECTION C

REGION 8

Section	Total Affiliates	Total Members	G-A&E G - 1	G-B G - 2	G-AP G - 3	G-CT G - 4	G-NS G - 5	G-VT G - 6	G-R G - 7	G-BTR G - 8	G-IM G - 9	G-AES G - 10	G-IT G - 12	G-IECI G - 13	G-EM G - 14	G-ED G - 15	S-C S - 16	G-MTT G - 17	G-EMB G - 18	S-COM S - 19	G-SU G - 20	G-PHP G - 21	S-CS S - 23	G-E G - 25	G-PC G - PC	G-EMC G - 27	S-SMC S - 28	G-GE G - 29	S-PE S - 31	G-EI G - 32	S-MAG S - 33	S-IA S - 34	G-MfgT G - 35
Benelux	7	1,413	57	17	49	123	30	24	31	24	56	49	91	41	33	95	140	65	49	78	24	22	70	23	10	18	50	14	53	13	30	31	3
Denmark	1	456	28	2	28	50	6	13	11	13	22	9	13	12	15	28	38	32	35	22	7	9	18	6	2	5	9	-	10	4	3	4	2
Egypt	-	174	3	2	7	17	1	2	1	11	8	3	8	8	3	12	20	8	5	7	1	1	13	1	2	3	3	1	11	3	2	6	1
France	16	1,416	34	12	38	86	32	16	40	18	51	72	81	42	46	80	155	58	44	63	30	29	102	23	16	11	54	23	54	23	49	29	5
Germany (West)	15	656	21	5	25	56	10	8	14	8	16	36	30	8	28	53	66	37	16	37	10	16	32	14	8	8	30	8	17	7	24	6	2
Greece	-	110	6	2	3	9	-	1	1	3	2	3	7	4	6	4	8	3	1	6	-	-	9	3	1	1	3	-	19	-	-	5	-
Iran	-	148	4	5	5	9	1	5	2	4	3	3	5	4	8	3	12	8	4	14	1	1	11	6	4	1	2	-	18	-	-	5	-
Israel	2	638	24	9	26	47	11	19	22	14	23	30	30	23	18	34	51	31	24	30	10	15	38	12	13	9	26	5	7	8	14	11	4
Middle & South Italy	2	616	21	6	21	46	7	10	16	9	20	32	47	12	13	40	77	30	19	34	9	10	45	9	4	6	43	5	10	3	5	4	3
North Italy	4	1,207	40	18	44	77	18	15	26	21	46	27	55	52	24	86	156	59	59	64	18	25	92	11	13	10	47	8	40	11	16	25	4
Norway	-	211	3	3	9	13	1	3	7	2	10	12	10	9	5	9	22	10	7	13	5	5	10	1	-	-	14	3	13	4	3	5	-
Spain	2	462	12	6	18	32	9	6	10	9	19	13	19	18	9	21	47	18	12	36	6	9	20	11	5	3	16	5	33	8	10	21	1
Sweden	4	1,293	48	9	42	86	24	34	37	24	74	68	56	35	33	94	87	70	59	65	16	30	56	26	20	20	53	9	47	19	18	26	8
Switzerland	-	1,018	43	18	14	92	17	11	24	19	50	39	61	29	32	65	84	39	43	74	15	18	47	16	8	8	40	5	56	17	15	17	2
United Kingdon & Republic of Ireland	20	1,183	33	16	34	84	22	24	27	22	40	34	35	29	49	75	101	67	27	71	14	17	51	24	21	10	28	9	130	16	24	45	4
	73	10,999	377	130	363	827	189	191	269	201	440	430	548	326	322	699	1,064	535	404	614	166	207	614	186	127	113	418	95	518	136	213	240	39
Territory Not Assigned to Sections (See table 9)	4	830	34	20	37	56	15	12	18	22	29	18	37	30	29	44	64	41	20	54	5	12	51	17	14	7	35	4	55	10	14	24	2
Total Region	77	11,829	411	150	400	883	204	203	287	223	469	448	585	356	351	743	1,128	576	422	668	171	219	665	203	141	120	453	99	573	146	227	264	41

TABLE 2-1971 GROUP/SOCIETY MEMBERSHIP BY REGION, BY SECTION, BY GROUP AND SOCIETY

SECTION C

REGION 9 Section	Total Affiliates	Total Members	G-A&E G - 1	G-B G - 2	G-AP G - 3	G-CT G - 4	G-NS G - 5	G-VT G - 6	G-R G - 7	G-BTR G - 8	G-IM G - 9	G-AES G - 10	G-IT G - 12	G-IECI G - 13	G-EM G - 14	G-ED G - 15	S-C S - 16	G-MTT G - 17	G-EMB G - 18	S-COM S - 19	G-SU G - 20	G-PHP G - 21	S-CS S - 23	G-E G - 25	G-PC G - 26	G-EMC G - 27	S-SMC S - 28	G-GE G - 29	S-PE S - 31	G-EI G - 32	S-MAG S - 33	S-IA S - 34	G-MfgT G - 35
Argentina	-	379	24	8	14	21	8	6	4	13	13	6	12	22	9	31	40	13	20	26	2	2	23	4	2	2	11	-	31	2	-	10	-
Central America	-	103	2	1	-	3	-	-	-	1	1	1	1	7	2	-	8	-	1	6	-	-	4	2	1	-	2	-	39	1	-	20	-
Chile	-	72	1	1	2	9	-	-	1	3	2	-	4	2	3	1	8	5	5	6	1	-	5	3	-	1	-	-	5	2	-	2	-
Columbia	-	343	10	3	8	21	-	3	-	9	5	4	7	8	10	29	35	9	5	22	1	1	24	5	1	1	11	1	88	1	-	21	-
Mexico	1	503	11	5	11	22	14	5	12	14	18	8	8	23	36	14	23	9	11	16	3	5	24	15	11	2	22	7	92	16	4	40	2
Monterrey	-	143	2	1	1	5	-	-	1	-	12	-	3	11	4	5	9	1	4	4	-	-	19	5	-	-	7	-	34	1	-	13	1
Peru	-	92	2	1	4	6	-	1	1	4	2	2	1	5	2	2	4	3	1	9	1	-	7	2	3	-	2	1	18	-	-	8	-
Puerto Rico & Virgin Island	-	247	6	9	5	12	4	7	-	5	5	7	3	10	7	13	13	1	13	26	-	1	7	1	1	2	5	2	60	3	2	16	1
Rio de Janeior	1	321	4	2	6	12	3	4	5	6	10	3	14	9	15	8	23	6	8	24	2	3	14	5	5	2	17	2	87	3	1	17	1
Sao Paulo	-	295	10	2	8	12	3	2	6	11	11	2	6	10	13	10	33	10	8	16	-	3	20	4	1	-	17	3	55	2	-	17	-
Venezuela	-	375	9	14	16	13	2	9	5	10	14	4	6	8	18	11	27	11	9	43	2	1	10	5	5	3	6	3	72	1	1	35	2
	2	2,873	81	47	75	136	34	37	35	76	93	37	65	115	119	124	223	68	85	198	12	16	157	51	30	13	100	19	581	32	8	199	7
Territory Not Assigned to Sections (See Table 10)	-	480	17	15	22	24	9	9	3	8	14	1	10	17	15	11	23	19	9	38	1	3	22	13	2	2	5	8	103	13	2	40	2
Total Region	2	3,353	98	62	97	160	43	46	38	84	107	38	75	132	134	135	246	87	94	236	13	19	179	64	32	15	105	27	684	45	10	239	9

REGION 10 Section	Total Affiliates	Total Members	G-A&E G - 1	G-B G - 2	G-AP G - 3	G-CT G - 4	G-NS G - 5	G-VT G - 6	G-R G - 7	G-BTR G - 8	G-IM G - 9	G-AES G - 10	G-IT G - 12	G-IECI G - 13	G-EM G - 14	G-ED G - 15	S-C S - 16	G-MTT G - 17	G-EMB G - 18	S-COM S - 19	G-SU G - 20	G-PHP G - 21	S-CS S - 23	G-E G - 25	G-PC G - 26	G-EMC G - 27	S-SMC S - 28	G-GE G - 29	S-PE S - 31	G-EI G - 32	S-MAG S - 33	S-IA S - 34	G-MfgT G - 35
India	-	430	9	3	6	13	10	5	2	7	18	7	6	27	15	25	25	11	13	12	7	8	37	5	8	3	12	3	94	8	8	19	4
Tamil Nadu	-	72	2	3	2	3	2	1	1	2	2	1	1	3	4	2	4	1	1	2	1	1	5	2	1	1	2	1	10	2	2	6	1
New Zealand	-	82	2	1	7	5	-	2	1	-	1	-	4	7	2	2	7	4	3	2	2	-	3	2	-	-	5	-	9	1	-	9	1
Tokyo	17	4,035	96	77	163	232	72	69	99	105	121	114	181	110	79	350	285	263	94	202	97	120	175	60	55	58	147	53	157	96	147	114	44
West Pakistan	-	47	-	-	1	1	1	-	-	1	-	3	3	2	2	2	3	3	-	1	1	-	2	1	2	-	-	-	18	-	-	-	-
	17	4,666	109	84	179	254	85	77	103	115	142	125	195	149	102	381	324	282	111	219	108	129	222	70	66	62	166	57	288	107	157	148	50
Territory Not Assigned to Sections (See Table 11)	9	2,474	80	56	85	186	34	42	21	69	72	88	82	56	121	115	238	99	69	177	18	17	141	46	36	22	69	19	281	19	25	80	11
Total Region	26	7,140	189	140	264	440	119	119	124	184	214	213	277	205	223	496	562	381	180	396	126	146	363	116	102	84	235	76	569	126	182	228	61

GROUP NAME
G - 1 Audio & Electroacoustics
G - 2 Broadcasting
G - 3 Antennas & Propagation
G - 4 Circuit Theory
G - 5 Nuclear Science
G - 6 Vehicular Technology
G - 7 Reliability
G - 8 Broadcast & Television Receivers
G - 9 Instrumentation & Measurement
G - 10 Aerospace & Electronic Systems
G - 12 Information Theory
G - 13 Industrial Electronics & Control Instrumentation
G - 14 Engineering Management
G - 15 Electron Devices
G - 16 Computer Society
G - 17 Microwave Theory & Techniques
G - 18 Engineering in Medicine & Biology
G - 19 Communications Society
G - 20 Sonics & Ultrasonics
G - 21 Parts, Hybrids & Packaging
G - 23 Control Systems Society
G - 25 Education
S - 26 Professional Communication
G - 27 Electromagnetic Compatibility
G - 28 Systems Man & Cybernetics
G - 29 GeoScience Electronics
G - 31 Power Engineering Society
G - 32 Electrical Insulation
G - 33 Magnetics Society
G - 34 Industry Applications Society
G - 35 Manufacturing Technology

SECTION C

TABLE 3 - IEEE GROUP/SOCIETY CHAPTER ACTIONS IN 1971

Region and Section	New Chapters	Change in Status of Existing Chapters	Chapters Dissolved
REGION 1			
Buffalo			G-26
Connecticut		S-16 to S-16/28	G-14
New Jersey Coast	G-15/17		
North Jersey	G-5/18/28/29	G-18 withdrawn from Met. N. Y. Chapter	
Rochester		G-10 and G-19 to G-10/S-19	
Syracuse		G-4/12 to G-4 and G-12	
REGION 2			
Baltimore			G-12; G-18
Columbus	S-23		
REGION 3			
Canaveral			G-27
Jacksonville	S-31		
New Orleans			G-14
N. C. Affiliation			G-3/17; G-18
REGION 4			
Chicago		G-3 and G-17 to G-3/17	
Twin Cities	S-34	G-1 and G-2 to G-1/2	G-15
REGION 5			
Dallas	G-18		
Denver	G-12/S-16		
Kansas City	S-19		
Tulsa		G-29 to G-4/29/S-16	
REGION 6			
Phoenix	G-27, S-34	G-4, G-12, S-16, S-23 to G-4/12/S-16/23	
Portland	S-34		
Sacramento	G-4/S-23; S-16		
REGION 7			
Toronto	S-28		G-3/17
Winnipeg	S-31		
REGION 9			
Monterrey Subsection (Mexico Section)	S-31		
REGION 10			
India	S-31		
Tokyo	G-4; G-8; G-15		

SECTION C

TABLE 4 - IEEE GROUP/SOCIETY CHAPTERS
as of December 31, 1971

Group Code	Name of Group	No. of Chapters	Section Locations		
G-10	Aerospace & Electronic Systems	35	Baltimore	Huntsville	Rochester
			Binghamton	Long Island	St. Louis
			Boston	Los Angeles Council	San Diego
			Buffalo	Middle Tennessee	San Francisco
			Canaveral	Mohawk Valley	Seattle
			Chicago	New Jersey Coast	Southeastern Michigan
			Cleveland	NY/North Jersey	Syracuse
			Columbus	Orlando	Tucson/Fort Huachuca
			Dayton	Ottawa	Twin Cities
			Denver	Philadelphia	Vancouver
			Fort Worth	Providence	Vandenberg
			Houston		Washington
G-3	Antennas & Propagation	32	Atlanta	Foothill	Phoenix
			Akron	Fort Worth	St. Louis
			Baltimore	Houston	San Diego
			Boston	Huntsville	San Francisco
			Buffalo	Long Island	Seattle
			Chicago	Los Angeles Council	Southeastern Michigan
			Columbus	Montreal	Syracuse
			Connecticut	New Hampshire	Tucson
			Dallas	North Jersey	Vancouver
			Dayton	Orange County	Washington
			Denver	Philadelphia	
G-1	Audio & Electroacoustics	12	Chicago	Kitchener-Waterloo	San Francisco
			Cincinnati	Ottawa	Shreveport
			Cleveland	Philadelphia	Twin Cities
			Houston	San Diego	Washington
G-2	Broadcasting	7	Cleveland	Philadelphia	Washington
			Florida West Coast	Twin Cities	Winston-Salem
			Houston		
G-8	Broadcast & TV Receivers	4	Central Indiana	Philadelphia	Tokyo
			Chicago		
G-4	Circuit Theory	17	Canton	Los Angeles Council	Syracuse
			Chicago	Philadelphia	Tokyo
			Cleveland	Portland	Tucson
			Dallas	St. Louis	Tulsa
			Hamilton	Sacramento	United Kingdon &
			Houston	San Francisco	Republic of Ireland
S-19	Communications Society	46	Alabama	Hamilton	Pittsburgh
			Atlanta	Houston	Phoenix
			Baltimore	Jacksonville	Rochester
			Boston	Kansas City	Sacramento
			Canaveral	Long Island	St. Louis
			Canton	Los Angeles Council	San Diego
			Charlotte	Mohawk Valley	San Francisco
			Chattanooga	Montreal	Seattle
			Chicago	Nebraska	Shreveport
			Columbus	New Jersey Coast	Southeastern Michigan
			Dallas	New Orleans	Syracuse
			Denver	New York	Toronto
			East Tennessee	North Jersey	Twin Cities
			Florida West Coast	Orlando	Vancouver
			Fort Huachuca	Ottawa	Washington
				Philadelphia	

Group Code	Name of Group	No. of Chapters	Section Locations		
S-16	Computer Society	48	Akron	France	Phoenix
			Baltimore	Hamilton	Pittsburgh
			Binghamton	Houston	Portland
			Boston	Huntsville	Sacramento
			Canaveral	Lehigh Valley	St. Louis
			Central Texas	Long Island	San Diego
			Chicago	Los Angeles Council	San Francisco
			Cleveland	Mohawk Valley	Schenectady
			Columbus	Nebraska	Southeastern Michigan
			Connecticut	New Jersey Coast	Syracuse
			Dallas	New York	Tokyo
			Dayton	North Jersey	Tulsa
			Daytona	Oklahoma City	Twin Cities
			Denver	Orange County	Utah
			Fort Huachuca	Orlando	Vancouver
			Fort Worth	Philadelphia	Washington
S-23	Control Systems Society	30	Baltimore	Houston	Sacramento
			Buffalo	Huntsville	St. Louis
			Central Virginia	Long Island	San Diego
			Chicago	Los Angeles Council	San Francisco
			Cleveland	Milwaukee	Schenectady
			Columbus	New York	Seattle
			Dallas	North Jersey	Southeastern Michigan
			Dayton	Philadelphia	Toledo
			Fort Worth	Phoenix	Twin Cities
			Hamilton	Pittsburgh	Vancouver
G-25	Education	4	Boston	Utah	United Kingdom &
			San Francisco		Republic of Ireland
G-32	Electrical Insulation	2	Chicago	Montreal/Ottawa	
G-27	Electromagnetic Compatibility	15	Atlanta	Los Angeles Council	Phoenix
			Boston	Mohawk Valley	San Francisco
			Central Texas	New Jersey Coast	Seattle
			Chicago	NY/LI/North Jersey	Tucson
			Houston	Philadelphia	Washington
G-15	Electron Devices	21	Albuquerque	New Jersey Coast	San Francisco
			Boston	NY/LI/North Jersey	Schenectady
			Dayton	Philadelphia	Southeastern Michigan
			Houston	Phoenix	Syracuse
			Lehigh Valley	Pittsburgh	Tokyo
			Los Angeles Council	Portland	Tucson
			Milwaukee	St. Louis	Washington
G-14	Engineering Management	27	Baltimore	Dayton	Philadelphia
			Binghamton	Denver	Pittsburgh
			Boston	Houston	Rochester
			Buenaventura	Huntsville	San Francisco
			Canaveral	Los Angeles Council	Seattle
			Central Indiana	Mohawk Valley	Syracuse
			Chicago	NY/LI/North Jersey	Toronto
			Cleveland	Orange County	Vandenberg
			Dallas	Ottawa	Washington
G-18	Engineering in Medicine & Biology	30	Boston	Memphis	Philadelphia
			Central Texas-Austin	Miami	Portland
			Central Tex. -SanAntonio	Milwaukee	Rochester
			Chicago	Mississippi	St. Louis
			Cleveland	Montreal	San Diego
			Connecticut	Nebraska	San Francisco
			Dallas	New Jersey Coast	Tokyo
			Denver	New Orleans	Twin Cities
			Houston	NY/LI/Princeton	Utah
			Los Angeles Council	North Jersey	Washington

Group Code	Name of Group	No. of Chapters	Section Locations		
G-29	Geoscience Electronics	6	Houston	North Jersey	Tulsa
			Los Angeles Council	Providence	Washington
G-13	Industrial Electronics & Control Instrumentation	7	Beaumont	Cleveland	San Francisco
			Boston	Connecticut	Vancouver
			Chicago		
S-34	Industry Applications Society	37	Akron	Illinois Valley	Sacramento
			Atlanta	Lehigh Valley	St. Louis
			Baltimore	Los Angeles Council	San Francisco
			Boston	Maine	Schenectady
			Buffalo	Middle Tennessee	Seattle
			Chicago	Milwaukee	Southeastern Michigan
			Cincinnati	NY/LI	Syracuse
			Cleveland	Orlando	Toledo
			Connecticut	Philadelphia, Phoenix	Toronto
			Dayton	Pittsburgh	Twin Cities
			Delaware Bay	Portland	Vancouver
			Houston	Rochester	Wichita
G-12	Information Theory	16	Boston	Chicago/Central Ill./	Phoenix
			Buffalo	Central Indiana/	St. Louis
			Central N. C./	South Bend	San Francisco
			Eastern N. C./	Hamilton	Southeastern Michigan
			Winston-Salem	Los Angeles Council	Syracuse
			Dallas	NY/LI/North Jersey	Washington
			Denver	Philadelphia	
G-9	Instrumentation & Measurement	10	Boston	NY/LI/North Jersey	San Francisco
			Chicago	Ottawa	Shreveport
			Los Angeles Council	Portland	Washington
			Montreal		
G-35	Manufacturing Technology	0			
S-33	Magnetics Society	7	Boston	Milwaukee	San Francisco
			Houston	Princeton	Twin Cities
			Los Angeles Council		
G-17	Microwave Theory & Techniques	36	Atlanta	Houston	Philadelphia
			Baltimore	Huntsville	Phoenix
			Boston	Long Island	St. Louis
			Buffalo	Los Angeles Council	San Diego
			Chicago	Milwaukee	San Francisco
			Columbus	Montreal	Schenectady
			Connecticut	New Hampshire	Seattle
			Dallas	New Jersey Coast	Southeastern Michigan
			Denver	New York	Syracuse
			Florida West Coast	North Jersey	Tokyo
			Foothill	Orange County	Tucson
			Fort Worth	Orlando	Washington
G-5	Nuclear Science	7	Boston	Los Angeles Council	San Francisco
			Chicago	North Jersey	Washington
			Connecticut		
G-21	Parts, Hybrids & Packaging	11	Baltimore	Los Angeles Council	Philadelphia
			Boston	New Jersey Coast	San Francisco
			Chicago	NY/LI/No. Jersey	Seattle
			Dayton		Washington
G-26	Professional Communication	1	United Kingdom & Republic of Ireland		

Group Code	Name of Group	No. of Chapters	Section Locations		
S-31	Power Engineering Society	86	Akron	Florida West Coast	Palm Beach
			Alabama	Foothill	Philadelphia
			Argentina	Fort Worth	Phoenix
			Arkansas	Houston	Pittsburgh
			Atlanta	Illinois Valley	Portland
			Baltimore	India	Rochester
			Beaumont	Jacksonville	Sacramento
			Berkshire	Kansas City	St. Louis
			Binghamton	Las Vegas	San Diego
			Boston	Lehigh Valley	San Francisco
			Buffalo	Los Angeles Council	Schenectady
			Canaveral	Maine	Seattle
			Canton	Memphis	Sharon
			Central Illinois	Mexico	Shreveport
			Central Indiana	Monterrey Subsection	Southeastern Michigan
			Central Texas	Miami	Spokane
			Charlotte	Mid-Hudson	Syracuse
			Chattanooga	Middle Tennessee	Tokyo
			Chicago	Milwaukee/Madison	Toledo
			Cincinnati	Montreal	Toronto
			Cleveland	Nebraska	Tulsa
			Columbus	New Hampshire	Twin Cities
			Connecticut	New Orleans	Utah
			Corpus Christi	NY/LI	Vancouver
			Dallas	North Jersey	Washington
			Dayton	Northeastern Wisc.	Wichita
			Delaware Bay	Oklahoma City	Winnipeg
			Denver	Orlando	Worcester County
			East Tennessee	Ottawa	
G-7	Reliability	18	Baltimore	Florida West Coast	North Jersey
			Binghamton	Los Angeles Council	Philadelphia
			Boston	Mohawk Valley	San Diego
			Canaveral/Daytona	Montreal	San Francisco
			Chicago	New Jersey Coast	Twin Cities
			Connecticut	NY/LI	Washington
G-20	Sonics & Ultrasonics	1	Boston		
S-28	Systems, Man & Cybernetics Society	16	Boston	Mexico	Pittsburgh
			Cleveland	Montreal	San Francisco
			Connecticut	New JerseyCoast	Schenectady
			Dallas	North Jersey	Toronto
			Long Island	Philadelphia	Washington
			Los Angeles Council		
G-6	Vehicular Technology	19	Canton	Los Angeles Council	San Francisco
			Chicago	Montreal	Southeastern Michigan
			Cincinnati/Dayton	Nebraska	Toronto
			Cleveland	NY/LI/North Jersey	Twin Cities
			Columbus	Philadelphia	Vancouver
			Dallas	Pittsburgh	Washington
			Florida West Coast		
31 Groups/Societies		608 *		110 Sections	

* Of this number, 89 Chapters are operated jointly by more than one Section or more than one Group or Society. A total of 511 single or joint Group/Society Chapters have been established as of 12/31/71.

SECTION D

TABLE 1 - GROUP/SOCIETY AFFILIATES, DECEMBER 31, 1971; 5--YEAR COMPARISON

Code No.	Group/Society Name	12/31/71	12/31/70	12/31/69	12/31/68	12/31/67
1	Audio & Electroacoustics	3	4	4	5	3
2	Broadcasting	-	-	-	-	-
3	Antennas & Propagation	-	-	-	3	3
4	Circuit Theory	3	2	1	1	1
5	Nuclear Science	116	144	150	141	138
6	Vehicular Technology	8	9	8	9	11
7	Reliability	13	18	18	19	21
8	Broadcast & Television Receivers	-	-	-	-	-
9	Instrumentation & Measurement	1	1	1	1	1
10	Aerospace & Electronic Systems	7	7	9	9	11
12	Information Theory	11	15	17	17	19
13	Industrial Electronics & Control Instrumentation	-	-	1	-	-
14	Engineering Management	35	56	58	49	46
15	Electron Devices	75	95	107	105	109
16	Computer	311	176	158	125	115
17	Microwave Theory & Techniques	7	12	13	14	11
18	Engineering in Medicine & Biology	163	181	176	141	129
19	Communications	-	-	-	-	2
20	Sonics & Ultrasonics	10	11	13	11	8
21	Parts, Hybrids & Packaging	-	-	-	1	3
23	Control Systems	4	7	7	8	2
25	Education	-	2	1	2	2
26	Professional Communication	9	16	19	26	30
27	Electromagnetic Compatibility	1	2	4	2	3
28	Systems, Man & Cybernetics	38	61	12	12	12
29	GeoScience Electronics	7	18	-	-	-
31	Power Engineering	1	-	-	-	-
32	Electrical Insulation	10	17	15	11	11
33	Magnetics	107	107	103	107	114
34	Industry Applications	-	-	-	-	-
35	Manufacturing Technology	-	-	43	26	26
		940	961	938	845	831

SECTION E

ORGANIZATIONAL UNITS OF IEEE BY REGION

Region Number	1	2	3	4	5	6	7	8	9	10	Total
1971											
Sections	23	23	39	23	20	32	17	16	10	5	208
Subsections	8	4	11	5	7	13	1	0	1	3	53
Chapters	108	93	50	58	61	99	26	4	4	8	511 *
Affiliations & Councils	0	0	1	0	0	1	3	0	1	0	6
Student Branches	75	46	42	43	41	53	54	29	28	2	393
1970											
Sections	23	23	39	23	20	32	17	15	10	4	206
Subsections	8	4	11	6	7	13	1	0	1	2	53
Chapters	108	93	53	59	58	94	25	4	3	4	501 *
Affiliations & Councils	0	0	1	0	0	1	3	0	1	0	6
Student Branches	71	44	38	42	38	47	32	22	24	1	359
1969											
Sections	23	23	38	22	20	32	17	13	9	4	201
Subsections	8	5	12	6	7	12	0	0	1	0	51
Chapters	107	94	55	64	53	95	24	5	3	3	503 *
Affiliations & Councils	0	0	1	0	0	1	3	0	0	0	5
Student Branches	70	43	37	40	36	47	29	18	21	1	342
1968											
Sections	23	23	38	22	20	32	17	13	9	4	201
Subsections	9	5	12	6	7	11	1	0	0	0	51
Chapters	107	95	54	68	52	93	22	3	1	3	498 *
Student Branches	67	43	35	40	34	47	27	12	13	1	319

* Joint Chapters of two or more Sections or two or more Groups/Societies are counted as one Chapter.

SECTION F

Table 1 - IEEE Technical Publications Output - 1971

	Editorial Pages	Advertising Pages & Filler	Total Pages	Number of Papers	Number of Letters
Regular Journals					
IEEE SPECTRUM	1,129	337	1,466	63	79
PROCEEDINGS OF THE IEEE	1,764	36	1,800	150	277
IEEE TRANSACTIONS & JOURNALS	23,080	---	23,080	2,825	967
Subtotals	25,973	373	26,346	3,038	1,323
Other Publications					
Conference Records*	2,632	---	2,632	565	-----
Preprints	4,252	---	4,252	427	-----
Standards	786	---	786	26	-----
Subtotals	7,670		7,670	1,018	-------
Totals	33,643	373	34,016	4,056	1,323

*Produced through IEEE Editorial Department

Table 2 - IEEE TRANSACTIONS and JOURNALS - 1971

	Number of Issues	Editorial Pages	Number of Papers	Number of Letters
AEROSPACE & ELECTRONIC SYSTEMS	6	1,276*	125	45
ANTENNAS & PROPAGATION	6	836	74	107
AUDIO & ELECTROACOUSTICS	4	356	37	12
AUTOMATIC CONTROL	6	912	92	111
BIO-MEDICAL ENGINEERING	4	476	44	27
BROADCAST & TELEVISION RECEIVERS	4	364	10	30
BROADCASTING	4	128	18	--
CIRCUIT THEORY	6	788	71	96
COMMUNICATION TECHNOLOGY	6	1,316	166	20
COMPUTERS	12	1,672	224	42
EDUCATION	4	252	45	5
ELECTRICAL INSULATION	4	204	22	1
ELECTROMAGNETIC COMPATIBILITY	4	360	51	9
ELECTRON DEVICES	12	1,260	120	56
ENGINEERING MANAGEMENT	4	184	18	--
ENGINEERING WRITING & SPEECH	3	96	9	--
GEOSCIENCE ELECTRONICS	4	260	33	1
INDUSTRIAL ELECTRONICS & CONTROL INSTRUMENTATION	4	184	19	14
INDUSTRY & GENERAL APPLICATIONS	6	864	90	--
INFORMATION THEORY	6	828	64	67
INSTRUMENTATION & MEASUREMENT	4	380	65	7
MAGNETICS	4	944	187	62
MICROWAVE THEORY & TECHNIQUES	12	1,024	91	97
NUCLEAR SCIENCE	6	2,788	550	9
PARTS, HYBRIDS & PACKAGING	4	192	21	--
POWER APPARATUS & SYSTEMS	6	2,868	328	3
QUANTUM ELECTRONICS	12	656	60	81
RELIABILITY	4	288	44	15
SOLID-STATE CIRCUITS	6	460	65	26
SONICS & ULTRASONICS	4	276	34	2
SYSTEMS, MAN & CYBERNETICS	4	436	33	22
VEHICULAR TECHNOLOGY	4	152	15	--
TOTALS	179	23,080	2,825	967

*Estimated. Final issue not published at time of count.

SECTION F

TABLE 3 - GROUP/SOCIETY NEWSLETTERS PUBLISHED IN 1971

	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
A&E		X			X			X			X	
AES	X	X	X	X		X	X	X	X	X	X	X
AP		X			X			X			X	
B			X			X			X			X
BTR	Does not publish a Newsletter											
COM			X			X			X			X
COMPUTER	X			X			X			X		
CS	X				X			X			X	
CT			X				X		X			X
EDUCATION		X			X					X		
ED		X			X	X		X		X		X
EI			X			X			X			X
EM		X		X			X			X		
EMB	X			X			X			X		
EMC	X			X			X			X		
GE		X			X			X			X	
IA		X		X		X		X		X		X
IECI		X		X		X		X		X		X
IM			X		X		X	August - November issue				X
IT		X			X				X			X
MAG	X			X			X			X		
MFG.T								X				X
MTT	X			X			X			X		
NS		X				X			X			
P	X	X	X	X	X	X	X	X	X	X	X	X
PC		X		X					X			
PHP			X		X			X			X	
REL	X			X			X			X		
SMC		X		X		X		X		X		X
SU							X					
VT			X				X		X			
CAD		X		X								

TABLE 1 - IEEE & JOINTLY SPONSORED MAJOR TECHNICAL MEETINGS - 1971

Name of Meeting	Sponsors	Place	Date	Paid Registration	Exhibits
Reliability Symposium	G-R, ASQC et al	Washington, D.C.	Jan. 12-14	619	No
IEEE Power Engineering Society Winter Meeting	S-PE	New York	Jan. 31-Feb. 5	2623	No
Aerospace & Electronic Systems Winter Convention (WINCON)	G-AES, L.A. Council	Los Angeles, Calif.	Feb. 9-11	1226	No
Int'l Solid State Circuits Conference	SSC Council, Univ. of Penna., Phila. Section	Phila., Penna.	Feb. 17-19	1080	No
Int'l Symposium on Fault-Tolerant Computing	S-C, Jet Prop. Lab. of Cal. Tech.	Pasadena, Cal.	March 1-3	230	No
Particle Accelerator Conference	G-NS, NBS et al	Chicago, Ill.	March 1-3	798	No
IEEE International Convention & Exhibition	IEEE	New York, N.Y.	March 22-25	43044	Yes
Reliability Physics Symposium	G-R	Las Vegas, Nev.	March 31 - April 2	460	No
Mining Industry Technical Conference	G-IGA, MEMMA	Greensberg, Penna.	April 1	407	No
Rubber & Plastics Industry Technical Conference	G-IGA, Akron Section	Akron, Ohio	April 5-6	283	No
USNC/URSI-IEEE Spring Meeting	USNC/URSI, 6 IEEE Groups coop.	Washington, D.C.	April 7-10	480	No
National Telemetering Conference	G-AES, G-Com-Tech., G-GE	Washington, D.C.	April 12-15	880	Yes
Conference on Frontiers in Education	G-Education, G-SMC, Atlanta Section, ASEE	Atlanta, Ga.	April 13-15	300	No
Symposium on Applications of Walsh Functions	G-EMC, NRL, Univ. of Maryland	Washington, D.C.	April 13-15	150	No
Int'l Conference on Magnetics (INTERMAG)	G-MAG	Denver, Colo.	April 13-16	769	Yes
Power Conditioning Specialists Conference	G-AES	Pasadena, Calif.	April 19-20	83	No
Offshore Technology	TAB Oceanography Coor. Comm. et al	Houston, Tx.	April 19-21	10893	Yes
Israel Convention of Electrical & Electronics Engineers	IEEE Israel Section, et al	Tel-Aviv, Israel	April 19-22	1400	Yes
Joint Railroad Tech. Conference	G-IGA, ASME	New York, N.Y.	April 20-21	241	No
Electric Process Heating in Industry Technical Conference	G-IGA, Milwaukee Section	Milwaukee, Wisconsin	April 20-21	172	No
Pulp and Paper Industry Tech. Conference	G-IGA, Savannah Section	Savannah, Ga.	April 21-23	253	No
Rural Electric Power Tech. Conference	G-IGA	Denver, Colo.	April 26-27	111	No
Region 3 Technical Convention	Region 3	Charlottesville, Virginia	April 26-28	400	No
Conference on the Management of Transmission & Distribution Systems	IEE, IEEE UKRI Section	London, Eng.	April 26-29		No

Name of Meeting	Sponsors	Place	Date	Paid Registration	Exhibits
Southwestern IEEE Conf. & Exhibition (SWIEEECO)	SWIEEECO and Houston Section	Houston, Tx.	April 28-30	3444	Yes
Ind. & Comm. Pwr. Sys. & Elec. Space Htg. & Air Cond. Jt. Tech. Conf.	G-IGA, S.E. Michigan Section	Detroit, Mich.	May 3-6	258	No
Appliance Technical Conference	G-IGA, Chicago Section	Chicago, Ill.	May 4-5	173	No
Textile Industry Technical Conference	G-IGA	Charlotte, N.C.	May 6-7	190	No
Electronic Components Conference	G-PMP, EIA	Washington, D.C.	May 10-12	525	No
Cement Industry Technical Conference	G-IGA	Washington, D.C.	May 10-13	374	No
Sixth Region Technical Conference	Region 6, Sacramento Section	Sacramento, Calif.	May 11-13	432	No
Electron, Ion and Laser Beam Technology Conference	G-ED, AVS et al	Boulder, Colo.	May 12-14	154	No
International Microwave Symposium	G-MTT	Washington, D.C.	May 16-20	630	No
Aerospace Electronics Conference (NAECON)	G-AES, Dayton Section	Dayton, Ohio	May 17-19	830	Yes
Spring Joint Computer Conference	Computer Society, AFIPS	Atlantic City, N.J.	May 17-20	23035	Yes
IEEE Power Engineering Society Power Industry Computer Applications Tech. Conference	IEEE Power Engrg. Society	Boston, Mass.	May 24-26	491	Yes
Electrical & Electronic Measurement & Test Instrument Conference (EEMTIC)	G-IM, Ottawa Section	Ottawa, Ont., Canada	June 1-3	1225	Yes
Laser Engrg. & Applications	IEEE Quantum Elec. Council, OSA	Washington, D.C.	June 2-4	1079	Yes
Chicago Spring Conf. on Broadcast & TV Receivers	G-BTR, Chicago Section	Chicago, Ill.	June 7-8	1910	Yes
Symposium on Applications of Ferroelectrics	G-SU	White Plains, N.Y.	June 7-8		No
Conference on Aerospace Antennas	IEE, IERE, IEEE UKRI Section	London, Eng.	June 8-10	208	Yes
International Conference on Communications	G-ComTech., Montreal Section	Montreal, Que., Canada	June 14-16	1670	Yes
Int'l Congress on Instrumentation in Aerospace Simulation Facilities	G-AES	Genese, Belgium	June 21-23	90	No
Design Automation Workshop	Computer Society, ACM, SHARE	Atlantic City, N.J.	June 28-30	206	Yes
Int'l Symposium on Electromagnetic Compatibility	G-EMC, Phila. Section	Phila., Penna.	July 13-15	517	Yes
IEEE Power Engineering Society Summer Meeting & Int'l Symp. on High Power Testing	IEEE Power Engrg. Society	Portland, Ore.	July 18-23	1223	No
Summer Computer Simulation Conference	Computer Society, AIAA, ISA, SCI, AMS et al	Boston, Mass.	July 19-20	500	No
Conf. on Nuclear & Space Radiation Effects	G-NS, Univ. of New Hampshire	Durham, New Hampshire	July 20-23	360	No

Name of Meeting	Sponsors	Place	Date	Paid Registration	Exhibits
Intersociety Energy Conversion Engineering Conference	G-ED, G-AES et al	Boston, Mass.	Aug. 2-6	500	No
Joint Automatic Control Conf.	Control Systems Society, AACC	St. Louis, Mo.	Aug. 11-13	600	No
European Microwave Conf.	G-MTT, Region 8, Swedish Acad. of Engrg. Sci. et al	Stockholm, Sweden	Aug. 23-28	650	No
Western Electronic Show & Convention (WESCON)	Region 6, WEMA	San Francisco, Calif.	Aug. 24-27	47000	Yes
Int'l Geoscience Electronics Symposium	G-GE	Washington, D.C.	Aug. 25-27	330	Yes
London Int'l Symposium on Electrical Network Theory	G-CT, IEEE UKRI Section, IEE, IERE, City Univ. coop.	London, Eng.	Sept. 6-10	200	No
Conf. on Computers for Analysis and Control in Medical & Biological Research	IEE, IEEE UKRI Section et al	Sheffield, Eng.	Sept. 7-9		No
Conference on Displays	IEE, IEEE UKRI Section, IPPS, IERE et al	Loughborough, England	Sept. 7-10	400	No
Petroleum & Chemical Industry Tech. Conference	G-IGA	Atlanta, Ga.	Sept. 12-15	275	No
Solid State Devices Conference	IPPS, IEEE UKRI Section, IEE, IERE	Lancaster, England	Sept. 14-16	212	No
Electrical/Electronics Insulation Conference	G-EI, Chicago Section, NEMA	Chicago, Ill.	Sept. 19-23	4500	Yes
Joint Power Generation Tech. Conference	IEEE Power Engrg. Society, ASME, ASCE participating	St. Louis, Mo.	Sept. 19-23	600	No
Int'l Conf. on Engineering in the Ocean Environment	Oceanography Coor. Comm. & San Diego Section	San Diego, Calif.	Sept. 21-23	305	Yes
Conference on Infra-Red Techniques	IERE, IEEE UKRI Section, IEE, Inst. of Phys. & Phys. Society	Reading, Eng.	Sept. 21-23	300	No
Int'l G-AP Symp. & USNC/URSI Meeting	G-AP, USNC/URSI	Los Angeles, Calif.	Sept. 21-24	500	No
Computer Technical Conference	IEEE Computer Society	Boston, Mass.	Sept. 22-24	3000	Yes
Fall Broadcast Technical Conference	G-B	Washington, D.C.	Sept. 23-25	208	No
IEEE Power Engrg. Society Conf. on Underground Distribution	IEEE Power Engrg. Society	Detroit, Mich.	Sept. 27-30	5285	Yes
Conference on Centralized Control Systems	IEE, IEEE UKRI Section	London, Eng.	Sept. 28 - Oct. 1	334	No
Joint Engineering Management Conference	G-EM et al	Los Angeles, Calif.	Oct. 4-5	150	Yes
Int'l Electrical & Electronics Conference & Exposition	Canadian Region	Toronto, Ont., Canada	Oct. 4-6	15000	Yes
Thermionic Energy Conversion Specialists Conference	G-ED	San Diego, Calif.	Oct. 4-6	120	No

Name of Meeting	Sponsors	Place	Date	Paid Registration	Exhibits
Electronic & Aerospace Sys. Convention (EASCON)	G-AES	Washington, D.C.	Oct. 6-8	500	Yes
International Electron Devices Meeting	G-ED	Washington, D.C.	Oct. 11-13	1100	No
Switching and Automata Theory	IEEE Computer Society, Michigan State Univ.	E. Lansing, Mich.	Oct. 13-15	130	No
Machine Tools Industry Tech. Conference	G-IGA	Cincinnati, Ohio	Oct. 18-20	414	No
Fall Electronics Conference	Chicago Section & 11 IEEE Groups	Chicago, Ill.	Oct. 18-20		No
IGA Group Annual Meeting	G-IGA	Cleveland, Ohio	Oct. 18-21	800	No
Region 8 Convention (EUROCON)	Region 8	Lausanne, Switzerland	Oct. 18-22	1100	No
Problems in the Optimization of Data Communication Systems	IEEE Computer Society, ACM	Stanford, Cal.	Oct. 20-22	200	No
Midwest Power Symposium	IEEE Power Engrg. Society, Southeast Michigan Section	Ann Arbor, Mich.	Oct. 21-22	75	No
Joint National Conference on Major Systems	G-SMC, ORSA	Anaheim, Calif.	Oct. 25-29	1500	No
Materials Handling Engineering Conference	G-IGA, Milwaukee Section, ASME	Milwaukee, Wisc.	Oct. 27-29	200	No
Conference on Engineering in Medicine & Biology	G-EMB, AEMB	Las Vegas, Nevada	Oct. 31 - Nov. 4	1400	Yes
Eastern Electronics Packaging Conference	G-PHP, ASTM	Boston, Mass.	Nov. 2-3	150	Yes
Nuclear Science Symposium	G-NS, USAEC, NASA	San Francisco, Calif.	Nov. 3-5	450	Yes
Northeast Electronics Res. & Engrg. Meeting (NEREM)	New England Sections	Boston, Mass.	Nov. 3-5	22500	Yes
Joint Conf. on Sensing of Environmental Pollutants	TAB Comm. on Environment Quality et al	Palo Alto, Calif.	Nov. 8-10	515	No
Mountain-West Conf. on Electromagnetic Compatibility	G-EMC, Tucson & Ft. Huachuca Sections	Tucson, Ariz.	Nov. 11-12	200	No
Fall Joint Computer Conference	Computer Society, AFIPS	Las Vegas, Nevada	Nov. 15-18	21840	Yes
Conference on Magnetism & Magnetic Materials	G-MAG, AIP	Chicago, Ill.	Nov. 16-19	500	Yes
Chicago Fall Conference on Broadcast & TV Receivers	G-BTR, G-ED	Chicago, Ill.	Dec. 6-7	300	No
Ultrasonics Symposium	G-SU	Miami Beach, Florida	Dec. 6-9	300	No
Vehicular Tech. Conference	G-VT	Detroit, Mich.	Dec. 7-8	300	Yes
Applications of Simulation	Computer Society, G-SMC et al	New York, N.Y.	Dec. 7-10	500	No
Decision and Control Conf. (Including 10th Symp. on Adaptive Processes)	S-CS, G-IT, G-SMC, Univ. of Florida	Miami Beach, Florida	Dec. 15-17	174	No

SECTION G

Table 2 - IEEE INTERNATIONAL CONVENTION STATISTICS

The Convention is internationally recognized as one of the largest Conventions of its kind in the world. An exhibition became part of the Annual Convention activities in 1930. Convention activities, from the first Convention held in 1926 through 1971, are indicated in the comparison figures listed below.

Date	Attendance	Firms Represented	Exhibits	Sq. Ft. Occupied	Papers Presented	Location
January 18-19, 1926	*	0	0	0	6	New York, N. Y.
January 10-12, 1927	425**	0	0	0	5	New York, N. Y.
January 9-11, 1928	800	0	0	0	9	New York, N. Y.
May 13-15, 1929	555	0	0	0	37	Washington, D. C.
August 18-21, 1930	575	*	20**	*	23	Toronto, Canada
June 4-6, 1931	400	*	50	*	19	Chicago, Illinois
April 7-9, 1932	461	*	25**	*	23	Pittsburgh, Pa.
June 26-28, 1933	487	*	35	*	24	Chicago, Illinois
May 28-30, 1934	940	*	56	*	32	Philadelphia, Pa.
July 1-3, 1935	586	*	34	*	21	Detroit, Michigan
May 11-13, 1936	360	*	40	*	19	Cleveland, Ohio
May 10-12, 1937	1,189	*	37	*	30	New York, N. Y.
May 15-17, 1938	1,866	*	29	*	49	New York, N. Y.
September 20-23, 1939	1,668	*	34	*	26	New York, N. Y.
June 27-29, 1940	1,071	*	35**	*	44	Boston, Mass.
January 9-11, 1941	1,310	*	30**	*	28	New York, N. Y.
June 23-25, 1941	353	0	0	0	33	Detroit, Michigan
January 12-14, 1942	1,790	*	30**	*	25	New York, N. Y.
June 29-July 1, 1942	256	0	0	0	23	Cleveland, Ohio
January 28, 1943	1,750	0	0	0	11	New York, N. Y.
January 28-29, 1944	1,704	0	0	0	22	New York, N. Y.
January 24-27, 1945	3,000	*	39	*	43	New York, N. Y.
January 23-26, 1946	7,200	1,571	135	13,220'**	88	New York, N. Y.
March 3-6, 1947	12,013	2,845	177	20,830	118	New York, N. Y.
March 22-25, 1948	14,459	3,059	180	25,900'	130	New York, N. Y.
March 7-10, 1949	15,710	3,427	225	30,700'	144	New York, N. Y.
March 6-9, 1950	17,689	4,088	253	33,600'	163	New York, N. Y.
March 19-22, 1951	22,919	5,082	277	45,672'	198	New York, N. Y.
March 3-6, 1952	28,673	6,306	365	54,246'	211	New York, N. Y.
March 23-26, 1953	35,642	7,493	412	63,033'	214	New York, N. Y.
March 22-25, 1954	39,302	8,799	605	87,192'	242	New York, N. Y.
March 21-24, 1955	42,133	9,504	704	95,782'	248	New York, N. Y.
March 19-22, 1956	41,017***	8,851	716	98,684'	277	New York, N. Y.
March 18-21, 1957	53,811	11,757	840	105,240'	284	New York, N. Y.
March 24-27, 1958	55,811	12,555	950	110,828'	285	New York, N. Y.
March 23-26, 1959	60,050	13,509	1,200	114,117'	263	New York, N. Y.
March 21-24, 1960	69,760	15,889	1,200	113,597'	261	New York, N. Y.
March 20-23, 1961	67,451	15,170	1,237	113,711'	274	New York, N. Y.
March 26-29, 1962	74,734	16,246	1,307	116,412'	275	New York, N. Y.
March 25-28, 1963	71,337	15,507	970	116,192'	251	New York, N. Y.
March 23-26, 1964	66,541	14,967	966	122,336'	307	New York, N. Y.
March 22-26, 1965	58,462	13,150	884	116,448'	359	New York, N. Y.
March 21-25, 1966	63,650	14,270	731	115,410'	305	New York, N. Y.
March 20-23, 1967	59,196	12,731	722	121,790	320	New York, N. Y.
March 18-21, 1968	63,749	13,710	680	121,777'	230	New York, N. Y.
March 24-27, 1969	60,543	13,020	618	115,208'	231	New York, N. Y.
March 23-26, 1970	47,738	10,000	587	106,443'	302	New York, N. Y.
March 22-25, 1971	35,228	7,000**	426	70,490'	333	New York, N. Y.

* Figures not available
** Estimated
***Reduction in attendance due to blizzard

SECTION G

TABLE 3 - SECTION, SUBSECTION, CHAPTER MEETINGS AND CONFERENCES *

S - Section Meetings C - Chapter Meetings
SS - Subsection Meetings STC - Section Technical Conference

Section and Subsection	Meetings S	SS	C	STC
REGION 1				
Berkshire				
Binghamton	3		15	
Boston	5		120	
Lynn		6		
Merrimack Valley		7		
Buffalo	9		20	
Connecticut	5		14	
Fairfield County		5		
New London		9		
Elmira Corning	7			
Ithaca	7			1
Long Island	18		15	
Maine	8			
Mid-Hudson	7		2	
Catskill		6		
Mohawk Valley	9		13	1
St. Lawrence Intn'l		4		
New Hampshire	8		6	
New Jersey Coast	3		19	
New York Westchester				
North Jersey	10		27	
Princeton				
Providence	9		1	1
Rochester	9		22	
Schenectady	6		15	
Adirondack		0		
Springfield	8			
Syracuse	5		16	
Vermont	4			
Worcester County	6		2	
	146	37	307	3
REGION 2				
Akron				
Allegheny Mountain	4			
Baltimore	6		28	
Annapolis		2		
Eastern Shore		4		
Canton	5		4	
Central Pennsylvania	9			
Cincinnati	12		12	
Cleveland	8		32	1
Columbus	7		17	1
Zanesville		6		
Dayton	9		24	1
Delaware Bay				
Erie	10			
Johnstown	9			
Lehigh Valley	14		13	1
Lima	6			
North Central Ohio	8			
Ohio Valley	7			
Philadelphia	6		80	
Pittsburgh	10		35	
Upper Monongahela		6		
Sharon	6		2	
Southern New Jersey	7			
Susquehanna	8			
Washington	5		94	1
West Virginia	9			
	165	18	341	5
REGION 3				
Alabama	11		17	
Atlanta	9		24	
Macon-Warner Robins		6		
Rome		7		
Baton Rouge				
Canaveral	8		18	
Central North Carolina	8			
Central Virginia				
Charlotte	6		13	1
Chattanooga	6		6	
Daytona	3		3	
Eastern North Carolina	9		2	
East Tennessee	8		2	
Upper East Tennessee		2		
Evansville-Owensboro	10			
Paducah		6		
Florida West Coast	11		12	
Fort Walton	3			
Gainesville				
Hampton Roads	9			
Huntsville	9		14	
Muscle Shoals		5		
Jacksonville	9			
Lafayette	10			
Lexington	9			
Louisville	9			
Memphis	8		13	
Jackson		5		
Miami	9		3	
Middle Tennessee	8		4	
Mississippi	8		1	
Northeast Mississippi		5		
Mobile	10			
Nashville	9			
New Orleans	9		5	1
North Carolina Affiliation of Sections				1
Oak Ridge	8			
Orlando	4		33	
Palm Beach	12		2	
Panama City	7			
Pensacola	9			
Richmond	9			
Savannah	8			
South Carolina	1			1
Central Savannah River		9		
Charleston		10		
Columbia		8		
Piedmont		10		
Virginia Mountain	7			
Western North Carolina	9			
Winston-Salem	8			
	308	73	172	4

Section and Subsection	Meetings S	SS	C	STC
REGION 4				
Arrowhead	4			
Calumet	5			
Cedar Rapids	8			1
Central Illinois	7		6	
Central Indiana	9		2	
Bloomington		12		
Central Iowa	8			
Chicago	2		37	
Fox Valley		7		
Northwest		5		
Fort Wayne	10			
Illinois Valley	9		2	
Iowa-Illinois	8			
(1) Burlington				
Madison	6			
Milwaukee	5		30	
Racine-Kenosha		5		
Nebraska	11		11	1
Northeast Michigan	9			1
Northeastern Wisconsin	10		1	
Rock River Valley	6			
Siouxland	9			
South Bend				
Southeastern Michigan	2		26	
Southern Minnesota	8			
Toledo	7		19	1
Twin Cities	5		35	
Red River Valley		9		
West Michigan	9			
	157	38	169	4
REGION 5				
Arkansas				
Beaumont	6		4	
Lake Charles		7		
Central Texas	6		23	1
Corpus Christi	6		2	
Victoria-Pt. Lavaca		7		
Dallas	8		37	
Denver				
Black Hills				
Pikes Peak				
El Paso	11			
Fort Worth	5		12	
Houston	9		32	
Clear Lake		8		
Freeport		8		
Kansas City	9		6	1
Oklahoma City	8		6	
Ozark	9			
Panhandle	9			
Permian Basin	9			
St. Louis	2		38	
Shreveport	8		6	
Monroe		9		
South Plains	9			
Tulsa	8		7	
West Central Texas	9			
Wichita	9		2	
	140	39	175	2

Section and Subsection	Meetings S	SS	C	STC
REGION 6				
Alamogordo-Holloman				
Alaska	10			
Albuquerque	9		3	
Los Alamos-Santa Fe		6		
Antelope Valley	5			
Boise	10			
Buenaventura	9		10	
China Lake	10			
Foothill	5		5	
Fort Huachuca	8			
Hawaii	10			
Idaho	6			
Las Vegas	6		3	
Los Angeles Council	2		124	
Met. Los Angeles	7			
Montana				
Billings				
Butte				
Helena				
Orange County	5		15	
Phoenix	3		20	
Portland	8		27	
Eugene		5		
Richland	9			
Walla Walla		5		
Sacramento	5		15	
Reno		5		
San Joaquin		6		
Shasta		5		
San Diego	10		40	
San Fernando Valley	6			
San Francisco	2		147	1
East Bay		5		
Golden Gate		6		
Santa Clara Valley		5		
San Gabriel Valley	6			
Santa Barbara	10			
Santa Monica Bay	6			
Seattle	8		30	
South Bay Harbor	5			
Spokane	5		5	
Grand Coulee Dam		8		
Tucson	6		4	
Utah	2		10	
Vandenberg	7		4	
Wenatchee	6			
	206	56	462	1
REGION 7				
Central Canada Council				
Bay of Quinte	5			
Hamilton	10		6	
Kitchener-Waterloo	7		3	
London	6			
Niagara International	7			
Toronto	5		7	

Section and Subsection	Meetings S	SS	C	STC
Eastern Canada Council				
Canadian Atlantic	7			1
New Brunswick		6		
Montreal	0		19	
Ottawa	3		14	
Quebec	5			
St. Maurice				
Western Canada Council				
Northern Alberta	9			
Regina	8			1
Southern Alberta	9			1
Vancouver	4		15	1
Victoria	9			
Winnipeg	9		1	
	103	6	65	4
REGION 8				
Benelux	3			1
Denmark	5			
Egypt	13			
France	2			
Germany (West)	0			
Greece	3			
Iran				
Israel	4			1
Middle & South Italy				
North Italy	2			
Norway	2			1
Spain	5			
Sweden	3			
Switzerland	12			
United Kingdom & Republic of Ireland				
(2)Yugoslav				
	60	0	0	3
REGION 9				
Argentina	11			
Brazil Council				
Central America	10			1
Chile	17			1
Colombia	6			1
Mexico	7			1
Monterrey				
Peru	12			1
Puerto Rico & Virgin Islands	7			
Rio de Janeiro	3			
Sao Paulo	6			1
Venezuelan				
	79	0	0	6

Section and Subsection	Meetings S	SS	C	STC
REGION 10				
(3)Hong Kong				
India	13			
(4) Bangalore				
Tamil Nadu		3		
Uttar Pradesh				
New Zealand	7			
Toyko	5		31	
West Pakistan	7			
	32	3	31	0

TOTALS

Section	1,396
Subsection	270
Chapters	1,722
Section Technical Conferences	33
Student Branches	864
GRAND TOTAL	4,285

(1) Subsection dissolved 8/20/71
(2) New Section established 6/21/71
(3) New Section established 12/14/71
(4) New Subsection established 12/14/71

*As reported to IEEE through 3/1/72

SECTION G

TABLE 3 - SECTION, SUBSECTION, CHAPTER MEETINGS AND SECTION CONFERENCES

Region Number	1	2	3	4	5	6	7	8	9	10	Total
1971											
Sections	146	165	308	157	140	206	103	60	79	32	1,396 *
Subsections	37	18	73	38	39	56	6	-	-	3	270 *
Chapters	307	341	172	169	175	462	65	-	-	31	1,722 *
Section Technical Conf.	3	5	4	4	2	2	4	3	6	-	33 *
Student Branches	113	102	130	125	155	142	53	36	5	3	864 *
Total Meetings	606	631	687	493	511	868	231	99	90	69	4,285
1970											
Sections	144	180	301	173	157	222	131	81	76	38	1,503
Subsections	43	28	84	36	46	64	1	-	5	-	307
Chapters	534	399	173	175	160	498	80	3	2	23	2,047
Section Technical Conf.	6	5	6	5	2	2	3	4	5	1	39
Student Branches	175	108	104	155	108	139	89	26	10	4	918
Total Meetings	902	720	668	544	473	925	304	114	98	66	4,814
1969											
Sections	142	192	300	180	169	218	121	79	61	25	1,487
Subsections	48	29	90	42	47	68	-	-	3	-	327
Chapters	575	393	203	198	170	440	68	3	-	21	2,071
Section Technical Conf.	2	4	4	2	-	3	3	1	1	-	20
Student Branches	139	111	132	162	127	148	71	15	12	2	919
Total Meetings	906	729	729	584	513	877	263	98	77	48	4,824
1968											
Sections	158	196	313	153	152	205	126	68	53	7	1,431
Subsections	46	35	80	41	35	56	1	-	-	-	294
Chapters	765	364	197	183	154	405	57	4	-	-	2,129
Section Technical Conf.	1	2	3	2	-	2	3	4	2	-	19
Student Branches	103	85	55	88	58	53	35	6	-	3	486
Total Meetings	1,073	682	648	467	399	721	222	82	55	10	4,359

*As reported to Headquarters through March 1, 1972

SECTION H

I. PUBLICATION ACTIVITIES

1. TECHNICAL PUBLICATIONS

General. During 1971 the Editorial Department processed 4,030 papers and 1,323 correspondence items for printing in IEEE publications, giving a total output of 32,857 editorial pages, as shown in Table 1 of Section F. Of these, 25,973 pages were published in regular journals of the Institute, a 5% increase over the previous year.

It was a year in which there continued to be a strong interest in developing alternative and more economical methods of publication. The IEEE TRANSACTIONS on Aerospace and Electronic Systems experimented with magnetic-tape typewriter composition, while the Editorial Department arranged to produce the December 1971 issue of IEEE TRANSACTIONS on Engineering Writing and Speech by computer-aided CRT photocomposition, and made plans to expand the experiment to include selected PROCEEDINGS papers in 1972. The number of TRANSACTIONS employing typewriter composition increased from 3 to 9 in 1971, with at least 4 more planned for 1972. Of these, 3 made use of author-typed manuscripts for direct photoreproduction, and 1 employed unjustified composition. At the same time, the Editorial Department introduced an optional minimal-editing service for TRANSACTIONS at half the cost of the standard full-editing service.

To reflect the difference in set-up costs of the various methods of composition and editing, the rates for voluntary page charges were broadened to 3 categories, with $60 per page continuing to apply to journals employing standard editing and justified composition, $40 per page for minimal editing and unjustified composition, and $15 per page for author-typed publications. One more publication adopted voluntary page charges during the year, bringing the total to 17.

Two new publication services were launched during the year. The newly formed IEEE PRESS is described separately below. In addition, plans were completed to offer on microfilm the entire backfile of the publications of the IEEE and its predecessor societies from 1884 to 1970 and annual updates starting with the 1971 volume year. The microfilm will be available on 16 mm or 35 mm positive or negative film, in cartridges or reels.

With the dissolution of the Information Services Department at the end of 1970, the computerized production of the annual indexes which appear in the year-end issues of all journals was successfully transferred to an out-of-house firm, with indexing and keyboarding continuing to be performed in-house within the Editorial Department.

IEEE SPECTRUM. In recognition of the importance of SPECTRUM to the Institute and the membership, the Executive Committee, acting on the recommendation of the Publications Board, authorized changing the position of Editor of SPECTRUM from a part-time volunteer basis to a full-time paid member of the Headquarters staff reporting to the General Manager. Accordingly, Mr. Donald Christiansen, former Editor of ELECTRONICS, joined the staff on December 1 as Editor of SPECTRUM.

A number of improvements were made to the arrangement and format of departments within SPECTRUM. Chief among these was the inauguration of a new department called "Inside IEEE" which provided a valuable communication channel between the President and other officers and the membership regarding Institute plans and activities of major importance and general interest.

A total of 63 articles and 79 letters were published during the year. Seven of the articles were written by members of the editorial staff. The total pages numbered 1,466, of which 1,129 were devoted to technical and other editorial material and 337 to advertising and related matter.

TRANSACTIONS and JOURNALS. Nearly 90% of the pages published in IEEE journals appeared in the TRANSACTIONS and JOURNALS of the IEEE Groups and Societies. During the year 179 issues totaling 23,080 pages were published, representing a 9% increase over the 21,157 pages published in 1970. The total was made up of 2,825 papers and 967 technical letters. Further details are given in Table 2 of Section F.

The substantial improvement in publication schedules begun in 1970 continued unabated in 1971, with most issues appearing on time or in the month preceding the month of issue and with a growing number of production schedules shortened to approximately 10 weeks.

PROCEEDINGS OF THE IEEE. An important event in the PROCEEDINGS-year was the appointment of a new Editor, Joseph E. Row of the University of Michigan. He succeeded David Slepian of Bell Telephone Laboratories, who stepped down after two years of outstanding and dedicated service in this capacity.

Five successful special issues, each containing papers devoted to a single area of major interest, were published during the year. The subjects covered were satellite communications (February), atomic and molecular plasmas (April), engineering education (June), microwave semiconductors (August), and thick and thin films for electronic applications

(October). In addition, the September issue comprised four invited papers, each on an aspect of holography.

The program of inviting technical leaders to write tutorial-review papers in their areas of special competence was continued. Fifteen such papers, on subjects ranging from MOSFET memory circuits to UHV power transmission, were published during the year.

Total pages published in 1971 numbered 1,800, of which 1,764 contained editorial material and 36 were advertising pages. The number of papers published was 150, of which 118 appeared in special issues. The technical letter section was composed of 350 pages containing 277 letters. A change from a two-column to a three-column format for this section was made, beginning with the September issue, for greater space economy.

IEEE PRESS. Extensive planning and organizing took place in 1971, the first year for the IEEE PRESS. An Editorial Board was formed under the chairmanship of E. E. Grazda in March and proposals were considered for a series of books consisting of reprints of selected papers from IEEE publications and other sources. A total of 7 reprint books were approved during the year, 2 of which were completed in 1971, namely, Clearing the Air: The Impact of the Clean Air Act on Technology, edited by Redmond, Cook and Hoffman and sponsored by the Geoscience Electronics Group, and Active Inductorless Filters, edited by S. K. Mitra and sponsored by the Educational Activities Board.

Operating guidelines were established for the IEEE PRESS governing the sponsorship and financing of books. Each book is to be published in two editions: a clothbound edition which is available to IEEE members at a 25% discount, and a special paperbound edition available at half price only to IEEE members and for course adoption. Arrangements have been made with John Wiley and Sons to market IEEE PRESS books throughout the world, with IEEE handling sales to its members and the libraries with which it has regular contact and with Wiley handling all other sales through its regular book distribution channels.

Advertising. Adverse economic conditions in the electrical and electronics industry continued to have serious effects on advertising throughout the industry in general, and on IEEE publications in particular. IEEE SPECTRUM carried 260 pages of paid advertising in 1971 as compared to 362 pages in 1970. This downtrend paralleled the over-all drop experienced by all major publications in the field. However, SPECTRUM nonetheless succeeded in increasing its share of the market slightly in product advertising. Advertising in the PROCEEDINGS, as previously planned, was restricted to its covers in 1971 and totaled 10 pages as compared to 57 pages in 1970.

2. REGIONAL PUBLICATIONS

Two Regional publications, inaugurated in 1967, continued publication in 1971. Four issues of IEEE ELECTROLATINA were published and distributed to the members in Region 9 (Latin America). This technical magazine contains articles and other appropriate material in Spanish and Portuguese. The IEEE REGION 8 NEWSLETTER, serving members in Europe and adjoining areas, was issued four times during the year.

3. SECTION PUBLICATIONS

A major activity of many Sections is the publication of a monthly Bulletin for the announcement of local activities. Seventy IEEE Sections are now issuing monthly publications as listed below:

Section	Publication
Akron	Akron Section Bulletin
Atlanta	The Atlanta Circuit
Baltimore	Newsletter
Binghamton	Pulse
Boston	The Reflector
Canaveral	Impulse
Cedar Rapids	Corona
Central Indiana	The Reporter
Central Pennsylvania	Newsletter
Central Texas	The Analog
Chicago	IEEE Scanfax
Cincinnati	Cincinnati Section News
Cleveland	Cleveland Section News
Connecticut	The CONNector
Dallas	Direction
Dayton	Conductor
Delaware Bay	Newsletter
Evansville-Owensboro	The Transmitter
Florida West Coast	Suncoast Signal
Fort Walton	The Courier
Fort Wayne	The Announcer
Houston	The Scope
Kitchener-Waterloo	IEEE Newsletter
Las Vegas	Currents & Sparks
Lehigh Valley	Newsletter
Long Island	The Pulse
Los Angeles Council:	IEEE Bulletin
Antelope Valley	
Buenaventura	
China Lake	
Foothill	
Metropolitan Los Angeles	
Orange County	
San Fernando Valley	
San Gabriel Valley	
Santa Barbara	
Santa Monica Bay	
South Bay Harbor	
Vandenberg	
Milwaukee	Newsletter

SECTION PUBLICATIONS (continued)

Section	Publication
Mohawk Valley	Echoes
Montreal	Current PHASE Courante
New Jersey Coast	The Scanner
New Orleans	Section Bits – IE^3
New York	The Monitor
North Carolina	IEEE Bulletin
Affiliation of Sections:	
Central North Carolina	
Charlotte	
Eastern North Carolina	
Western North Carolina	
Winston-Salem	
North Jersey	IEEE Newsletter
Orlando	Orlando Section Notes
Ottawa	Ottawa Section Bulletin
Philadelphia	Almanack
Pittsburgh	IEEE Bulletin
Portland	The BEEEP
Princeton	The P.S.
St. Louis	The Mighty MHO
San Diego	San Diego Bulletin
San Francisco	The Grid
Schenectady	The Prism
Seattle	Data Link
South Carolina	Southern Corona
Southeastern Michigan	Wavelengths
Southern New Jersey	Newsletter
Syracuse	The Scanner
Tokyo	Denshi Tokyo
Tucson	The BEEET
Twin Cities	Radiator
Washington	Washington Bulletin
Worcester County	Newsletter

4. ELECTRICAL ENGINEERING

This IEEE management newsletter of 6 to 8 pages plus inserts, first issued as such in 1964, notes completed and impending changes in the structure, Bylaws, policies, and operations of the Institute and evolution of its organizational units. Its mission is to encourage an exchange of information among Boards, Committees, Divisions, Societies, Groups, Conferences, Regions, Councils, Sections, Subsections, Chapters, and Branches. Its bimonthly distribution includes about 4,000 officers of these units and the Headquarters staff. Its usefulness is increased by insertion of documents, forms, and offerings of operating aids. Its accuracy is enhanced by review of its editorial content by the General Manager's staff. In 1971, to 46 pages of text were added 52 supplemental pages as inserts.

Ownership of the title "Electrical Engineering" by the Institute as a registered trademark goes back to 1931.

SECTION H

II. TECHNICAL ACTIVITIES

1. TECHNICAL ACTIVITIES BOARD

The technical activities of the Institute continued with great vigor throughout 1972 despite adverse economic pressures. The established programs were augmented by new programs that are responsive to the changing interests and needs of the membership.

The on-time publication record of the Transactions and Journals of the Groups, Societies, and Councils was considerably improved over the previous year. Experience with overseas publishers proved unfortunate due to strikes, but the G-AES experiment with an outside publisher provided interesting information and is to be continued for another year. The quantity of pages in some Transactions has been reduced because of financial limitations caused by increased costs.

Conference activities on the part of the Groups and Societies held up well despite somewhat lower attendance and fewer exhibitors in some cases. In general, good financial control of these conferences was maintained. The first EUROCON was held in Region 8 and turned out to be a well-run and successful event. The RAB/TAB Technical Meetings Committee formed to assist in the conduct of technical meetings of the Groups/Societies/and Regions was established and identified a number of areas where it could help contribute to the improved management of this sort of IEEE technical meetings.

Good financial management of almost all Groups and of all Societies was demonstrated during 1971. However, with rising publication costs and decreased IEEE support, a number have had to increase their fees for 1972. The budgeting procedure for 1972 was somewhat different than in prior years because of the influence of the Divisional Directors in considering Institute priorities as a judgment factor in allocating resources, rather than using fixed formulae with Group membership and publication pages as criteria. The method finally used for 1972 was not in fact as much different from 1971 as it appeared it would be at one time.

As a result of numerous discussions at TAB OpCom, Divisional meetings, and TAB, a general understanding of the roles of the Divisions, Divisional Directors and the Groups and Societies was established.

Clarification of the Guidelines for Groups becoming Societies was agreed upon and approved by the Board of Directors. Four groups were approved for society status: Magnetics, Systems Man and Cybernetics, Communications Technology, and Industry and General Applications. In the case of the last two, their names were changed in the process to the IEEE Communications Society and the IEEE Industry Applications Society respectively. Some mergers of Groups are being actively considered, and the new Manufacturing Technology Group has come into being and appears to be successfully launched.

The Group Evaluation and Review Committee has been able to indicate methods by which Group objectives should be established, and a majority of the Groups/Societies have submitted either one and/or five-year plans. The procedures to handle the five-year evaluation problem have not been undertaken yet, and it is timely that this be done during 1972.

There has been increased emphasis on the IEEE Standards activities during 1972 and a repricing of standards at levels that reflect both cost and value considerations. An increased income from standards has been realized, and more efficient operation appears to have been accomplished through reduced cost-of-publication methods. The number of people participating in standards activities seems to be increasing and with greater interest and involvement. The Standards Organization has taken on a more direct interest in the soon-to-be published IEEE Dictionary and a mid-spring 1972 publication date is anticipated.

NEW AND EXPLORATORY AREAS OF TAB ACTIVITIES

Applications of Electrotechnology to Social Problems

A special report on this subject was prepared by an Ad Hoc TAB Committee. Included in this report was the recommendation that a Washington office for the IEEE be established and staffed. This recommendation was implemented by Board action at the November meeting. Recommendations for continued activity of the IEEE in the field of Application of Electrotechnology to Social Problems were outlined in this report.

Environmental Quality Committee

The IEEE Environmental Quality Committee has successfully established relationships with a number of outside organizations such as those concerned with social, legal, medical and other aspects of the environmental problem. Plans are underway for a workshop type conference to be held next year with joint participation representatives of these other fields of specializations. Gratifying progress has been realized during 1971 in this area of environmental quality.

World Environment Resources Council

As a result of recommendations of some members from the Geoscience Electronics Group, an extensive effort has been undertaken to help establish a U.S. Environment Resources Council as part of the World Environment Resources Council. This activity has been favorably received by representatives of several organizations both in the U.S. and on a World wide basis. Extensive efforts on the part of IEEE personnel will be required to establish both of these organizations during the coming year.

Technology Forecasting and Assessment

Cooperative efforts between the Washington Section and several of its Groups Chapters have resulted in a successful one-day meeting being held on this subject in connection with the first Region 2 Conference. Plans for an expanded activity in 1972 in this area are underway with both TAB and RAB participating. An effort to obtain financial support for this program in 1972 from NSF is currently in progress.

Regional Outstanding Lecturers

During 1972, efforts were coordinated successfully to establish an experimental Regional Outstanding program between Region 8 and Regions 1 through 6. Approximately 10 such lectures were presented by IEEE members in Region 8 as a result of cooperative efforts between Paul Jespers, Region 8 Director and Peter Edmonds of the IEEE staff. Plans for expansion of these Regional Outstanding Lectures in 1972 include coverage of more IEEE Regions.

Education

In an effort to help the EAB, each of the Groups/Societies were asked to extend their educational activities with particular emphasis to applications and tutorial type material. The majority of the Groups/Societies have cooperated well in this matter.

IEEE Press

TAB supported the establishment of the IEEE Press and its reprint series. The first of these was on the timely subject "Clearing the Air: The Impact of the Clean Air Act on Technology."

TAB Manual

Preparation to update the TAB manual are underway, and the preliminary efforts in this matter have been completed.

Leadership Development

Extensive efforts were made during the past year to carry out Group officer and Ad Com leadership workshops, and a favorable reaction to this effort has been achieved. Additional work on material for group leadership development is appropriate to take advantage of the information contained in the TAB manual and other specific information to improve and extend the leadership development by the Technical Activities Board.

The statistical tabulations, shown elsewhere in this report, show a strong base of Group and Society memberships, and support and involvement in specialized events ranging from Chapter meetings to international symposia and conferences. The expansion of the publication programs were limited by the available financial support.

2. THE JOINT TECHNICAL ADVISORY COUNCIL (JTAC)

The JTAC, sponsored by the IEEE and the EIA (Electronic Industries Association), held five meetings during 1971.

JTAC Committee 63.1—Electromagnetic Compatibility: Committee 63.1 is being held on a stand-by basis, primarily to provide updating analysis of the accomplishments of the Federal Communications Commission (FCC) and the Office of Telecommunications Policy (OTP) regarding the JTAC recommendations in its report SPECTRUM ENGINEERING—THE KEY TO PROGRESS. A comprehensive report was prepared listing activities initiated, scheduled/planned, and needed by the JTAC, the FCC, and the OTP on each of the many recommendations in the above report [see pages 25-58, JTAC Annual Proceedings (1970/1971) Volume XXXIV]. This report was presented at a briefing session held by the JTAC for the FCC and the OTP to discuss the state of the art in the field of spectrum engineering utilization.

JTAC Committee 67.1—Spectrum Utilization Aspects in the Use of Space Techniques: With State Department approval the JTAC Chairman, Mr. H. Edward Weppler, presented the JTAC Report, RADIO SPECTRUM UTILIZATION IN SPACE, to the heads of 40 delegations and key personnel attending the Special Joint CCIR (International Radio Consultative Committee) Meeting in Geneva, which was held in February 1971, to prepare for the June/July 1971 ITU World Administrative Radio Conference on Space Telecommunications. The book was well received and used as a reference for the Conference.

JTAC Committee 71.1—Survey of Activities and Controls with Regard to Radio Spectrum Pollution: The JTAC established Committee 71.1 in response to a request from the OTP, as well as the Office of Telecommunications (OT) of the Department of Commerce, to obtain advice on the projects being handled by them on man-made noise. In order to eliminate duplication of effort, the JTAC not only reviewed OTP's and OT's studies under way, but ANSI's (American National Standards Institute) project on man-made noise.

III. EDUCATIONAL ACTIVITIES

The Educational Activities Board is organized into three basic committee areas: Accreditation, Pre-College Guidance, and Continuing Education. During the year additional committees were established to explore and develop programs for the professional concerns of women in engineering, the professional concerns of the minority groups, and career development. The following briefly summarizes the activities of each of these areas.

Accreditation. In the area of ECPD activities two notable actions have been taken: 1) a resolution to the IEEE Board of Directors to reaffirm its position in respect to the accreditation of advanced degrees in electrical engineering; and 2) a reduction in our subsidy to ECPD made possible by a reduction in ECPD's budget. Our representatives are actively participating in the discussions being held within ECPD in respect to restructuring its organization, as well as the approach to the accrediting services to reflect current and foreseeable conditions within the profession.

Pre-College Guidance. The committee for Pre-College Guidance formalized a program of providing support to the Institute Sections in their guidance activities, providing guidance counselors with "Decisions About Careers in Engineering – A Guide for Those Who Counsel High School Students," a summary of Donald E. Super's report on the career decision process; a new throw-away brochure for distribution at guidance sessions; and information regarding films available in the guidance area. Plans for 1972 include a guidance forum during the 1972 International Convention and the publication of additional guidance material.

Continuing Education. To further its objective of providing continuing education programs for the professional development of the IEEE member, the Continuing Education Committee has organized into the following areas of project responsibility: Slide Tapes, Bibliographies & Books, Self-Study Courses, Short Courses, Cassette Colloquia-DATE, IEEE Soundings, University Support, Continuing Education Credit Program. These subcommittees generate new material, review and edit projects received from outside sources and recommend its suitability to existing or proposed programs. The committee as a whole is responsible for recommending EAB policy, planning and identification of major activities in continuing education, coordination of activities with other societies, and coordination of continuing education activities with TAB and RAB.

Programs which have been continued and augmented are: Slide Tape Lectures, Cassette Colloquia, Soundings, and Self-Study Courses.

New programs under development include auto-instructional courses consisting of study outline, course notes, textbook and book of reprints (in cooperation with IEEE PRESS). In the area of short courses a new approach has been developed whereby the EAB in cooperation with Section/Group Chapters will jointly sponsor short course offerings in areas of high membership during 1971-1972.

Cooperation with IEEE PRESS. The EAB reviewed and concurred in the adoption of the "Operating Guidelines for IEEE PRESS" and has sponsored the publication of two books by PRESS. Texts will be used as the basis for one-day short courses and self-study courses prepared by the authors.

Cooperation with Groups and Sections. Response from Groups and Sections in stimulating greater cooperative effort in educational programs has been gratifying to the EAB. One-day short courses mentioned above is one example of this cooperative effort.

Professional Opportunities for Women in Engineering. This newly formed committee has established a clearing house for appeals of women in their efforts to get promotions in education and industrial institutions and to be appointed to decision-making roles in engineering fields. It has also established a registry for women engineers. It is becoming active in recruiting women into engineering and in stimulating enrollment of women in engineering schools. Liaison with women's groups in other professional societies is being maintained.

Professional Opportunities for Minority Groups. The committee for minority concerns is organizing into a group of regional subcommittees to better focus on the local problems of the minority groups. A directory of practicing minority engineers for resource file is being compiled. The chairman has been visiting colleges and universities to explore ways of assisting in curricula planning and advice. Interaction with the Pre-College Guidance Committee is being maintained to stimulate the entrance of blacks into engineering and in the development of a film directed to the minority youngster in cooperation with ECPD.

Career Development. As a result of studies made by ad hoc committees for long-term economic outlook and career counseling the EAB recognized the need to develop educational programs focused on the new needs of our members both in technology and in the general area of professional concern. With the authorization for the establishment of the position "Manager of Career Development" the EAB is now in a position to prepare a detailed plan of action based on recommendations made by the ad hoc committees mentioned above.

Two programs initiated in the latter half of 1971 were specifically aimed at the unemployed engineer: one directed at aiding him to sharpen a basic tool; the other directed at transferring his skills and capabilities into an activity which holds promise of future employment.

IV. REGIONAL ACTIVITIES

The Regional Activities Board held four regular meetings and participated with the Technical Activities Board in three dinner meetings and one luncheon meeting during the year.

There was continued emphasis in 1971 on improving communications with the membership through the Region/Section network. This was accomplished in part by expanding the Area/Council programs. Region 3 continued with its 6 Areas and 1 Council; Region 5 established 3 new Areas; Region 6 established 5 new Areas and also continued its 1 Council; and Region 7 continued to maintain its 3 Councils. Several other Regions are presently considering the formation of Areas. After careful consideration, RAB decided to keep the Area/Council concept fairly unstructured in order to avoid creating another layer of managerial bureaucracy. It was felt that the efforts of the Region/Section communications network contributed in part to the increased participation in this year's Institute election from the usual 25% to 30%.

There were a number of activities and accomplishments by RAB this year which will most likely result in long-range effects on the Institute policies and operations. Several of these are highlighted below:

(1) In order to assist the Regional Directors to better assume in 1972 the responsibilities of being "Regional Executives," final arrangements were made to decentralize the administration of Regional funds. The Directors will now have the responsibility of allocating for the funds budgeted for their Regions' yearly operation.

(2) The Executive Committee approved the RAB's recommendation to amend Bylaw 402.10, which would allow the RAB to prepare annually the rebate schedule for Sections to be submitted to the Finance Committee for review, to the Executive Committee for approval, and then incorporated in the Institute budget.

(3) Questionnaires were prepared and administered by Regions 3 and 6. The Directors of Regions 1-6 also developed a questionnaire primarily aimed at ascertaining what the U.S. members would like the Institute to do in nontechnical areas. This questionnaire, accompanied by a letter from President Mulligan and President-Elect Tanner, will be mailed in early 1972 to 145,000 members. The member interest profile will be extremely valuable in future Board decisions and activities.

(4) At their August meeting, the Board of Directors authorized $110,000 for the new Regional Member Service Experimental Fund (REMSEF). Regional Directors were requested to present to the Executive Committee, prior to its November meeting, detailed proposals of projects their Regions might undertake during 1972 which would benefit the members in their respective geographical units. The following projects have been approved for 1972:

Region 5 - $5,000 for educational programs to aid unemployed engineers.
Region 6 - $5,000 for L.A. Council-Groups Experimental Program.
Region 6 - $50,000 for a Region 6 Office.
Region 7 - $45,000 for a Region 7 Office.
Region 8 - $5,000 for a study on improving publication distribution.

In addition, the Board approved funds for establishing a Washington Office in 1972 to enable IEEE to work with the various U.S. Government branches in informing them about IEEE and its expertise. It should be noted that these projects are all experiments - and, at present, are not to be carried beyond 1972.

(5) In Region 6, the Joint Societies Employment Advisory Committee (JSEAC) has been in full operation since the summer attempting to assist the high number of unemployed engineers in the California area.

(6) The Institute's transnational activities were aided by a very successful EUROCON '71 held by Region 8 in Lausanne, Switzerland. This was the first Regional conference held by IEEE in Europe and was attended by 1,100 persons. Another effort to improve our Regional and Institute transnational relations was the Board's acceptance of a two-year experimental agreement with Associazione Elettrotecnica ed Elettronica Italiana (AEI) to encourage electrical engineers to become members of both associations by granting advantageous cumulative membership rates.

(7) It was also agreed this year that the Regional Directors for Regions 1-7 and 9, if they so desire, may refer to their respective Regions as follows: Northeastern Region (1); Eastern Region (2); Southeastern Region (3); Central Region (4); Southwestern Region (5); Western Region (6); Canadian Region (7); and Latin American Region (9).

(8) In the technical communications area, the following Regional conferences were held:

April 26-28	Region 3 Conference Charlottesville, Virginia
April 28-30	SWIEEECO (Region 5) Houston, Texas

May 11-13	Region 6 Conference Sacramento, California
October 4-6	International Electrical and Electronics Conference and Exhibition (Region 7) Toronto, Ontario, Canada
October 6-8	Region 2 Conference Washington, D.C.
October 18-20	Fall Electronics Conference (Region 4) Chicago, Illinois
October 18-22	EUROCON (Region 8) Lausanne, Switzerland

The Regional Activities Board is aided by five Standing Committees whose Chairmen, as voting members of RAB, keep the Board abreast of their activities throughout the year:

Finance Committee - Spearheaded the campaign to revise the present method of allocating Section rebates in the hope of motivating Sections to be more active in meeting the needs of their members. This was accomplished through the amendment of Bylaw 402.10. The new program will go into effect in 1973.

Member Services Committee. This Committee is charged with the task of implementing actions recommended by the RAB which will serve the needs of the individual members. The MSC attempts to accomplish that objective through maximum personal contact with Section Officers whose executive direction determines in great measure whether the needs of the members in those localities have been identified and are being met to the extent that it is possible to do so.

During the year the MSC conducted a Workshop for the Editors of Region and Section publications and six additional Workshops for Section Officers which were held in Regions 1, 3, 4, 5 and 6. The Committee Chairman was also invited to participate in a Region 7 Workshop. The Workshop Programs were planned to explain the IEEE organization, the important role of the Section in Institute activities, and to provide the opportunity for open discussion and exchange of ideas.

Attendance at the Workshops, for the most part, has been disappointing and the Committee is seeking ways and means to attract maximum Section representation and active participation in the Workshop Program. The Committee feels that the attendance of newly elected Officers in these educational and indoctrination sessions will benefit the Institute, the Section, and most importantly the individual members.

Policy and Planning Committee - This year concentrated on finalizing some of the projects started in 1970. One of the more important areas was the Region 3 questionnaire on membership retention. As a result of this questionnaire, a program is now under way to motivate five selected Sections to develop programs and activities which will increase both their membership and their member participation. The Committee also approved the final version of the Section Management Guide which will be distributed to Section Chairmen in 1972 to aid them in further understanding their responsibilities.

Student Activities Committee - Formally joined the RAB this year. Their ongoing activities included the various Regional Student Activities meetings, the Student Prize Paper Contests, the Annual Vincent Bendix Award program, in which seven of the twenty-five proposals were accepted, and a successful Counselors Forum held in March. New activities included the Membership and Transfers Committee recent graduate retention program, experimental workshops for graduating students, and the proposed Student Policy and Planning Committee program for INTERCON '72. This new committee will evaluate the effectiveness of existing student programs and recommend innovative approaches for new programs.

Technical Meetings Committee. This is a joint RAB/TAB Committee which has been charged with the responsibility for coordinating, developing, and recommending policies, procedures, guidelines, and schedules for technical meetings sponsored or cosponsored by Groups, Societies, Regions and Sections. As a result of the Committee's efforts, the Master Meeting Schedule format was revised, the IEEE Conference Budget and Financial Report form was revised, and an ambitious "Major General Meetings" program was presented for consideration.

V. BOARD AND STANDING COMMITTEE ACTIVITIES

1. Admission and Advancement Committee. During the year the number of new membership applications processed totaled 13,130. Of these, 916 required review by the Admission and Advancement Committee during the twelve meetings held in 1971. Actions were taken as follows:

	Senior Member	Member
Admissions approved	200	219
Admissions rejected	27	19
Transfers approved	351	66
Transfers rejected	29	5
	607	309

For economy reasons the Committee approved a change in the processing of reference forms for Senior Member and Member grade admissions and transfers. The responsibility is now that of the applicant to address, sign and mail the reference form to those named as references on the application, and to insure that the completed forms are received by the Admission and Advancement Committee.

2. Awards Board. The Awards Board deviated from its usual custom of having three meetings during the year and scheduled four in 1971. All sessions were held at IEEE Headquarters in New York.

Two additional Committees of the Awards Board had been created, the Group/Society Awards Committee and the Candidate Research Committee, thus increasing this Board's membership from 14 to 16.

Also established in 1971 was a new Field Award, the Frederik Philips Award, which is given "for outstanding accomplishments in the management of research and development resulting in effective innovation in the electrical and electronics industry." This award is made possible by the support of N. V. Philips' Gloeilampenfabrieken of the Netherlands, and consists of a gold medal, certificate and $1,000.

The Awards Board recommended to the Board of Directors candidates for the Medal of Honor, four Major Annual Awards, nine Field Awards, two Prize Paper Awards and two Scholarship Awards as well as nominations for the National Medal of Science. The Major Awards and the Prize Paper Awards were presented at functions held during the IEEE International Convention; however, the locations for presentation of the Field Awards were widespread with an international flavor as the following indicates: Winter Meeting of the Power Engineering Society, New York; Annual Meeting of the IEEE United Kingdom and Republic of Ireland Section, London, England; International Solid-State Circuits Conference, Philadelphia, Pa.; International Conference on Communications, Montreal, Canada; WESCON and Nuclear Science Symposium, San Francisco, Calif.; International Electron Devices Meeting, Washington, D.C.; EUROCON, Lausanne, Switzerland, and NEREM, Boston, Mass.

Last year, as a result of the Board of Directors approval of the recommended changes in the awards structure, the Awards Board concentrated on making arrangements and negotiations to reflect these modifications and have them ready for implementation in 1972. Included in the recommended revisions was the scope of the Morris N. Liebmann Award, which has now been broadened to "emerging technologies." An announcement appeared in the November 1971 issue of SPECTRUM indicating the changes made in the various awards. Much time and thought was devoted to the study of newly proposed award certificates.

Other actions taken by the Awards Board during the year were: 1) the appointment of representatives to three intersociety boards and a commission (the Hoover Medal Board of Award, the John Fritz Medal Board of Award and the Washington Award Commission) to replace those IEEE representatives whose terms expired, and 2) approval of proposed Group, Conference and Region Awards.

3. Conference Board. This Board was newly constituted in early 1970 to prepare for the 1971 March Convention. Eight committees were formed: Exhibits Advisory, Hospitality, Public Relations, Technical Program, Registration, First Night Reception, Banquet, and Women's Activities.

Among the many problems which the Conference Board and its committees met were the sharp economic decline, a resistance among exhibitors to New York costs, increasing competition from vertical events, and a reduction generally in convention attending. Nevertheless, the Board and its new staff brought the 1971 event into being with satisfactory results from the standpoints of attendance and finances. Registration was 35,228 including 7,816 exhibitor personnel and 8,675 IEEE members; 426 contract exhibitors occupied 70,490 square feet of space in the Coliseum; 333 papers were presented in technical sessions at both the Coliseum and New York Hilton.

In organizing for the 1972 event, the committee structure was simplified to six committees, the

name INTERCON was selected to express the scope of the event, and many innovations were introduced. Three floors in the Coliseum were laid out for exhibit space; at the end of December 1971, two floors were fairly well assigned but the Nixon surcharge, rate-of-exchange uncertainties and a weaker domestic market had discouraged many overseas exhibitors from participating. The budget was reduced as much as could be in order to provide an adequate contribution to the Institute itself. To spread staff costs, in November an offer was made to all other IEEE units to provide staff assistance to the degree requested and at commensurate rates. The concept of an Inter-convention Board embracing NEREM, NEC, Toronto, WESCON and IEEE-NY was discussed in November and several projects started to test and implement this idea.

4. Educational Activities Board. (See Section H-III)

5. Fellow Committee. The Committee met twice in 1970. The first meeting in March was devoted to discussion and approval of scoring procedures and the criteria upon which the nominations for Fellow grade are appraised.

   A total of 354 nominations, submitted by the April 30, 1971 deadline date, were scored by Committee members. At the final meeting, the Committee reviewed the computer analyses of the composite scores and made final selections of those candidates to be recommended for election to Fellow grade as of January 1, 1972. The citations for the selected candidates were prepared at this same time.

   The Board of Directors on November 19, 1971 received the Fellow Committee recommendations and took action to confer the grade of Fellow on 99 members.

   With the full support of the Technical Activities Board, a new plan was adopted in processing Fellow grade nominations in 1972 which calls for the sponsor of a Fellow grade nomination to solicit from the appropriate Group or Society an evaluation of the technical accomplishments of the candidate. These evaluations will be of assistance to the Fellow Committee in adjudicating future nominations.

   The Board of Directors had appointed an ad hoc committee to examine the Fellow recognition and the mechanisms employed in selecting candidates. The recommendations of that committee were submitted to the Board in August 1971 and are under consideration by the Board.

6. Finance Committee. The Finance Committee held nine meetings during 1971 during which it primarily concerned itself with reviewing the investments of the Institute, comparing actual results of operations with budget, determining where expenses could be reduced and income augmented, and preparing the 1972 Budget.

   The Committee accepted the Audit Report of Price Waterhouse & Co. for 1970 which was included in the Treasurer's Report published in SPECTRUM, June 1971.

   The Committee developed a functional analysis of income and expense to assist the Executive Committee and the Board of Directors in determining Institute priorities.

   The special dues and fee schedule at one-half rate, established in 1971 for unemployed members, was extended through 1972 upon the Committee's recommendation.

   A recommendation to transfer the investment funds from the financial management firm whose performance was unsatisfactory to two other firms with excellent records was approved by the Executive Committee. The funds were divided into approximately equal amounts. A charter for the Investment Committee was approved as recommended to the Executive Committee.

   The Committee initiated work on the 1972 Budget in March, culminating in a final proposal submitted to the Board of Directors by the Executive Committee in November.

7. History Committee. A formal meeting of this Committee was held in March at the International Convention, but most of the Committee work was carried on by telephone and correspondence. The preparation of a history of the formation of the IEEE is an ongoing project of Nelson Hibshman, retired IEEE Executive Consultant, under the auspices of the History Committee. It is planned that this history will be ready for dissemination, as appropriate, in early 1973, which will be ten years after the merger took place. The Committee assisted in placing in the Bancroft Library (University of California) two collections of important private papers.

8. Intersociety Relations Committee. During 1971 the ISRC reviewed IEEE's participation in the activities of 35 scientific and technical organizations throughout the world as reported by 98 volunteer IEEE representatives to the various standing committees and boards responsible for their appointment. The ISRC digested these reports and sent this digest to the Executive Committee.

   A member of the ISRC was assigned the responsibility for keeping the IEEE membership informed of the situation regarding registration with references included which would allow members to review registration practices as

they might affect their personal situation. An article on the subject is planned for publication in SPECTRUM giving background information on professional engineering legislation, status of legislation in the United States and elsewhere in the world, IEEE policy on the matter, IEEE/NSPE relationships bearing on the subject and areas of possible consideration and action relative to IEEE members' individual interests. Subsequently, an up-date article on the current situation regarding professional engineering laws, registration and regulation of engineering practice will be planned annually for publication in SPECTRUM. By means of feedback from IEEE Sections, IEEE attorneys, input from NSPE, NCEE and other sources, the legislative situation will be monitored and items of special interest or potential concern to IEEE will be brought to the attention of ISRC for the purpose of alerting the IEEE Executive Committee. Liaison will be maintained with other organizations having interests and knowledge in this subject area for such additional useful information and insight as may be made available.

The Committee reviewed the policy issues and decisions facing ECPD, which may be completely restructured within the next few years, and it was decided that it is vitally important that the EAB have extremely close liaison with ECPD during this time and that, therefore, EAB should nominate the IEEE representatives on the Executive Committee and Board of ECPD and the IEEE Executive Committee should appoint them.

Dr. R. P. Wellinger, a member of ISRC and the Honorary Chairman of the Steering Committee of EUROCON '71 reported to the Committee that as a result of the Region 8 conference: European national societies are now fully aware of the capabilities of IEEE Region 8; improvement has been noted in the spirit of cooperation among some of the national societies; and it would seem desirable to hold another EUROCON but not before the fall of 1973.

The ISRC Subcommittee on Scientific and Cultural Exchanges developed a new procedure for the selection of IEEE/Popov Society delegates which was approved by the Executive Committee and implemented in connection with the 1972 exchange arrangements. Basically, the subcommittee will select an interest theme for each annual visit which will correspond with the various IEEE Group or Society activities until the interests of all disciplines are covered. Each Group or Society representing a phase of the current interest theme will be asked to nominate a number of delegates. The ISRC Subcommittee will add nominees representing nondivisional IEEE members and to maintain the appropriate mix of industrial, academic and government representatives. The exchange will be announced in SPECTRUM giving full information about the exchange and requesting IEEE members to apply to their appropriate Groups or Societies if they are interested in participating.

The interest theme for 1972 is communications and the following Groups and Societies were approached for nominees: Communication Technology; Broadcasting; Broadcast and Television Receivers; Information Theory; and the communications aspects of Aerospace and Electronic Systems; Vehicular Technology; and Audio and Electroacoustics.

This new approach has been evolved as a means of developing a more homogeneous delegation, which, hopefully, will allow the group to explore an area of common concern in greater depth. On the basis of reciprocity the Soviets will be urged to put together a delegation aligned with the same interest theme chosen for that year, which will allow a more meaningful interaction between the two delegations.

The 1971 IEEE delegation to the Popov Society Congress was headed by President James H. Mulligan, Jr., who came away from Popov-71 with the opinion that this exchange is an important part of the IEEE program and that the subcommittee should be given every assistance to ensure the quality of the exchange remains high since it is one of the actions of the IEEE in support of their transnational role. He suggested a number of ways of strengthening the exchange and maximizing its value, which the subcommittee will implement in every way possible.

The subcommittee continued its efforts to enlarge the scope of the exchanges to include additional Eastern European countries but there is still a problem of their obtaining funds. A committee member, who is also a member of the 1972 IEEE delegation, plans to visit Romania, Hungary and Poland in conjunction with his visit to the Soviet Union to discuss possible solutions to this problem.

The ISRC is planning to explore the possibility of eventually developing an exchange with mainland China and considerable spadework has already been done including gathering of background material, meetings with a number of Chinese speaking members of IEEE, identifying possible contacts who might be attending international meetings which would also be attended by the Chinese professionals, and assigning various projects to members of the subcommittee who were willing to explore different aspects of a possible exchange with individuals who are knowledgeable in the area. The subcommittee realizes this is a long-term effort and will probably not eventuate in an actual exchange for a number of years.

9. Life Member Fund Committee. This Committee held its annual meeting in March 1970 during which past projects were reviewed and new ideas sought. Once again, the Committee sponsored awards for the top three Student Prize Paper Winners in each Region as well as the "Education Medal" award. Expenses of delegates to International Standards meetings was also paid by the Committee.

Upon the Life Member Fund Committee's recommendation, the Board of Directors revised Life Membership requirements so that any member having attained the age of 65 would become a Life Member at such time that his age plus years of membership totaled 100. Student years of membership are to be credited in computing membership total.

Also, upon the Life Member Fund Committee's recommendation, the Board of Directors established the "Retired Member" category, allowing reduced dues for certain retired members. Those members who have attained the age of 65 years, and do not qualify for Life Membership, may apply for reduced dues, provided they are not gainfully employed.

The Committee expressed concern that documents of historical value relating to important developments in electronics and electrical power be preserved for future study by scholars. Working in cooperation with the History Committee, the Life Member Fund Committee appropriated $2000 on an experimental basis to cover the expenses of identifying such papers and boxing, transporting and warehousing them.

In December 1971, the Life Member Fund Committee mailed a newsletter to all Life Members, thanking them for their contributions to the Fund and outlining the activities the Fund was able to sponsor during the year. The philosophy of the Committee is support of programs to improve greater scholarship in electrical/electronics engineering professions.

10. Long Range Planning Committee. During 1971 the Committee met three times to discuss some of the problems affecting the IEEE, to consider alternate solutions, and to develop a consensus of opinion for their remedy.

The Committee felt that, other than increasing the tutorial and general broad-based informative articles in SPECTRUM, the present posture of Institute publications, as related to economic conditions of its members, is satisfactory. Social problems, those concerned with the quality of urban life, environment, safety, public transportation, etc., were discussed as they relate to the profession. Since these all have technical implications entailing analysis and instrumentation techniques, the Committee felt the Institute should find more viable ways to operate effectively in these areas.

The role of geographic units relative to the role of technical units was studied by the Committee who suggested that activity serving only a particular segment of the membership be on a "pay as you go" basis. Not only would members pay just for the services they want, but the Institute would have a feedback system of how responsive it was to the needs of the members.

In November, the Committee presented a report to the Board of Directors regarding the composition of the Executive Committee and the Board of Directors. The following recommendations were made:

(a) The Board of Directors be increased in size by the addition of four Directors-at-Large to be elected by the voting members from nominations presented by the Nominations and Appointments Committee.

(b) The creation of a Vice-President - Regional Activities, to be elected by the Annual Assembly and to serve ex officio as a member of the Board of Directors and the Executive Committee. This would free the Vice-President-at-Large and create an Executive Committee that includes not only operating officers but has representation of the members at large.

(c) The individual nominated by the Nominations and Appointments Committee for the office of President need not come from any particular office but should have spent at least one year on the Executive Committee.

(d) The Board of Directors meetings be held as follows:

- First week in January (same as as present).
- In March/April, one or two weeks following INTERCON.
- Early summer, following the closing of colleges.
- In November, in conjunction with the Annual Assembly (same as at present).

11. Membership and Transfers Committee. To coordinate and strengthen membership promotion activities throughout all organizational units of the Institute, the composition of the Membership and Transfers Committee was restructured to include nineteen members: a Chairman, a Vice-Chairman, representatives from each of the ten Regions, the six Technical Division, and the Student Activities Committee. The Committee met three times during 1971 and actions can be highlighted as follows:

(1) Preparation of Guidelines. Guidelines defining the responsibilities of the Regional and Divisional Representatives were prepared and similar instructions developed for those Area Representatives appointed within the Regions to assist in the important communication with the Sections on membership programs.

(2) The Section Membership and Transfers Manual was updated to incorporate new programs (some of which are described below) generated by the Committee during the year.

(3) Membership Manual for Groups and Societies. A Membership Manual outlining recommended procedures for promoting enrollment in the Groups and Societies was prepared and made available to Divisional Representatives on the Committee for distribution among the Groups and Societies within the Division.

(4) Recent Student Graduate Program. Because a substantial percentage of recent Student graduates fail to continue membership within the first three years following graduation, the Committee developed and implemented a new program with the prime objective of maintaining communication with these new graduates, immediately before and after graduation, encouraging their involvement in Institute affairs and interest in continuing membership. Sections were provided with the names of the recent graduates moving into their Section territories with the request that they extend a personal welcome to them, inviting their active participation in the local activities. Groups and Societies were furnished with lists of these graduates enrolled in their Groups/Societies with the suggestion that they also communicate with these graduates, expressing an interest in their welfare.

The results of this new program have been disappointing. Greater attention by the Sections, Groups and Societies is necessary in the future if this program is to accomplish its objectives.

(5) Members in Dues Arrears. The reduction in number of dues arrears members in prior years has been traced to the concentrated efforts made by the Sections in personally contacting these members, encouraging continuation of membership. A similar reduction in the number of members in dues arrears this year can also be attributed to this member retention program, organized by the Membership and Transfers Committee, which was continued in 1971.

(6) New Membership Brochures. Two new brochures were printed in 1971: one, including an application blank, to be furnished to prospective members; the other enclosed with the notification of election to new members and transferees, reminding them of the benefits of membership.

(7) Section Program for Reinstating Resigned Members. A program was developed for the Sections to use in contacting members who resign from the Institute to encourage reinstatement or to determine the basis for the resignation and, where appropriate, to refer comments received to the Regional Director for information and for further consideration by other Institute agencies.

(8) New Membership Promotion/Meeting Notice Poster. A new poster was designed to serve as a meeting notice in combination with membership promotion. A small number of posters were printed; specific locations were selected for the display and monitoring of these posters to determine the effectiveness of this promotional effort.

(9) Section/Region Membership Statistics. Commencing June 30, 1971, the Section Chairmen and Regional Directors received from the IEEE New York Office monthly reports with detailed statistics (additions, deletions, etc.) in the Section and Region memberships. These reports reveal the results of membership recruitment programs conducted by the Sections and the data should be useful in Section and Region operations. These monthly mailings are accompanied by Bulletins from the Membership and Transfers Committee highlighting recommended membership activities to be undertaken at specific times of the year.

(10) Transfers in Membership Grade. The Committee proposes to initiate a new program of communicating with those holding Associate grade for ten or more years, inviting them to apply for transfer to Member grade, this mailing to be accompanied by a simplified transfer form. Implementation of this plan is contingent upon development of a new computer program to identify members with the required tenure of membership.

(11) Leaflet - IEEE Membership at a Glance. The Committee is considering printing a small one-fold leaflet spelling out the membership grade requirements, membership dues rates, and the benefits of membership for quick reference by many who are involved with membership promotion activities.

(12) Attention to Membership Activities. The success of any programs undertaken by the Committee depend upon the degree of support they receive from the many organizational units of the Institute. The Committee feels that there is a need for the Institute as a whole to give more attention to the matter of acquiring new members, maintaining the existing membership by recognizing and meeting their needs insofar as this is possible, and encouraging greater involvement and participation by the membership in Institute affairs.

12. Nominations and Appointments Committee. Six meetings of the Committee were held in 1971 to fulfill its responsibilities, which included:

(1) Report to the Executive Committee recommending candidates for appointment to those Committees reporting to the Executive Committee.

(2) Report to the Board of Directors recommending (a) candidates to be elected by the voting members, and (b) candidates for appointment to those Committees and Boards reporting to the Board of Directors.

(3) Report to the annual Assembly recommending candidates for election by that body.

13. Publications Board. (See Section F and Section H-I)

14. Regional Activities Board. (See Section H-IV)

15. Technical Activities Board. (See Section H-II)

16. Tellers Committee. The Tellers Committee met once in 1971 for the purpose of supervising and approving methods employed in counting the votes on ballot returns from the voting members in the annual IEEE election. In 1971 the members were asked to vote on proposed amendments to the IEEE Constitution which were submitted by a valid petition. Management engaged the firm of Price Waterhouse & Co. to supervise the opening of the ballots and generally to maintain security in the election.

The results of the count were reported by the Tellers Committee to the Board of Directors in November 1971.

VI. IEEE GROUP INSURANCE PROGRAM

The Insurance Program approved by the Institute for its members showed another increase in participation. The following table indicates the number of certificates in force for each of the Plans in the Program for the policy years ending in 1971.

Certificates in Force	
Disability Income	4,309
Major Hospital-Nurse-Surgical	4,026
High-Limit Accidental Death and Dismemberment	4,925
Hospital Dollars	4,555
Life Insurance	21,248
	39,063

This amounted to a gain of about 9%.

Experience for the Life Insurance Plan continued to be very favorable. Members who were insured under the Plan during the policy year ending September 1, 1971 will receive a dividend credit equal to 55% of the amount paid for coverage during that policy year.

VII. HEADQUARTERS STAFF ACTIVITIES

As of December 31, 1971, there were 255 permanent employees on the IEEE Staff. Staff assignments for the years ending 1970 and 1971 are as follows:

	12/31/70		12/31/71	
	Budget	Actual	Budget	Actual
Administrative Services:				
Accounting		21		19
EDP		25		23
Membership Services		20		-
Operations		91		92
Totals	186	157	147	134
Editorial Services:				
Spectrum		8		10
Proceedings		5		5
Group Transactions		32		25
Student Journal		1		-
Other Publications		9		10
Art Department		3		3
Totals	69	58	59	53
Educational Services:				
Awards		1		1
Student Branches		2		-
Public Relations		1		1
Support of Other Organizations		1		1
Career Guidance		1		1
Continuing Education		1		1
Totals	11	7	5	5
Executive Office	16	15	19	20
Information Services	16	1	-	-
Convention and Publishing Services:				
Publishing		5		6
Convention		6		4
Sales and Marketing		-		2
Totals	5	11	9	12
Technical Services:				
Dictionary		-		-
Standards		4		5
Group Administration		18		15
Totals	23	22	24	20
Member Services:				
Student Activities				2
Committee Activities				4
Regions & Sections				5
			12	11
TOTALS	326	271	275	255

Additions to the staff in 1971 were: J. Dudley Broderick, Marketing Manager; Donald Christiansen, Editor, IEEE SPECTRUM; Bertram Stanleigh, Senior Standards Engineer; Charles F. Stewart, Director, Member Services; and William I. Zuckerman, Accounting Manager.

Inside IEEE

Improved communications—a primary goal for 1971

Last month, "Inside IEEE" replaced "News of the IEEE." The change in name was in keeping with the new material added to these columns that gives advance information on policy changes under consideration, experimental programs under way, and on other such happenings. "Inside IEEE" is one medium for letting each IEEE member know what is under consideration and what is being tried experimentally—in addition to the usual reporting of meetings and other events. With this new commentary we hope to keep you informed of what IEEE's Board of Directors and other IEEE operating and policy-making units are doing and why.

"Inside IEEE" is one of several ways in which IEEE is improving its communications with individual members. And improved two-way communications is one of our prime objectives for 1971. It is only through such improved communications that we will attain the information feedback and the flexibility we need to work out solutions to the problems of our individual members and the Institute as a whole.

Our first efforts at better communications in these columns last month concentrated on: IEEE's new Group on Manufacturing Technology, IEEE's new Dial Access Technical Education Service, special workshops for training Section officers, the new committee of the Technical Activities Board on the impact of electrotechnology on social-economic problems, the activities of the Life Member Fund, and formation of a delegation of IEEE members to the annual meeting of the Popov Society of the U.S.S.R.

This month, we will discuss a pilot program in Region 3 for achieving better communications between the Regional Director and the Sections, the student workshop held last month in Region 4, and actions of the IEEE Board at its November meeting in Florida.

Pilot program in Region 3

In order to achieve better communications between the officers and Board and the Sections, Section executive committees, Student Branches, and Subsections, Region 3 has been organized into six areas, each with its own area chairman. The areas represent a compromise between areas of common interest, geographical distances for the travel of area chairmen, and numbers of Sections in each area.

Each area chairman provides major assistance to the Regional Director. The area chairman provides a primary channel through which Section members' ideas, suggestions, and complaints can be brought to the attention of the IEEE Directors. He is responsible for improving the Institute's effectiveness in serving the needs of the members in his area. He accomplishes this objective by establishing strong lines of communication, hopefully through two visits per year to each Section. Results and recommendations following each Section visit are submitted to the Regional Director and to officers of the Institute as appropriate.

The area chairman concept in Region 3 was created out of a desire for frequent periodic contact of the 39 Sections and 39 Student Branches in Region 3. A major visitation program by the area chairmen in 1970 identified a substantial number of member needs, which were analyzed and appropriate action taken as a consequence. The resulting closer supervision through contact has resulted in faster feedback and more frequent followup, both up and down the organizational communication network.

Student workshops

Effective communication between the Student Member and his Section or Region was the primary theme of workshop sessions held during the National Electronics Conference in Chicago last month. The resulting uninhibited exchange of ideas seemed to indicate that, although our Student Members may possess an enviable degree of enthusiasm, they may sometimes be aware to a rather limited degree of the methodologies for implementing their goals. The Region 4 workshop, like similar sessions sponsored by other Regions, gave the students and their Branch counselors many opportunities to define the vital elements of their Branch programs and to learn of the existence of Institute resources and the interest of the officers and Directors in helping them get the desired results. There seemed to emerge naturally from the discussion the realization that the opportunities and responsibilities of the Branch chairmen are substantial in insuring a dynamic and viable program of Institute activities. Comparable conclusions were drawn at the various workshops held for Section chairmen in Regions 1–7 this year.

Board actions

The Board approved, effective January 1 of this year, the formation of three IEEE Societies—the IEEE Power Engineering Society, the IEEE Computer Society, and the IEEE Control Systems Society. John Granger discusses this new approach in some detail in "Spectral lines" on page 21 of this issue. Society identification should bring increased technical benefits to all members of the Institute by facilitating the flow of ideas and information between the IEEE Societies and non-IEEE groups in the same technical areas.

Another Board action was the trans-

Feedback wanted

You can make "Inside IEEE" more effective by telling us what topics you would like to see discussed in future issues. We are also interested in your opinions of the material already published in this issue and in December.

Please address your comments to R. K. Jurgen, Managing Editor, *IEEE Spectrum*, 345 East 47 St., New York, N.Y. 10017.

fer of the Student Activities Committee from the jurisdiction of the Educational Activities Board to the Regional Activities Board. This change in organizational setup is expected to result in much better interaction between the Sections and Student Branches and insure closer attention to the needs of our Student Members.

It is not surprising that the IEEE—like many organizations in the United States as well as overseas—should experience difficulties associated with rapidly rising costs in all phases of its operations. A substantial portion of the Institute income is derived from the dues paid by members, and the member dues have been held at $25 since January 1967. It is the responsibility of the Board to achieve a balance between total income and the expenditures associated with providing services to our members. At the November meeting, the Board addressed itself realistically to the problem of trying to maintain a suitable level of member services in this period of rapidly rising costs. With this responsibility and the needs of the members in mind, a major reassessment of the IEEE's priorities was made with some corresponding cutbacks in expenses. Most of the reductions were made in administrative expenses at IEEE Headquarters in New York.

One major cutback was the elimination of Information Services and its supporting staff. This decision stemmed partially from the fact that it seemed unlikely that sufficient funds from the National Science Foundation, which had supported this service in the past, would be forthcoming in 1971. Certain Information Services activities will be carried forward by the editorial and publishing services departments.

Another action taken by the Board was the elimination of the *IEEE Student Journal* and its supporting staff. Starting this month, however, all IEEE Student Members will receive *IEEE Spectrum* regularly, and the editorial content of the *IEEE Spectrum* will include material of special interest to students.

All of our members who have leadership responsibilities in IEEE affairs face an important challenge in the months ahead. It is vital that we address ourselves to identifying the needs of our members and attempt to meet them insofar as it is possible to do so within the limitations imposed by the resources and scope of the Institute. But all members have the responsibility of making their views known to Section, Group, and Branch officers as we work together to improve our Institute's effectiveness in meeting today's needs.

The budget actions that have been reported were a direct consequence of the economic conditions prevalent today in the United States and other parts of the world. The officers and Directors recognize that these same conditions have resulted in serious difficulties for many of our members. Considerable attention has been given to problems in this general area for the last several months and the subject continues to receive high priority. I expect to be able to report in the near future on Institute action that would be both appropriate and effective in responding to member needs of this nature.

J. H. Mulligan, Jr.
President, IEEE

Several amendments to IEEE's Constitution are made

Several amendments to the IEEE Constitution have been passed by the voting members of IEEE. The amendments were divided into five categories: Divisions, schedules, petitions, legal, and other.

The purpose of the amendments in the Divisions category is concerned with the six new Divisions of IEEE. The 31 IEEE Groups, while retaining their individual identities and purposes, have been associated into six Divisions that are the technical counterparts of the geographically organized IEEE Regions. Effective with the amendments, each qualified Division will elect a Delegate to the annual Assembly, who will serve also as a member of the Board of Directors.

Authority for setting up the Divisions and for the election of Divisional Delegates–Directors is granted by the Constitution under Articles V and IX, which provide for the grouping of members and the election of Directors.

The purpose of the amendments in this area is to recognize explicitly the office of Divisional Delegate–Director on the same basis as the office of Regional Delegate–Director. A related amendment permits combining the offices of Secretary and Treasurer. This allows the election of an additional Director, without enlarging the Board of Directors, if this seems advisable or necessary.

Of the members who voted, 29 596 voted for the amendments in the Divisions category, 1321 against, 1478 blank ballots, and three invalid.

The purpose of the amendments under the schedules category is to advance the date of the annual Assembly, so that all new Directors can be advised of their election at the same time, approximately two months before assuming office.

Another amendment in this category concerning the date of identification of voting members increases the time for preparation of the ballots by approximately two weeks. The extra time is needed to permit the selection, from the list of all voting members, of those eligible to vote in the individual Regional and Divisional elections.

The vote on the category was 30 178 for, 727 against, 1492 blank ballots, and one invalid.

Before the amendments, the Constitution was interpreted to recognize the right of members to nominate by petition candidates only for Institute Officers and the Board of Directors. The amendments in the petitions category extend this right explicitly to nominate candidates for elective office in other organizational units of the Institute, such as Groups and Sections. The amendments also provide that the number of signatures required for petitions shall be specified in the Bylaws.

This category's vote was 29 744 for, 1103 against, 1549 blank ballots, and two invalid.

The amendments in the legal category were recommended by legal counsel for two reasons: (1) to conform to the recently enacted New York State "Not-for-Profit Corporation Law," which has replaced the "Membership Corporation Law," under which the Constitution was written previously; and (2) to conform to the language of the IEEE's tax-exempt objectives as recognized by the Internal Revenue Service. No change in any IEEE activity is involved in these amendments.

The vote was 30 168 for, 736 against, 1491 blank ballots, and three invalid.

The amendments in the "other" category are of an editorial nature. The phrase "nonnational," which characterizes IEEE's scope in Article I, was found to have a negative connotation and often be misunderstood. The word was changed from "nonnational" to "transnational," conveying that IEEE's activities extend across national boundaries.

The addition of the word "Boards" in Section 6 of Article VII recognizes IEEE's six Boards for Awards, Conferences, Educational Activities, Publications, Regional Activities, and Technical Activities.

The vote in the "other" category was 29 456 for, 1137 against, 1803 blank ballots, and two invalid.

Life insurance plan increased to 60 percent

An unprecedented 60 percent dividend credit has been declared for all members insured under the Life Insurance Plan during the policy year, which ended on September 1, 1970.

The next notice of payment will reflect a 50 percent credit, and the remaining 10 percent will appear on the following second notice. The credit will be given in two installments because it will cover more than a full semiannual payment for most insured members.

Annual dividend credits, amounting to a substantial percentage of premium contributions made by insured members during the previous policy years, have been made since the beginning of the Life Insurance Plan. The rate was 25 percent for the first two policy years, 35 percent for the third and fourth years, 30 percent for the fifth year, 35 percent for the sixth year, 50 percent for the seventh year, and now 60 percent for the eighth year.

These substantial credits have been made possible by the favorable claim experience and the continuing growth of the plan. There may, however, be some years in which claim experience is less favorable, so that it may not always be possible to maintain the current high level of dividend credits.

All inquiries about the Life Insurance Plan and any of the other plans in the Group Insurance Program for IEEE members should be made to the Administrator, IEEE Group Insurance Program, 1707 L Street, N.W., Washington, D.C. 20036.

W. J. Hilty appointed to direct publishing services

William J. Hilty has been appointed Director, Convention and Publishing Services at IEEE, effective January 1, 1971. He succeeds Ralph H. Flynn, who returned to his consulting practice at the first of the year.

Mr. Hilty has the major responsibility for the 1971 March International Convention and Exhibition, held annually in New York. In addition to this responsibility, Mr. Hilty will now also direct the publishing activities of *IEEE Spectrum* and *Proceedings of the IEEE*, the two largest circulation monthlies of IEEE, as well as more than 30 other journals also published by the Institute.

Mr. Hilty was graduated from Fenn College in 1948. From then until 1952 he was advertising manager with the Flexible Bus Company of Loudonville, Ohio. In 1952–1955 he served as advertising account executive with Fuller & Smith & Ross of Cleveland.

Mr. Hilty was advertising representative and advertising sales manager for the American Society for Metals from 1955 to 1961. He became exposition manager at ASM in 1961, assistant director of communications in 1965, and director of communications in 1968. In that post he was responsible for expositions, advertising sales, and public relations.

Mr. Hilty holds a retired reserve commission as a major in the U.S. Air Force. He is president of the National Association of Exposition Managers and the Exposition and Conference Council.

Inside IEEE

Actions of IEEE Board respond to high-priority needs expressed by the members

A report from IEEE's President

Your officers and directors are devoting considerable time to improving the communications networks of the Institute so that the expressed needs of individual members will get attention as rapidly as possible. Through letters and personal conversations with many members throughout the world, we have become keenly aware of the specific needs of IEEE members and we are attempting to respond rapidly to the views expressed.

We are aware that members want to know promptly what actions have been taken in response to their comments and what actions are being considered for the future. The awareness on the part of the Board is why "Inside IEEE" has been restructured to do a better and faster reporting job. This month's column, for example, is the result of special efforts that were made to include a report of the actions at the Board of Directors meeting on January 6, a date that is beyond the normal closing date for this issue.

At this Board meeting, two separate actions were taken to reduce member dues in certain cases. One action applies to unemployed members; the other to members entering the military service. Effective immediately, involuntarily unemployed members will pay only one half of regular dues ($12.50 per year instead of $25) and one half of Group and Society membership fees. Detailed information is given in the boxed notice on page 116 of this issue. Members entering the military service will now be eligible for a substantial reduction in dues while in the service. Any IEEE member who enters the military service on a full-time basis is eligible for this dues reduction. He need only submit evidence of this fact to IEEE Headquarters, and then he will be able to continue his membership with all privileges by paying only $8 annual dues instead of the usual $25. The arrangement may be continued for a total of four years.

Many members in the United States have urged the Institute to attempt to influence legislation, particularly with regard to improving the economic status of the membership, and to provide various member services directly concerned with economic betterment. Quite apart from the question of the appropriateness of IEEE participating in such activities in view of its present Constitution is a matter of organizing a concerted effort in a short time that can be expected to be truly effective in achieving the desired objectives. To provide those Institute members with an immediate opportunity to fulfill their desire for greater involvement in the nontechnical areas of the profession, the Board approved at the January meeting an arrangement with the National Society of Professional Engineers (NSPE) whereby certain services of that organization can be obtained by IEEE members at a substantial saving compared with NSPE membership dues. The charter of NSPE permits it to engage in legislative activity and to offer services related to the economic status of its members. Under one of the options available, for an annual fee of $15 an IEEE member can obtain copies of a legislative bulletin, a legislative action report, and a legislative opinion request, all of which are concerned with engineering-related national (U.S.) legislation, as well as numerous other services. Additional details are given in the boxed notice on page 116 and more information, which is omitted this month because of time limitations, will be given in the March issue. An interesting account of the activities of NSPE is given by IEEE Fellow and NSPE President Harry Simrall in this issue. It is to be noted that this action by the Board in no way precludes further consideration of IEEE action in these areas or subsequent action by the Board as a result. Indeed, I am devoting a substantial amount of my Institute time to formulating further alternatives for action in this broad area of vital member concern. The move however does provide a virtually immediate opportunity for those members who wish to take action in the nontechnical area to do so at a minimum cost. Directors, as well as Section chairmen, Group chairmen, and Society presidents, have received copies of the press release on this subject and can provide further information immediately, if desired.

In our talks with members we have also learned of their continued interest in the availability of materials for continuing education. Furthermore, we have found out that many members have not been well informed about the educational offerings presently available from the IEEE. These offerings have been publicized in the past but only on an individual basis. One could easily have overlooked one or more announcements in *IEEE Spectrum*. To rectify this communication difficulty we are presenting in Table I a complete inventory of educational services presently available. Included in the table are seminar and short course publications, slide tape lectures, cassette colloquia, IEEE Soundings, films, and video tape lectures. Complete ordering information and an order form are included. Glen Wade, Chairman of the Educational Activities Board (EAB), is presently directing his attention to the development of new educational items in the series with particular attention to applications-oriented material. He would welcome your suggestions in this connection (address him at Headquarters in New York). He is also working in cooperation with Vice President Tanner and the Regional Directors to obtain appreciable improvement of organized educational activities at the Section level.

Another development discussed at the Board meeting that has important educational implications for our membership is the creation of the IEEE Press. This new entity will be publishing special collections of reprinted papers, principally from IEEE Journals, augmented by special introductory or tutorial material. To serve the expressed interests of the total membership, present plans call for an applications-oriented series of books as well as one primarily concerned with theoretical matters. One of the first books under consideration is concerned with digital signal processing. Books in both series will be available at nominal prices, with the first book scheduled for publication in mid-1971. Others are expected to follow later this year. Ben Coates, Vice President for Publication Activities and Chairman of the Publications Board, is working closely with Glen Wade in the initiation of this venture.

The IEEE is placing increased emphasis on students and student affairs under the leadership of Vice President

I. IEEE EDUCATIONAL OFFERINGS

Slide Tape Lectures

On loan to Sections and Branches.
Handling charge: $2.50 to Student Branches, $10.00 to all others.
May be purchased outright at the prices listed.

Number	Title	Price, $
Microelectronics		
67-M-1	Terminology and Classifications—S. M. Stuhlbarg	20.00
67-M-2	Thin Film Electronics—M. Penberg	38.50
67-M-3	Thick Film Networks—R. C. Early	32.50
67-M-4	Hybrid Microelectronic Bonding and Packing Methodology—M. Ohanian	35.50
67-M-7	Integrated Circuits Fabrication—C. M. Awad	51.50
67-M-8	Effect of Process Characteristics and Control on Integrated Circuit Design and Specifications—R. E. Bohn	52.50
67-M-9	Bipolar Digital Circuits—W. T. Rhoades	39.50
67-M-10	Practical Application of Monolithic Analog Circuits—J. F. Gifford	41.50
67-M-11	Microwave Applications—V. Gelnovatch	31.50
67-M-12	Microelectronic Packaging: Current Techniques and Future Trends—J. J. Staller	44.50
67-M-13	Impact of Large Scale Integration on Packaging and Interconnection of Digital Electronic Systems—J. W. Lathrop	44.50
67-M-14	Multilayer Wiring Technology—A. Levy	23.50
67-M-15	Mechanical Wiring Technology—L. Katzin	33.50
67-M-16	Thermal Design Considerations in Microelectronic Circuitry—J. Baum	28.50
67-M-17	Microelectronics Reliability—E. C. Hall	35.50
67-M-18	The Future of Integrated Circuits—G. R. Madland	32.50
67-M-20	Systems of the Future—W. W. Gaertner	72.50
Hybrid Microelectronics Circuits		
68-HC-2.2	Thin Film Hybrid Microcircuit Interface Design Problems—H. R. Larsen	43.50
68-HC-4.1	Device Microassembly: An Overview—M. Ohanian	32.50
68-HC-4.3	Medium Scale Integration—W. P. Dean	30.50
68-HC-5.1	Cost Effectiveness of Microcircuit Hybrid Packaging—E. R. Mullen	31.50
68-HC-6.2	Microcircuit Packaging and Hermetic Sealing—G. K. Fehr	38.50
68-HC-6.3	Plastic Encapsulation of Hybrid Microelectronic Circuits—J. L. Hull	58.50
68-HC-8.2	Thin Film Applications and Case Histories—C. M. Neal	50.50

Cut along dotted line

IEEE Education Registrar
345 East 47th Street
New York, N.Y. 10017
U.S.A.

Please send the following: (Please print)

Quantity	Item—Number or Title	Amount in Local Currency

Total Amount Enclosed in Local Currency _____

Check one: ☐ IEEE Member ☐ Nonmember
IEEE Membership Number _____

Name _____

Address _____

City, State, Zip Code _____

Seminars, Short Courses

Seminars and Short Course Publications are available at the following prices. The material listed consists of Course Notes and Study Outlines. Supplemental textbooks, available at local bookstores, are given in parentheses.

Course number	Title	Price, $
69-E-1	Fundamentals of Integrated Circuits ("Analysis and Design of Integrated Circuits," Motorola, McGraw-Hill; "Semiconductor Electronics Education," Committee Paperbacks, J. Wiley [5])	10.00
69-E-3	Fundamentals of Reliability ("Probabilistic Reliability," M. Shooman, McGraw-Hill) ASQC/IRE Reliability Training Text, IEEE	7.00
70-E-1	Monolithic Integrated Circuits	10.00
70-E-3	Applications of Digital Filters ("Digital Processing of Signals," B. Gold and C. M. Rader, McGraw-Hill)	7.00
70-E-4	Using Quantum Electronics Today	10.00
70-E-5	Computers and Patient Care (Study outline only included)	5.00
68-E-1	Computer Programming for Electrical Engineers	10.00
68-E-2	Problem Solving for Electrical Engineers Using Time-Shared Computers ("Fortran with Engineering Applications," D. D. McCracken, J. Wiley)	10.00
70-E-6	Fundamentals of Supervisory Control	5.00

Cassettes

For sale to individual members and nonmembers.

		Price, $ M	Price, $ NM
Cassette Colloquia			
IPL-69	Workshop on Computer Languages for Process Control	6.00	10.00
70-CC-01	The Future of Air Traffic Control	7.00	12.00
70-CC-02	Management Principles for Engineers	6.00	10.00
70-CC-03	Integrated Circuits for Consumer Applications	7.00	12.00
70-CC-04	Principles for Programming Process Computers	6.00	10.00
IEEE Soundings			
	An annual subscription service consisting of four cassettes per year. Subscription	26.00	42.00
	Individual cassettes:		
70-ES-01	Systems Engineering: Art, Science and Politics	7.00	12.00
70-ES-02	Electronics in Commercial Aviation	7.00	12.00

Films

The National Committee for Electrical Engineering Films has made available to the IEEE Film Library the following films. Available on a loan basis, a handling charge of $10.00 has been established.

Movies from Computers
Electromechanical Dynamics of Synchronous Machines
Complex Waves I
Complex Waves II
Wave Velocities, Dispersion, and the Omega–Beta Diagram
Harmonic Phasors
Response of a Resonant System to a Frequency Step
Introduction to the General Purpose Oscillosope

Additional titles in the Film Library include:
($5.00 handling charge)

Artificial Intelligence—Present and Future
Traffic Control
Controlled Thermonuclear Fusion and Electrical Engineering
Engineering—The Challenge of the Future
(Guidance film—postage only)

Video Tape Lectures ($10.00 handling charge)

Workshop on Thick Film Hybrid IC Technology (two reels)
What Are You Going To Do for Me in the 70s IEEE?

Exchange rates

U.S. dollars	$25.00	$10.00	$5.00	$1.00	75 cents	50 cents	25 cents
Francs[1]	140	56	28	5.60	4.20	2.80	1.40
Italian lire[2]	15625	6250	3125	625	470	313	157
British pounds/ shillings/pence[3]	10/8/4	4/3/4	2/1/8	0/8/4	0/6/3	0/4/2	0/2/1
Spanish pesetas[4]	1736 pta	694 pta 44 ct	347 pta 20 ct	69 pta 44 ct	52 pta 08 ct	34 pta 72 ct	17 pta 36 ct
Yen[5]	9000	3600	1800	360		180	90
Deutsche marks[6]	91 m 50 pf	36 m 60 pf	18 m 30 pf	3 m 66 pf	2 m 75 pf	1 m 83 pf	92 pf

(A) Checks should be made payable to:

1. Bank check: Chase Manhattan Bank for the Account of The Institute of Electrical and Electronics Engineers.
   Postal check: "C.M.B. Postal Check Account: Paris 11-99": the correspondence stub must indicate "For the Account of IEEE"
2. Banca Nazionale del Lavoro for the Account of The Institute of Electrical and Electronics Engineers
3. Chase Manhattan Bank for the Account of The Institute of Electrical and Electronics Engineers
4. Chase Manhattan Bank for the Account of The Institute of Electrical and Electronics Engineers
5. Chase Manhattan Bank for the Free Yen Account of The Institute of Electrical and Electronics Engineers. (Form 1-A must be prepared in triplicate and submitted with payment. Write IEEE Hq. for forms.)
6. Chase Manhattan Bank for the Account of The Institute of Electrical and Electronics Engineers

(B) Send the order form and payment in your local currency directly to:

1. Chase Manhattan Bank, 41 Rue Cambon, Paris 1er, France
2. Banca Nazionale del Lavoro, 119 Via Vittorio Veneto, Rome, Italy
3. The Chase Manhattan Bank, N.A., P. O. Box 440, Woolgate House, Coleman Street, London E.C. 2, England
4. Banco Hispano Americano, Casa Central, Madrid, Spain
5. Chase Manhattan Bank, C.P.O. Box 383, Tokyo, Japan
6. The Chase Manhattan Bank, N.A., 6 Frankfurt/Main 1, Germany, Postfach 3994

Note: IEEE order form, in every instance, must accompany your payment to the bank to insure proper identification and proper credit when it is transmitted by the bank to IEEE Headquarters. It will not be possible for the bank to take action unless an IEEE order form is submitted with your payment.

Tanner. For example, membership requirements have been simplified for all students contemplating a career in the electrical/electronics profession. As a result of action taken at the January Board meeting, there is now just one grade of Student member. The Student Associate category has been eliminated, and as a result Student Branches will include the former Student Associate Branches. The term "school of recognized standing" has been redefined to include bona fide community colleges, junior colleges, and technical institutes with appropriate accreditation. The transfer of the Student Activities Committee to the Regional Activities Board (consisting primarily of Regional Directors) at the beginning of the year has enabled interaction at the first meeting of this Board in January, which should yield much greater attention to student activities in the various Sections of the Institute.

Repeatedly there was emphasized at the Board meeting the need for substantial increase in attention to the service rendered to the individual member. Good communications between the many volunteers with positions of responsibility and the permanent Headquarters staff are of paramount importance in developing understanding of member needs and responding to them. The appointment of Charles F. Stewart, Jr., to the Headquarters staff as Staff Director, Membership Activities (see page 119 of this issue), provides a Headquarters pivot for the vital Region–Section communications network. He will be working closely with Vice President Tanner, the Regional Activities Board, and staff members Emily Sirjane and Esmi Bidstrup with the primary objective of seeing that the Institute increases both the speed and effectiveness of the service to its members.

Your comments regarding the new format of "Inside IEEE" will be welcomed. You may pass them on to me directly, either in writing or personally at one of the many meetings I will be attending in the near future, or, alternatively, you may wish to express your views to your Section, Group, or Society officers or to one of our Regional or Divisional Directors.

J. H. Mulligan, Jr.
President, IEEE

Charles Stewart named Director, Member Services

Charles F. Stewart, Jr., for the past four years assistant executive secretary of the Metallurgical Society of AIME, has been appointed to the newly created position of Director, Member Services of the IEEE.

Mr. Stewart will report to Donald Fink, General Manager, and be responsible for staff support for the Regional Activities Board. In addition, he will coordinate membership development programs and activities of the Regions, Sections, Subsections, Group Chapters, and Student Branches. He will assist the other departments in matters affecting membership services and development.

Mr. Stewart holds a B.A. in economics from Colgate University. Following graduation, he served with the U.S. Army Paratroops as an operations/intelligence specialist.

He has a background in production planning and marketing in the materials and service-oriented fields. Prior to joining IEEE, Mr. Stewart was responsible for staff administration, operations, and service to the Metallurgical Society's three divisions and their respective technical committees. His duties included coordinating their financial, conference, and proceedings publication activities.

IMPORTANT ANNOUNCEMENT TO IEEE MEMBERS

In January, the IEEE Board of Directors authorized two steps to meet the current needs of the membership: reduced dues and fees for unemployed members, and arrangements for members to take part in legislative, employment, and retirement services under the auspices of the National Society of Professional Engineers.

Unemployed members. If you are currently unemployed through involuntary termination and are actively seeking reemployment, you may continue your IEEE membership through December 1971, with all privileges, publications, and services covered by membership dues (and by Group or Society fees, and subscription fees, if any) *by payment of one half of the established dues and fees.* If you wish to take advantage of this arrangement you must submit a signed statement to IEEE Headquarters that you are involuntarily unemployed and seeking reemployment. *No action to reduce the dues or to rebate payments already made can be taken until you notify Headquarters of your unemployed status.*

If the unemployment notification is received at Headquarters by February 28, 1971 (the established cutoff date for all members whose dues have not been paid), services will be continued without interruption. If it is not possible to meet that date, the unemployment notification can be accepted until July 1, 1971. Membership will be resumed when the notification is received and, upon request, publication services will be carried back to the first of the year, subject to availability of back issues.

When feasible, you can assist IEEE to reduce its costs by sending the one-half payment with your unemployment notification. If you do not submit the payment with your unemployment notification, IEEE will bill you for the half payment prior to the due date of July 1, 1971.

If you are unemployed and have already paid the full dues and fees for 1971, a rebate will be sent to you for the excess paid upon receipt of your unemployment notification and request for rebate.

To assure uninterrupted receipt of publications and services, members presently unemployed and desiring to accept the one-half payment arrangement should notify Headquarters at once, since services must be suspended on February 28, 1971, if your dues and fees have not been paid—unless we have knowledge of your unemployed status.

NSPE services. By special action of the IEEE and NSPE Boards of Directors, IEEE members wishing to take advantage of the services offered by the National Society of Professional Engineers may do so in a cooperative program. Full details of several optional plans will be provided in a later issue of SPECTRUM. Since membership in NSPE is no longer restricted to registered professional engineers and engineers-in-training, NSPE is open to qualified IEEE members who are not registered. In one of the options, IEEE members may subscribe at a special rate to NSPE publications and services without formal membership in NSPE. Included in this option are: bulletins, action reports, and opinion requests on current legislation; eligibility for the NSPE employment referral service; participation in the NSPE salary survey; and eligibility for the NSPE retirement programs.

By this cooperative effort, programs that cannot be offered by IEEE under its scientific, technical, and educational charter are available through NSPE, which is chartered to engage in legislative activities and economic programs.

Inside IEEE

A report from IEEE's President

Employment and education were only two of the many topics that received in-depth consideration at the February meeting of the IEEE Executive Committee. At that meeting the committee reviewed an integrated IEEE program specifically designed to serve our members in these economically troubled times and took appropriate steps to start action on two elements in the program. Many members in the United States, and some outside, have urged that the Institute take constructive action for those affected by deteriorating economic conditions. The program at hand is believed to be one step in that direction. It is aimed at assisting a member to make a realistic assessment of his future career possibilities as an electrical engineer and at providing guidance in taking appropriate action.

The return postcard appearing on page 149 in this issue is intended to give us an accurate count of our members who are either unemployed or underemployed. If you are in either category please complete and return the card as soon as possible. The data collected will be used by the Institute for future action programs and a summary will be forwarded to appropriate groups in the U.S. Government and elsewhere for use in the development of programs aimed at reducing unemployment of scientists and engineers.

While this information is being collected from the membership and analyzed, a task force under the chairmanship of Executive Committee member W. O. Fleckenstein will be directing its attention to obtaining a quantitative picture of the economic conditions in the electronics, electrical, and related industries. It will attempt to determine where the profession stands economically, what the principal forces of change are, and what the trends are likely to be in the 5–10-year period ahead. Finally, from studies presently being conducted by groups in the U.S. Government, we expect to have data by about mid-year regarding anticipated demand for engineers in various specialties and geographical locations. The totality of the information collected should allow an individual to make decisions concerning his future career on a considerably better factual basis than now appears to be possible.

We believe, however, that more than factual data can be provided to assist one in mid-career (age 35 to 50) in making decisions about one's future. Unemployment at the peak of one's career can raise major questions of individual career commitment, skill transfer, physical mobility, and related factors. This condition, combined with the highly specialized skill and level of income and standard of living that this group has, has caused increasing concern over the lack of definitive knowledge covering mid-career counseling. Unfortunately, normal job vocational guidance and placement techniques do not offer the models for new approaches that are perceived to be required. Because of this situation the Executive Committee has arranged for a planning and review conference, to be held early in March, concerned with the explicit and implicit problems in mid-career guidance. Those present will be specialists from various professional fields associated with this problem area. It is intended that their recommendations will be translated as appropriate into programs under the purview of the Educational Activities Board aimed at providing direct benefits to the membership of the Institute. The results of the conference will also be made available to interested agencies of the U.S. Government and others concerned with manpower development and utilization.

The activities just described, however, do not respond to the immediate need of many of our members who now face unemployment. To this end, we intend to continue the employment counseling workshops conducted in cooperation with the AIAA and the Department of Labor. These are aimed directly at improving an individual's effectiveness in identifying and obtaining a suitable career position. Series of these workshops have been conducted with considerable success in Baltimore, Boston, Long Island, Los Angeles, San Francisco, and Washington. Literature used in the workshops is available without charge to any member by contacting J. M. Kinn, Director of Educational Services, at IEEE Headquarters. Furthermore, I shall continue to present to various groups of the U.S. Government concerned with reduction of unemployment of scientists and engineers specific suggestions for action that will be based on the communications received from the Institute membership.

Education

A major function of the Institute is the continuous education of the membership—a process using a variety of methods in diverse subject areas. A major effort to meet the needs of our members in this area is a cooperative program among the Regional Activities Board (RAB), the Educational Activities Board (EAB), and the Technical Activities Board (TAB). These operating units of the IEEE have embarked upon unprecedented and ambitious programs of interrelated activities aimed at bringing each IEEE member the maximum possible benefits from his IEEE membership.

A partnership is emerging between TAB and RAB whereby TAB will produce technical programs and material—with the assistance of EAB—and this material will be made available to the individual member through the communications network of RAB. Section officers, who at times may have felt that they were out on a long limb in providing suitable programs, will be furnished with many aids to clarify and simplify their jobs. They will be provided by TAB with speaker rosters, lists of educational materials available, and assistance in running Section educational courses. There is now an increased emphasis on encouragement of inter-Section activities, including cooperation in exchanging speakers and organizing speaker tours in various local geographical areas. All of these programs have a single objective in mind: to serve the individual IEEE member better.

The close liaison between EAB and TAB is resulting in the various Groups setting up committees on education or naming education officers. Eleven Groups have already done so. According to EAB, such committees or officers might do the following: develop tutorial material on particular aspects of our technology; produce bibliographies in specific technical areas; make suggestions for IEEE Press offerings in the applications area; provide inventories of educational materials that the Group has produced in the past; sponsor educational tours abroad; contribute to IEEE's Cassette Colloquia and Dial Access Technical Educational Service;

sponsor national lectureships; and help educate IEEE on matters of special technical interest such as the power needs of the United States and siting of power plants.

Role of the Section Chairman

It is vital to your interests to get to know your local Section Chairman, for it is on the local level that you have an excellent opportunity to express your desires, interests, and complaints in person. Once you know him, get him to know your needs. Your Section Chairman is one of your important spokesmen in IEEE affairs, but he cannot represent your interests if he doesn't know what they are.

If you don't know who your Section Chairman is, you can find out by looking at the listing at the end of this column.

Regional Committee Meetings

One good example of how you can benefit by working through your Section Chairman is tied in with this month's IEEE International Convention. At the Convention a series of Regional Committee meetings will be held. Each Regional Committtee includes all the Section Chairmen in that particular Region. Many important matters will be discussed at the meetings. One topic expected to receive serious consideration is how IEEE should budget its finances for 1972. Here is an opportunity for you to get your thoughts known on how IEEE should allocate its funds among its various activities. Speak to your Section Chairman. Make certain that he or his representative is planning to attend his Regional meeting and make sure that he is aware of your views on priorities in budget allocations and your feelings on any other IEEE matters of importance to you.

Section Chairmen Workshops

Another important event during the IEEE International Convention will be the holding of Section Chairmen Workshops. You may ask how you will benefit from these if you are not a Section officer. The answer is obvious once you are aware of their purpose. The workshops are designed to educate the Section officers in their duties and to teach them how to serve better the members in their local Sections. Section Chairmen and Vice Chairmen attending these workshops will be asked such questions as: Are you serving the interests of the members in your Section? What kind of personal contact do you have with the members in your Section? How do you go about finding out the needs of the members in your Section? How do you implement these needs once they are known to you?

Once again, if you want to obtain maximum benefit from your membership make certain that your Section Chairman or his representative will be attending these workshops.

Communications

The Regional meetings and Section workshops are two elements in our continuing program of improving the two-way communication process in our Institute. The Groups will be conducting a comparable series of leadership training programs during the International Convention. These will be for Group/Society officers and other members of Group/Society Administrative Committees and will consist essentially of an introduction to modern management concepts and their application to Group/Society operations.

Finally, I direct your attention to the Highlight Session at the International Convention on Monday evening, March 22. If you attend the Convention, I hope that you will be present at this session. At that time I expect to report further on activities of the Institute, and the other officers and chairmen of selected boards and committees will be available to respond to questions from our members.

J. H. Mulligan, Jr.
President, IEEE

A new IEEE service—group flights to Europe

IEEE has now made available to its members, by action of the IEEE Executive Committee, a new service of "affinity group" flights to Europe, in order to facilitate attendance at the various IEEE-sponsored European conferences in 1971.

With reductions of almost 50 percent in some cases (when compared with the regular economy fares), this new service, which is *not* a charter group arrangement, will be of particular interest to those members wanting to attend Eurocon '71, to be held in Lausanne, Switzerland, on October 18–22.

Never before offered to IEEE members, this service is being conducted for IEEE by the National Center for Education Travel, Inc., located in Washington, D.C.

In addition to saving up to $100 per round-trip ticket (when compared with individual excursion fares), IEEE members will have a choice of several scheduled round-trip flights to Europe on such major airlines as Pan Am, TWA, and BOAC. In many cases several flights spanning conference dates are offered to accommodate members wishing to include other business or vacation activities in their trips.

Eligible travelers under this arrangement are IEEE members of six months' standing, and their spouses, dependent children, and parents residing in the same household. Children from 2 to 12 years of age fly at half-fare.

In order for a member's reservations to become effective, 40 people must sign up for the same flight. As soon as groups of 40, each called an "affinity group," are assembled, at least 30 days before desired departure, reservations are confirmed by NCET. In some cases, a member's reservations for a particular flight may not be confirmed. Members should try to keep their schedules flexible in case alternative plans have to be made. The member will be notified and possibly asked to switch to another flight. However, in most cases the first-choice flight is assured.

IEEE members interested in these flights should refer to the listing of flights on page 127 in this issue and then return the reservation form to NCET, 1601 Connecticut Ave., N.W., Washington, D.C. 20009.

The administrative costs of this "affinity group" flight program will be borne by a surcharge of $10 included in the cost quoted in the listing on page 127. No part of these expenses will be borne by IEEE general funds, nor by any IEEE members not participating in the program.

Two business seminars are now available from IEEE

Two business games covering the fundamentals of financial management and computer programming are now available as correspondence seminars through IEEE.

The first, the Management Game Seminar, permits participants to make all the key decisions affecting profit or loss for a simulated company. It is particularly suitable for those who want to find out if they have corporate managerial ability and how to use it. Among other things learned by taking this seminar are how to take executive responsibility; what the fundamentals of company management, corporate financial reporting, and "break-even" analysis are; and how to make clear, concise financial reports.

The second game, the EDP Game Seminar, teaches what a computer can do, how it does it, and what the functions of time-sharing terminals are. It is designed primarily for noncomputer executives who have to deal with computer professionals. Participants in this game are instructed in the use of Fortran and computer theory. A discussion of hardware is introduced near the end of the seminar.

Both courses cost $45 each, take 12 weeks to complete, and are conducted solely by correspondence. Inquiries should be directed to Education Registrar, IEEE Headquarters, 345 E. 47 St., New York, N.Y. 10017.

Educational activities—EAB's plans for the year

Since the creation of the Educational Activities Board three years ago, that Board, under the leadership of its chairmen, John N. Shive and John G. Truxal, and with the able assistance of John M. Kinn of the Headquarters staff, has generated a number of valuable new educational services directed for the most part to two specific audiences—the individual member-at-large and the various geographic units, such as the Sections, Chapters, and Student Branches.

Last month a complete inventory of the educational material and services that are available from Headquarters was published in President Mulligan's *IEEE Spectrum* report in "Inside IEEE." Briefly, the inventory contains listings of course notes, slide tapes, films, video tapes, cassette colloquia, and the new quarterly educational service "IEEE Soundings." These offerings provide a basis from which the present EAB plans to operate in order to develop new educational material and programs for the members.

As part of the approach to achieving these goals, I have had numerous discussions with IEEE Vice President Robert H. Tanner and the Regional Directors (RAB) and Vice President Harold Chestnut and the Presidents and Chairmen of our Societies and Groups (TAB). Specifically, I have asked members of RAB to encourage within the Regions and Sections:

- The appointment of officers to be in charge of educational activities within these units.
- The assessment of Regional and Sectional needs in terms of continuing education.
- The sponsorship of Regional and Sectional programs of continuing education.
- The evaluation of educational material coming from IEEE.
- The promotion of continuing education services.
- The participation of knowledgeable members of the Regions and Sections in helping to educate the lay society on technological issues.
- The participation in cooperative programs with other IEEE units in such activities as helping to arrange for education tours abroad.

To the members of TAB I have suggested a number of educational activities, including those listed by President Mulligan in his report in this issue of *Spectrum*.

Other areas of EAB activity of which you should be aware include the following.

Unemployment. Last fall, with the urging of President Mulligan (then Vice President, Regional Activities), the EAB staff worked with the staffs of other societies, notably AIAA, to provide IEEE Sections with the ability to hold workshops for unemployed members. These workshops dealt with the psychological and pedagogical factors required in developing the capability of an individual to project himself effectively in both written and oral communication. Workshops of this type have been held in Los Angeles, Baltimore, Boston, and Washington, and on Long Island, among other locations, and one is being scheduled for members just prior to and during the IEEE Convention and Exposition —specifically, on Thursday evening, March 18, Monday evening, March 22, and Thursday evening, March 25, at the New York Coliseum. .

Dial Access Technical Education (DATE). The experimental system known as DATE was put on line in December for use by the New York Section members. It consists initially of 25 taped lectures (which range from 8 to 20 minutes in length) describing the current status of a segment of technology; for example, Display Devices (by I. Reingold), Microwave Integrated Circuits (by H. Sobol), Active Filters (by S. K. Mitra), Computer Time Sharing (by W. R. Beam), and Thermionic Systems (by S. N. Angrist). These subjects have been prepared with the cooperation of the Groups.

The testing of DATE is continuing and results look promising. You will be hearing more about this system in the future.

In addition to the foregoing programs of continuing education, a number of new programs are in the planning stage. For example, EAB is involved in a cooperative effort with Vice President C. L. Coates and IEEE PRESS to produce an applications-oriented series of books and course offerings. We anticipate that this material will become part of an educational program to be brought to the various Regions for the convenience of the general IEEE member. One of the fields under close scrutiny is that of minicomputers. If we are successful, the activity in this regard will culminate in short courses involving written material, tape lectures, and presentations by experts at various Regional meetings. In this way the applications and relevant issues for a particular Regional group can be treated.

The EAB is also presently engaged in developing new approaches for precollege guidance, responding for the Institute to requests for positions on major reports (currently we have prepared a response to the "Preliminary Report of the Engineering Technology Study" conducted by ASEE), and continuing its overall monitoring of the accreditation of universities in the U.S.

In future issues of *Spectrum* I shall report to you on other important EAB activities. Your comments on these educational efforts and your suggestions concerning what we should be doing and how we may improve on what we are presently doing will be most welcome.

Glen Wade
Chairman
IEEE Educational Activities Board

Membership and transfers unit reports member increase

The IEEE Bylaws provide that the Membership and Transfers Committee shall plan and develop methods of extending the membership of IEEE and promoting transfers in grade, to the end that all members shall occupy the highest grade for which they are qualified.

In 1970 the Membership and Transfers Committee (M&T) set a membership goal calling for each IEEE Section to realize a 10 percent net increase in membership during the calendar year. Several programs were undertaken to assist in achieving this high objective.

A slide presentation "Why M&T?" was extensively used during the year at Regional Committee meetings, Section Workshops, and Section Executive Committee meetings to stress the importance of organizing and monitoring effective M&T programs at the Section level.

Regional Directors gave the support necessary to generate M&T activity at the grass-roots level, since the success of the membership goal depended to a great extent upon the degree of local attention given it by the Section Chairman and those serving with him on the Section Executive Committee. In an organization the size of the IEEE, the person-to-person approach is vital not only in recruiting new members, but in identifying and attempting to serve the special needs and interests of current members by encouraging their involvement and interest in the Institute. With the cooperation of the Regional Directors, a concentrated effort was made during the past year, through the Sections, to reinterest former members in continuing their membership. The subsequent substantial reduction of members in dues arrears can be traced to this direct communication with the members, which only the Sections can provide.

During the year members of the IEEE staff operated Member Services Desks at 20 major conferences sponsored or cosponsored by the IEEE; 575 membership applications and 656 applications for enrollment in the IEEE Groups and Societies were deposited. In addition, attention was given to 3011 inquiries from members and prospective members during these conferences.

The results of the 1970 M&T program are gratifying. At the year's end, the number of new elections (Student Members as well as other grades), the reinstatement of former members, and the renewals of membership exceeded the numbers in all of these categories over the prior two years. Even in this period of economic recession, the IEEE membership reached an all-time high of 169 059 at the end of 1970. Forty IEEE Sections, identified in the following, achieved a net increase of 10 percent or more in membership during the year.

REGION 2

Johnstown
Lehigh Valley
Ohio Valley
Susquehanna

REGION 3

Central North Carolina
Chattanooga
Eastern North Carolina
Fort Walton
Hampton Roads
Mobile
Palm Beach
Panama City
Pensacola

REGION 4

Northeastern Wisconsin

REGION 5

Central Texas
Corpus Christi
Kansas City
Ozark
South Plains

REGION 6

Boise
China Lake
Fort Huachuca
San Diego
Spokane
Utah

REGION 7

Canadian Atlantic
Hamilton
Quebec
Southern Alberta

REGION 8

Denmark
Egypt
France
West Germany
Israel
Middle and South Italy
North Italy
Switzerland

REGION 9

Colombia
Puerto Rico and Virgin Islands
Rio de Janeiro

M&T activity is well under way for 1971. The committee has been reorganized to include technical and geographical representation and the involvement of the Student Activities Committee to coordinate M&T activity effectively on an Institute-wide basis. The emphasis on successful M&T programs through the Regions and Sections will continue. Representatives from the six Technical Divisions are developing plans for attracting the membership, and new members, in the activities of the Groups and Societies. A concentrated program to involve graduating Student Members in the affairs of the Institute will have high priority in 1971. The M&T looks forward to continued interest and support from all IEEE organizational units and from individual members in these activities in the ensuing year.

W. L. Sullivan
Chairman, M&T

IEEE EMPLOYMENT SURVEY

The IEEE is vitally concerned with the employment status of its members and is cooperating with other societies and national bodies to determine the current status of its non-student members' employment. We request ALL NON-STUDENT MEMBERS to answer the questions below and return this pre-paid postcard to Headquarters immediately:

1. GENERAL TOPICS, CIRCUITS AND ELECTRONICS
2. ELECTRON DEVICES AND MATERIALS
3. ELECTROMAGNETICS AND COMMUNICATION
4. INSTRUMENTATION AND SPECIAL APPLICATIONS
5. POWER AND INDUSTRY
6. SYSTEMS AND CONTROL THEORY
7. CONTROL TECHNOLOGY
8. COMPUTER PROGRAMMING AND APPLICATIONS
9. COMPUTER SYSTEMS AND EQUIPMENT

IEEE EMPLOYMENT SURVEY 3/71

My current employment status is:

1.) employed ☐
2.) temporarily employed ☐
3.) unemployed ☐
4.) under employed ☐
5.) unemployment imminent ☐

Place my name on list for future employment information ☐

PLEASE FILL IN BOX WITH NUMBER FROM LIST AT LEFT THAT BEST DESCRIBES YOUR PAST OR PRESENT TECHNICAL SPECIALTY ☐

(OPTIONAL)

NAME

ADDRESS

MEMBER NUMBER

Here's an IEEE response to your professional needs

NSPE services and publications now available to IEEE members

Few engineers doubt the need for strong technical groups, but today's *concerned* engineer wants more. The areas in which he is most interested include government liaison, both the legislative process and the administrative decisions, and at the Federal, state, and local levels. He is concerned with broad employment problems ranging from the current concern for unemployment to representation in particular employment problems such as portable pensions, patent rights, and registration. He is anxious for unified action in improving the image and status of the profession through public relations, and in such professional matters as guidance, ethics, and cooperation and liaison with other professional groups.

Many IEEE members have expressed a desire for greater participation in the nontechnical problems facing the profession. The IEEE has worked out an arrangement with the National Society of Professional Engineers whereby IEEE members may avail themselves of certain services and publications offered by the NSPE. (*A convenient coupon appears on page 119.*)

Alternatives Now Open to IEEE Members Are. . .

Subscription to NSPE services. Available at a fee of $15 a year. Services include eligibility for the Professional Engineer Employment Referral Service (PEERS); eligibility for the NSPE retirement program; participation in the NSPE Salary Survey; subscription to the *Professional Engineer* magazine; a member rate on all NSPE publications; and receipt of any or all of the following on request: Legislative Bulletin, Legislative Action Report, Legislative Opinion Request, one practice section newsletter (except Professional Engineers in Private Practice newsletter).

Services from state society and national organization. Available at a fee of $30—$15 to be service charge to national, $15 to be service charge at state level. In addition to the services already mentioned (alternative 1), an IEEE member would receive the state publication and such other state services and participation as might be available, but would have no vote in state society or national activities. Several states have programs of discussions with employers on desirable employment practices for engineers.

Full membership in NSPE. This is available to IEEE members subject to eligibility provisions of NSPE—fee $35 to $75, depending on the particular state and chapter. NSPE members receive all services of the national, state, and local society and have voting privileges. Full membership would enable participation in all activities of the local, state, and national societies in such matters as improving the status of engineers, public relations, community involvement, ethics, career guidance, committee participation, holding office, voting on policy matters, and many others.

NSPE publications and services

Legislative Bulletin. A four-page publication issued monthly, the bulletin summarizes Federal legislation introduced in the Congress.

Legislative Opinion Request. This publication requests the opinion of those receiving it as to their position on various legislative proposals that may be introduced from time to time. It attempts to summarize the elements of proposed legislation. It may be limited to a particular bill, or to several bills introduced on the same subject.

Legislative Action Report. Action reports are issued as legislation progresses through the various stages of consideration. The report suggests to those receiving it the desirability of contacting their legislators concerning the position of the Society and is the mechanism by which the profession can be most effective.

Practice section newsletters. NSPE has four newsletters; one each for engineers employed in government, in industry, in private practice, and in education. The newsletters primarily report important developments in the area of employment for each group of engineers. Items range from significant statistical information to reporting on studies of value to that type of employment, employment practices, and salary and economic considerations.

Professional Engineer Employment Referral Service (PEERS). This service, for which only NSPE members are eligible, permits an unemployed or soon-to-be unemployed engineer to place his name and a short résumé on file with NSPE. These are summarized and sent without individual identification to more than 1000 employers. If an employer is interested in an anonymous summary, NSPE will provide him with the individual's name and address so that he may contact him for a full résumé and any details concerning employment.

NSPE retirement program. The retirement program is a combined annuity and mutual fund program for which NSPE members are eligible. It provides an investment program with guaranteed annuity through an insurance aspect and a variable annuity return via the mutual fund.

Salary survey. The NSPE conducts a biennial survey of its members' incomes and reports the results in breakdowns by age, field of employment, type of work assigned, and degree of responsibility.

Inside IEEE

A report from IEEE's President

IEEE's success in the dissemination of technical information through its many publications is well known. Not so obvious, however, is the increased attention being given by the Institute and its members to public service matters. The interaction of the IEEE with national governments is a conspicuous example of effort in this area. One might also include in the public service category, however, IEEE's role in the transfer of technological information across national boundaries, particularly the multidisciplinary knowledge associated with the solution of various societal problems. An account of some recent efforts along these lines gives added insight to this dimension of Institute activities.

Canadian Communication Task Force

In the IEEE Canadian Region (Region 7), IEEE has recently accepted the responsibility of arranging a series of meetings to facilitate the exchange of information from interested people in the communication and computer fields with the Department of Communication Task Force on Computer Communication. The meetings will have a technical base and will be designed to provide an opportunity for those involved in the communication and computer industries to express opinion and exchange views with the Task Force representatives. The Canadian Information Processing Society is also cooperating. The objective of the meetings will be the formulation of a statement of policy in this important technical area.

JTAC

An IEEE entity with a long history of service to the United States government is the Joint Technical Advisory Council (JTAC), sponsored jointly by the IEEE and Electronic Industries Association (EIA). The Council recently gave an informal briefing to Chairman Burch of the Federal Communications Commission (FCC) and his fellow Commissioners, and Dr. Whitehead, the Director of the Office of Telecommunications Policy (OTP), at the Commission headquarters in Washington. The briefing dealt with the areas of activity having a mutual interest to the OTP, the Commission, and the JTAC in the field of spectrum engineering and utilization.

The JTAC has taken an active role in regard to cable television, and has recommended that the FCC approve the establishment of a National Cable Television Systems Committee. This committee would include representatives from the National Cable Television Association, EIA, and the IEEE. In an allied action, the IEEE Cable Television Task Force has formed a subcommittee to prepare a technical report on recommended frequency plans to be used in cable television systems. It is expected that the report will be of most interest to city administrations, cable television system owners and designers, and manufacturers of cable television hardware.

Interaction with U.S. government agencies

Recently at the initiative of Dr. Harold Chestnut, Vice President for Technical Activities, a series of conferences has been held in Washington, D.C. concerned primarily with increased advisory service to government agencies by the Institute and its membership.

Two meetings have been held with Dr. Hubert Heffner, Deputy Director of the Office of Science and Technology, regarding the principle of forming IEEE Technical Advisory Councils (TACs) to interact with certain government agencies in fields appropriate to IEEE's technical interests. From these meetings the following subjects have emerged as ones for initial exploration: transportation, energy policy, industrial productivity, and technology for developing countries. Here is what has happened as a result of these suggestions:

Transportation. A meeting with representatives of the Department of Transportation identified several different aspects of transportation such as urban, interurban, mass transit, and air traffic control as typical topic areas in which IEEE can contribute. The IEEE Committee on Transportation is clearly one appropriate means of providing advisory services in this technical field.

Energy policy. One branch of the Office of Science and Technology has the responsibility of coordinating many aspects of the production and utilization of electric energy. These include environmental quality considerations associated with the generation of electric power; underground transmission and distribution of electric energy; use of superconductivity as it affects underground transmission and distribution of electric energy; use of solar energy; nature of the future U.S. program in fusion power; and the research and development program in conventional methods of generating electric power, including such items as reliability and EHV equipment. Discussions with representatives in this office have led to the conclusion that an IEEE TAC might be drawn from such sources as TAB Environmental Quality Committee and/or from the IEEE Power Engineering Society.

U.S. industrial productivity. The National Science Foundation (NSF) has been requested to investigate ways of improving U.S. productivity, especially in comparison with results achieved in other advanced countries such as Japan and Germany. The fact that a substantial percentage of U.S. production is involved in service activities

Effective with this issue, "Inside IEEE" has been divided into two separate departments. One department, called "Meetings," covers both IEEE and nonIEEE meetings with calls for papers, program announcements, Calendar, etc. The other department, which retains the name "Inside IEEE," includes reports from IEEE officers and news on IEEE policy changes, awards, and other nonmeeting activities.

Publication schedules did not permit including in this issue a report on the Highlight Session held on March 22 at the International Convention. In the May issue, President Mulligan will summarize his comments concerning Institute activities made at that time as well as report on the progress of various member service programs initiated earlier this year.

is of considerable significance. IEEE skills in the IGA, EM, and SMC Groups and the newly formed Group on Manufacturing Technology seem appropriate to contribute to this problem area.

Technology for developing countries. Representatives of the Agency for International Development have been contacted in connection with this area. It appears that modification of the entire U.S. program dealing with technology in developing countries is being considered and an opportunity exists for the IEEE to help in implementing a new approach. More emphasis will be given to use of industrial assistance and on targeting objectives with specific realizable gains. The United Nations is also embarking on a new "Second Development Decade," which will continue to stress aid in developing countries. Furthermore, Dr. James Palmer of G-SMC, Vice President of the Volunteers for International Technical Assistance (VITA), has expressed a willingness to assist in establishing cooperative IEEE activity here. Some members of the IEEE Computer Control Systems and Power Engineering Societies as well as individuals in the new Group on Manufacturing Technology are considering initiating effort here.

Cooperation with European societies

EUROCON 71, the first regional technical meeting in Region 8 will be held in Lausanne, Switzerland, on October 18–22. An honorary committee in support of this meeting will include the presidents of many of the national electrical engineering societies. Already the following societies have offered their support, and it is believed that others soon will follow suit: the Société Royale Belge des Electriciens (Belgium); Société Francaise des Electriciens (SFE), Société Francaise des Electroniciens et des Radioelectriciens (SFER), and Association Francaise Cybernetique Economique et Technique (AFCET) (France); Verbandes Deutscher Elecktrotechniker (VDE) (Germany); the Institution of Electrical Engineers (IEE) (Great Britain); the Associazione Elettrotecnica ed Elettronica Italiana (AEEI) (Italy); and the Association Suisse des Electriciens (Switzerland). IEEE members will notice in the list of group flights, published on page 54 of this issue, several destined for Geneva for the period October 14–25. These flights present an excellent means of access to a convention that promises to portray the latest European achievements over a wide technological field.

During my visit to Lausanne and Geneva in January with Vice Presidents Tanner and Chestnut, there were several most interesting meetings with the presidents of the French, German, Italian, and Swiss national electrical engineering societies in connection with the formation of the honorary committee and the organization of EUROCON itself. But the discussions also led to several interesting possibilities which should benefit the membership of the various societies. Our Italian colleagues are interested in cooperative membership arrangement in our two societies (AEEI and IEEE). With the Germany society (VDE), we discussed a program for the interchange of distinguished lecturers in selected technical areas between Germany and North America. Vice President Tanner has accepted the primary responsibility of following up both of these beginnings, as well as any similar opportunities which might arise in the near future, with a view to producing concrete recommendations for formal actions.

In conclusion

Member involvement in government advisory service and cooperative ventures with colleagues in other countries are challenging Institute activities not normally associated with Group/Society and Section operations. An opportunity to contribute to the development of national policy or assist in technology transfer across national boundaries is often both instructive and satisfying. The person-to-person exchanges of information inherent in these tasks are a valuable part of one's professional growth—an activity that deserves considerable emphasis throughout the Institute.

J. H. Mulligan, Jr.
President, IEEE

Reprints of Spectrum articles are now available

As a new service to *IEEE Spectrum* readers, reprints of all feature articles are now being offered, starting with this issue. To order reprints, please use the form appearing below, which lists single and quantity prices.

ORDER FORM FOR IEEE SPECTRUM REPRINTS (April 1971)

The price schedule for each article is as follows:

First copy: $1.50. Additional copies: $0.75 each.

Please ship the following reprints:

Title of Article	Quantity	Total Price
Electronic music synthesis for recordings		
The management and the risk		
Linear circuit applications of operational amplifiers		
Introduction to radio and radio antennas		
Effective measurements using digital signal analysis		
Total amount enclosed		

Name

Street Address

City State/Country Zip Code

Return form and remittance to: IEEE, 345 E. 47 St., New York, N.Y. 10017, Att: SPSU

Inside IEEE

A report from IEEE's President

At the Highlight Session on March 22 at the IEEE International Convention I had the opportunity of reporting on the status of various Institute activities as well as affirming member reaction on a number of subjects. Publication schedules did not permit an account of this meeting in the April issue of *Spectrum*, and I am taking advantage of this space to summarize my comments at the meeting as well as describe significant developments since that time.

My formal presentation at the meeting treated both technical and nontechnical matters, with considerably more emphasis in reporting on the latter than on the former. This imbalance in reporting should not be interpreted as evidence of any lack of emphasis on technical affairs within the Institute; indeed, many novel efforts are under way to improve the effectiveness of our technical activities. On the other hand, in the current economic climate, especially in the United States, many of our members have a particular concern with certain nontechnical matters such as their career development. A similar pattern will be noted in the material that follows; technical and nontechnical aspects are discussed, with greater attention to the latter.

Group/Society cooperation with Sections

A goal for the Institute is to identify the needs of our membership and develop the systems that can satisfy them. One of the continuing needs is to bring technical information to the individual members of the Institute that is relevant to their professional obligations. In doing so there is a need to make better use of the various person-to-person communication means, such as the Region–Section network and the Division–Group/Society structure.

Far greater utilization, on a local level, of the strengths and resources available in our Groups and Societies is another aim. This implies much greater concern with Group/Society Chapter activity as well as having the Groups and Societies provide speakers to these local areas where the technical strengths represented in the Group/Society are not readily available.

Clean Air Bill

We have several experimental technical programs in process. One was initiated about two months ago and is now nearly complete. A special task force was set up to make an analysis of the Clean Air Bill that was signed by President Nixon at the end of 1970. This analysis is concerned with the various implications for the electronics industry of that bill. The report and reprints of related technical articles should be available soon.

IEEE Press

Our educational programs that are under development at the moment are designed to give considerable emphasis to applications as contrasted with the research and development aspects. There are now in preparation several special publications that are making use of the newly established IEEE Press. The IEEE Press provides a mechanism for making available technical information other than through the medium of *Transactions*, *Proceedings*, and *Spectrum*. The first volumes in the series will treat applications of high-power semiconductor devices, digital signal processing, and minicomputers. In addition, the report on the Clean Air Bill and related technical articles previously mentioned will be a publication issued by the IEEE Press.

Section and Group workshops

An important element in ensuring that relevant technical information is brought to our membership is the provision of effective leadership at all points in the Institute's structure. To this end, a series of Section workshops was held during the International Convention at which about one third of the Sections were represented. Topics discussed included how Institute funds should be used best to serve the members in local and national activities, the possible effects of constitutional changes occurring as a result of member requests, the new arrangements between IEEE and NSPE, and the problem of funding Section publications in a time of rising costs and decreasing advertising revenues.

Leadership training workshops for Group officers were also held during the Convention and are being considered for WESCON and NEC. The purpose of these workshops is to introduce modern management concepts to Group leaders to make them more effective in communicating with the individual members of the Institute. Topics covered included the management process from a systems point of view; the management problem-solving process; goal setting, planning, and organizing; measures of performance of a Group, of an administrative committee, and of the individual Group leader; and the determination of specific needs of Group members that are to be satisfied by IEEE.

The workshops combine study notes and homework problems received by participants before attending the workshops; class discussions of the study notes; small teams to work out specific problems; and a final class discussion.

Regional meetings and member consultations

The importance of the individual Institute member's views is the motivating force behind a series of consultations now being held in Regional meetings to discuss the 1972 IEEE budget. In April, Regions 3, 4, 5, and 8 held such consultations and several other Regions will be doing so shortly. Several iterations are planned in which representative groups of our members are consulted in order to establish the budget priorities needed for the allocation of the total Institute resources in 1972. Inputs are required to determine where program emphasis should be increased (or decreased) and what the total budget should be to ensure a viable total Institute program that will be responsive to the needs of the members. All members are urged to make their views in this regard known to their Section or Group/Society officers for transmittal to the Regional and Divisional Directors. The names and addresses of the latter are given in Table I. Refer to page 113 of the March *Spectrum* for corresponding information regarding Section chairmen.

In the nontechnical area, we have many programs under way. They are in the broad categories of career develop-

ment, unemployment, portable pensions, and national policy making.

Career development

In career development we are concerned with both employed and unemployed members. The postcard in the March issue of *IEEE Spectrum* has given us a count of individual members who are unemployed or underemployed. Those who returned the postcard indicating they would like pertinent employment aids from IEEE will be receiving shortly a specially prepared package of material.

A continuing program of employment workshops is scheduled. Conducted in cooperation with AIAA, they assist an individual in identifying his capabilities and in presenting these with regard to employment. Table II is a listing showing future workshops scheduled in some of the principal unemployment impact areas together with telephone numbers that can be used to obtain further details.

The important problem of midcareer counseling or midcareer guidance is one which the Institute has addressed by a special conference in March. The specific proposals that resulted from the conference are being considered with the intention of developing specific material to help members in career decisions.

As additional material for these decisions, economic information is being developed on the state of the electronics, electrical, and related industries in the United States. A special task force under the chairmanship of Executive Committee Member W. O. Fleckenstein is charged with identifying the various forces that have put our industry in its present state and making projections with regard to the five- or ten-year period ahead. An Economic Analysis Committee; chaired by Harold Goldberg, Chairman of the Boston Section, is also studying aspects of this problem.

Unemployment

The question of unemployment among scientists and engineers in the United States, or rather action to reduce it significantly, is a subject receiving much attention within IEEE both on the part of staff and volunteers, including your President. A concentrated attack on the problem has been underway for the last several months. Early in March I attended a conference in Washington, D.C., called by Dr. E. E. David, Jr., Science Advisor to President Nixon. Present were Secretary of Labor Hodgson, the Assistant Secretary for Manpower Development, several other individuals from government offices directly concerned with the employment of scientists and engineers, and the presidents of many of the U.S. engineering and scientific societies.

The conference was a direct result of President Nixon's expressed concern for the problem of unemployment among scientists and engineers, and it was addressed to the program of the Department of Labor for attacking unemployment on a local basis in nine high-impact areas: Los Angeles/Orange County, Seattle, Atlanta, Boston, Cape Kennedy, Dallas/Ft. Worth, Huntsville, Long Island, and Philadelphia. Recently, Houston, St. Louis, San Diego, San Jose, and Wichita have been added to the list of high-impact areas.

Subsequent to the March 3 meeting, I obtained the agreement of the presidents of the AIAA, ASCE, ASME, AIChE, and NSPE to have their societies join with the IEEE in providing assistance to the Department of Labor, the Office of Management and Budget, and the Office of Science and Technology in an attack on the unemployment problem at the national level. In an allied move, it is anticipated that in each high-unemployment area there will be formed a Joint Societies Employment Advisory Committee to assist the government in solving problems at the local level. Los Angeles/Orange County was chosen as the location of the pilot local effort. A specific program has been proposed for this area as a result of discussions that John Guarrera, Director of Region 6, or I had with several government representatives, including the Department of Labor's Regional Manpower Administrator in San Francisco. Art Dausch is serving as the chairman of the Joint Societies Employment Advisory Committee in the area, and staff members of the IEEE Los Angeles Council office are involved in support efforts for the committee.

On April 1 Director Guarrera and I had the pleasure of attending a meeting at the Western White House in San Clemente, Calif. There we met with Dr. David, Mr. Hodgson, and a small group comprising leaders of professional societies, private industry, and the academic community, all of whom are working to alleviate the problem of unemployment in the aerospace and defense industries. This was a follow-up meeting to the one held on March 3, and President Nixon joined the group for about an hour. During the meeting Secretary Hodgson announced a $42 million program intended to speed effective productive utilization of currently underused technological talent and to increase employment opportunities and speed job finding among the nation's unemployed engineers, scientists, and technicians.

The new program has three parts:

1. A job-promotion program to bring the federal government and professional societies together to acquaint the private sector, government agencies, and educational institutions with the availability of unemployed and underemployed engineers and scientists.

2. A job-coupling program to expand the use of the National Job Registry established recently in Sacramento and the new job bank system of the U.S. Employment Service to speed and facilitate job identification and the coupling of applicants with jobs for referral purposes. One of the ingredients is a $5 million funding of a Job Search Program to enable applicants to explore tangible job opportunities out of their commuting area.

3. A three-part job-adaptation program to help a man qualify and move to

PRESIDENT MULLIGAN (left), Past-President Clarence H. Linder (lower right), and Director Guarrera (not visible) attended aerospace unemployment meeting in California on April 1, which was also attended by President Nixon.

available jobs. A $25 million job retraining effort will help engineers and scientists move to different but related technological fields, particularly into low-productivity industries. A $10 million moving-expense-reimbursement program will enable those who are able to locate jobs out-of-area to move their families to that area together with their personal belongings and household goods. A $2 million program will take small groups of professionals and assign them to explore the kinds of jobs that exist in traditional sectors that need technological talent. They will then relate those jobs to the kind of talent that is available in the unemployed groups of engineers and scientists today and make recommendations for bringing the two together through various new types of conversion and retraining methods.

At this writing it appears that the informal coalition of professional societies mentioned previously can provide valuable assistance to the Department of Labor in the implementation of this program. Several discussions in this direction have already occurred in which Director Guarrera or I have been involved. The developments in this connection are quite rapid, but an attempt is being made to keep Regional and Divisional Directors well informed of progress for the benefit of their constituencies.

With regard to the long-term problem of unemployment, it is evident that there needs to be developed national policies for manpower planning and utilization. When a federal program of substantial size is to be brought on line, it appears that there should be a "manpower assessment" of the manpower needs, including those in science and technology as well as in other areas, the educational programs required, and related factors associated with staffing the program. By the same token, prior to phasing out a program of substantial size, one needs a comparable manpower assessment. This is an area in which the IEEE and other societies can contribute in the development of recommendations.

Portable pensions

Many of our members have expressed considerable interest in portable pensions, and I have investigated legislation on the subject pending in the U.S. Congress. Two bills that bear directly on the subject are S.2, introduced in the Senate by Senator Javits, and H.R.1269, introduced in the House of Representatives by Representative Dent. If the Javits bill or a modification of it in essentially the same form is passed, then for a particular pension plan to be approved for tax advantages by the Internal Revenue Service, it will have to

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Tokyo, Japan 100
03 501-4111 Ext. 2016

Division 1
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Division 2
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412 256-2586

Division 3
(Broadcasting, Broadcast and Television Receivers, Aerospace and Electronic Systems, Communication Technology, and Electromagnetic Compatibility)
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Division 4
(Antennas and Propagation; Electron Devices; Microwave Theory and Techniques; Sonics and Ultrasonics; Parts, Hybrids, and Packaging; and Magnetics)
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Division 5
(Computer Society)
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Division 6
(Reliability; Engineering Management; Engineering in Medicine and Biology; Education; Engineering Writing and Speech; Systems, Man and Cybernetics; Geoscience Electronics)
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Worcester Polytechnic Institute
Department of Electrical Engineering
Worcester, Mass. 01609
617 753-1411

II. Employment workshops active as of April 15 or about to be activated

Boston, Mass.	617 862-3880
Cleveland, Ohio	216 432-3100
Detroit, Mich.	313 863-0902
Hartford, Conn.	203 649-2766
Huntsville, Ala.	205 883-7920
Long Island, N.Y.	516 938-3500
Los Angeles, Calif.	213 322-5746
New Orleans, La.	504 888-1234
Philadelphia, Pa.	215 839-0191
San Fernando Valley, Calif.	213 322-5746
San Francisco, Calif.	415 327-9300
St. Louis, Mo.	314 727-2240
Seattle, Wash.	206 622-0600

Workshops have previously been held in Baltimore, Buffalo, Columbus, Dallas, Las Cruces (N.Mex.), Mt. Diablo (Calif.), Minneapolis, Orange County (Calif.), Princeton, Sacramento, San Diego, San Bernardino, San Gabriel Valley, Tampa, Tulsa, Vandenberg (Calif.), Washington, D.C., and Wichita. If you are interested in having an employment workshop reactivated in one of these areas or a new one established in any other area, call Emma White at IEEE Headquarters 212 752-6800, Ext. 617.

meet certain minimum standards for vesting and participation by the employee. I have talked with the special minority counsel for the Senate Labor Subcommittee who is handling the Javits bill and have determined the kind of information that would be valuable for the committee to have when considering modifications of the bill presently proposed. The type of information-collection meetings that I have mentioned earlier, in which we get direct inputs from our members, constitutes one excellent means for obtaining the information.

It is important to recognize, however, that the NSPE currently has a pension that can be made available with immediate vesting and immediate participation in the plan, thereby providing complete portability. Naturally, the particular employer who institutes this pension program has to be willing to provide these aspects.

Additional information on Institute programs

Limitations of space preclude reporting on all of the action programs that are in progress or that are contemplated for initiation. Considerable attention has been given, however, to facilitating the exchange of information among individual members of the Institute and the members of the Board of Directors. The Regional and Divisional Directors represent an excellent source of the latest information on specific Institute activities. Section and Group/Society officers, as well as individual members, should feel free to make use of this source on any Institute matter. Further reports on Institute programs are also planned for this section of *Spectrum*, and the comments of the membership are invited concerning specific matters to be addressed.

J. H. Mulligan, Jr.
President, IEEE

Inside IEEE

A report from IEEE's President

My report to the membership this month is relatively brief compared with those in previous issues of *Spectrum*. This month the principal comments concerning Institute activities are made by three members of the Board of Directors: John A. Guarrera, Director of Region 6; Harold Chestnut, Vice President for Technical Activities; and Glen Wade, Chairman of the Educational Activities Board. As you will note, they are reporting in detail on our pilot program in California aimed at reducing unemployment among engineers and scientists, developments at recent TAB and TAB OpCom meetings, and certain activities being developed by the Educational Activities Board.

Therefore, I shall limit my remarks to two subjects on which expressions of member views are urgently needed. The first concerns the arrangements between IEEE and NSPE by means of which our members can avail themselves of various services offered by NSPE (see page 22 of May 1971 *Spectrum*). President Harry Simrall of the NSPE has requested me to furnish the Institute's views concerning those NSPE services that would be of particular use and interest to the IEEE membership. Some attempts have been made to obtain this information by discussions with Section officers at Regional meetings and in personal conversations with individual members. More information is needed, however, and you are urged to contact your Section Chairman, Group/Society Chairman/President, Regional Director, or Divisional Director and voice your ideas. The names and addresses of the Section Chairmen were given in the March issue of *Spectrum* (page 113) and those of the Regional and Divisional Directors in the May issue of *Spectrum* (page 8); the names of the Group/Society Chairmen/Presidents are given at the end of this report.

I had reported earlier on the desire of the officers and other members of the Board of Directors to take into account as many member views as possible in the formulation of the Institute budget for 1972. Thanks to the diligence of Ray Sears, our Treasurer and the Chairman of the Institute Finance Committee, the initial version of the 1972 budget was made available for discussion at the February meeting of the Executive Committee. This was followed by discussion at the meeting of the Board of Directors in March as well as at a meeting of the Finance Committee shortly after the middle of April. At this last meeting, even though not members of the Finance Committee, several Regional and Divisional Directors were present for the full-day discussion. The members of your Board of Directors have the difficult, basic problem of responding to member requests for new and augmented services in a time of rising expenditures for present activities because of inflation and progressive increases in the cost of purchased services. The budget actions ultimately become those of establishing additional sources of income, reducing expenditures for member services to a level that can be supported by projected income, or some combination of both. The possibility of an increase in member dues was considered at the Board meetings in August 1970 and March 1971, and, to date, an increase has been resisted by a majority of the Board members. It appears inevitable that the dues cannot be maintained at the present level of $25 much longer; the real question is how to achieve a balance between income and expenditures in order to have a viable organization generally responsive in providing services that the members want.

Because of the foregoing it is extremely important that you express your views concerning Institute priorities. Your Board needs to know which present activities should receive greater emphasis and which less, and, furthermore, what new activities should be instituted, with some expression of priority associated with their introduction. To have your Board members well informed, it is highly desirable that you make your views known to your Section or Group/Society officers so that they in turn can pass them on to the Regional and Divisional Directors. The Finance Committee will meet again in July to discuss the next revision of the Institute budget for 1972 and considerable attention will be given to this subject at the meeting of the Board of Directors in August. I hope that we shall hear from many of you concerning Institute priorities.

J. H. Mulligan, Jr.
President, IEEE

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Chen To Tai (Chairman)
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Ann Arbor, Mich. 48103
313 764-0500

Audio and Electroacoustics
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Bell Telephone Labs., Inc.
Murray Hill, N.J. 07974
201 582-3576

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609 963-8000

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Purdue University
School of Electrical Engineering
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Communication Technology
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IEEE employment activity in the West

Reflecting the high priorities placed on the problem of technical unemployment, by Dr. Mulligan and the IEEE, and its catastrophic nature in the western aerospace industry, Region 6 initiated early this year a multifaceted program to combat the problem.

One of the early actions taken was the formation of the Joint Societies Employment Advisory Committee (JSEAC), for California. This is a coalition of professional societies in California reflecting a national agreement of major professional societies to work in concert on the employment problem.

JSEAC was formed around a core of individual members of various societies who had been working together on the employment problem for over a year. Hence there was a wealth of experience, knowledge, and activity on which to build.

JSEAC is chaired by Art Daush, who is also Region 6 and the Los Angeles Council's Industrial Coordinator, as well as a vice president of the California Society of Professional Engineers (CSPE). JSEAC is currently comprised of the IEEE, AIAA, NSPE, CSPE, ASME, ASCE, AIChE, SCTPE, and ACS representatives from California.

A number of actions have been taken under JSEAC auspices. As a result of a meeting in San Clemente, Calif., with President Nixon and his staff, which Dr. Mulligan and I attended, a proposal for a federally funded contract was submitted and is now in the negotiation stage. This program, for skills assessment and job development, would be administered by the IEEE, with Southern California being the base for a pilot program. To get under way on this and other programs, IEEE Headquarters, Region 6, and the Los Angeles Council have provided funds to expand the Los Angeles Business Office staff and services, in support of the efforts of JSEAC. The committee is working at all levels of industry and government. Via CSPE, there is a long-standing interface with California State Government, in Sacramento, with established access to state leaders and the Department of Human Resources (State Employment Office). JSEAC has met with the Regional Manpower Administrator for the Department of Labor (the primary channel for administration of federal government manpower funding programs) and has been assured of his cooperation. In addition, various members of JSEAC are members of, and are feeding inputs into, many other special unemployment committees that are seeking solutions to the problem. Among these are the committees of Lieutenant Governor Reinecke, State Assembly Leader Robert Morretti, Los Angeles Mayor Sam Yorty, and the state and local Chambers of Commerce.

On an immediate-aid basis, the IEEE Los Angeles Council Office maintains job lists, provides résumé reproduction services, and has undertaken the job of keeping members informed of all avenues of assistance available, via its monthly publication. It is also assisting the 12 Council Sections in setting up local employment activity.

Region 6, in conjunction with JSEAC, plans to assist other affected areas in the Region by setting up local programs, based on the experience of Southern California, including programs such as AIAA workshops initiated by other societies.

By working together for a common goal, with directed effort instead of duplication and waste, IEEE and the joint societies intend to pursue a systematic approach to this major problem of our society and country, in all areas and at all levels where solutions can be effected.

John J. Guarrera
Director, Region 6

Recent developments in technical activities

Statement of policy on IEEE Societies and Groups approved by TAB

The Technical Activities Board voted its approval of the Statement of Policy on IEEE Societies and Groups, which had been under discussion and con-

sideration since last December. TAB OpCom, the Executive Committee, and the IEEE Board also have endorsed this policy statement, designed to provide additional strength to the Institute by establishing a framework for greater growth, flexibility, and vitality. In this policy statement the role of IEEE Groups and Societies is described, and guidelines for forming societies are presented. Since membership in IEEE Societies and Groups need not be limited to electrical and electronics engineers, it should be possible for persons trained in other disciplines to work more easily with our Group and Society members on problems of a more interdisciplinary nature. Currently, approval has been granted to the IEEE Computer Society, the IEEE Control Systems Society, and the IEEE Power Engineering Society.

Technology forecasting and assessment experiment

At its May meeting, TAB agreed to undertake an experiment in Region 2 related to technology forecasting and assessment. This venture on a small scale may help point the way toward methods by which more IEEE Groups and Societies can obtain a clearer picture of the future implications of their current activities. This experiment would be a TAB and RAB cooperative venture in which several Group and Society Chapters of the Washington, D.C., Section would define their technical field, select a limited portion of that field, and undertake to estimate for that portion what the reasonably long-term (5–10-year) future will be in a technical sense. In addition, an endeavor would be made to evaluate what would be the economic and social effects, if any, of the technical future that has been forecast.

Monthly workshops will be held, with training and assistance provided as required. Following the Region 2 meeting in October 1971, there will be a program devoted to the presentation of the findings of the workshops. It is hoped that the results of these findings will have sufficient merit to warrant that the methods of technology forecasting and assessment be employed on a broader geographic scale by a larger number of IEEE Groups and Societies. This experiment should be complementary in a way to the planning and forecasting efforts being done by the Group and Society AdComs from a more administrative point of view.

IEEE Regional outstanding lecture tours

A service to IEEE members that appears to be particularly attractive to a number of Sections is the idea of a Regional Outstanding Lecture Tour. Featuring lecturers who have exceptional knowledge in an area of high technical interest and can express themselves in a clear and effective fashion, the lecture tour would combine addresses spaced one or two days apart to two or more IEEE Sections in a given Region with visits to outstanding industrial, university, or governmental organizations in the Sections involved. This should provide an unusual learning experience for Section members and lecturers alike. To the extent desirable, members of other organizations interested in electrical or electronics engineering or in appropriate other professions should be invited to attend these lectures.

Initial efforts at establishing the Regional Outstanding Lecture Tours will be in the fall of 1971 in Region 8. It is anticipated that a number of IEEE affiliated conferences being held in Europe at that time will provide the occasion for outstanding lecturers to be in Region 8. Efforts are currently under way by Director Paul Jespers of Region 8 to establish definite dates and places for such lectures. Likewise, Sections in Regions 1–6 interested in obtaining outstanding lectures for fall and later lectures should contact Dr. Peter Edmonds at IEEE Headquarters. We hope to extend this program soon so that it will include all Sections.

Information on world environment and resources

The need for improved means for identifying, gathering, organizing, disseminating, and assessing the information on the world environment and resources was made apparent to some members of the Geoscience Electronics Group during development of the Earth Resources and Technology Satellite (ERTS) program. A challenging systems problem was identified as being the total processing of the data for utilization by many users on a worldwide basis. Meetings with other persons from other disciplines and countries have confirmed a broad interest in exploring the possibility of forming some AFIPS/IFIP-like federation of technical, scientific, and professional societies to establish a common continuing forum in which persons concerned with world environment and resources could meet together and discuss matters of common interest.

The successful experience of IEEE technical activities for many years in such fields as information processing, automatic control, and engineering in medicine and biology on a transnational and a worldwide basis provides a useful background for interest in the area of environment and resources. Currently, Dr. Enrico Mercanti and other members of the Geoscience Electronics Group are exploring various ways in which this previous IEEE experience can be used effectively in helping to create an American and an international federation in the field of information relating to world environment and resources. It is anticipated that IEEE members from other Groups and Societies will wish to associate in the formation of this world environment and resources information organizational activity.

Harold Chestnut
Vice President, Technical Activities

The EAB and professional concerns

Many IEEE members are aware of the existence of an Educational Activities Board, but relatively few are familiar with the broad scope of its interests. In this month's "Inside IEEE" I shall describe three vital concerns with which we are now involved and that may not be as visible to the IEEE membership as some of our other involvements.

For example, how does the IEEE ensure to the profession and to society that engineering graduates are indeed qualified to practice in the discipline? It does so through a flexible and sophisticated accrediting system, which was created in 1932 by joint action between the five "Founder" engineering societies (AIEE, ASCE, ASME, AIME, AIChE) of ECPD. This is a program in which the IEEE has been concerned for many years. Two more recent concerns deal with professional opportunities in electrical engineering for women and for members of racial minorities. Current IEEE activities in each of these areas are discussed in the following paragraphs.

Accreditation

The five foregoing societies created an organization called The Engineers' Council for Professional Development (ECPD). This council, through its volunteer members, established minimum acceptable criterions for the accreditation of engineering curriculums in the disciplines they represented, and developed a set of procedures whereby universities and colleges within the U.S. could apply for accreditation of one or more of their curriculums. Very briefly, the procedure followed includes: completing a comprehensive questionnaire by the school; establishing a team of *ad hoc* visitors (representing each of the curriculums to be accredited); an on-site visit by the inspectors for two to three days; a written report on each curriculum inspected; a review of all materials by a committee of the ECPD Board of Directors; and final disposition of the matter by the Board.

At the present time ECPD accredits

two-year associate degree programs, four-year engineering technology programs, four-year baccalaureate engineering programs, and advanced-degree programs. It does so through two committees of its board: the Engineering Education and Accreditation Committee (EE&A), which is responsible for all engineering curriculums, and the Engineering Technology Committee (ET), which is responsible for two-year and four-year technology programs.

Your Institute is deeply involved in these activities through committees of EAB. For example, the IEEE supplies the volunteer *ad hoc* visitors to inspect electrical engineering curriculums. The IEEE recommends changes in minimum acceptable standards for these curriculums, and continually reviews actions taken on its behalf by ECPD. Evidence of the viability of the ECPD activity can be seen from the facts that membership in the ECPD (based on a curriculum responsibility) now consists of 12 engineering societies, that the number of engineering curriculums accredited by the ECPD is 1026 (of which 183 are EE), and that the number of engineering technology curriculums accredited is 323.

One of the present concerns within the IEEE and ECPD is the problem associated with the accreditation of advanced degrees. Your EAB unanimously adopted the following position with respect to this matter on March 23, 1971:

> The IEEE endorses the principle that the ECPD seek recognition from the National Commission on Accreditation (NCA) as the accrediting agency for advanced engineering education programs. ("Advanced" is defined as referring to programs normally leading to first and second professional degrees beyond the bachelor's level.) In endorsing the proposal to approach NCA, IEEE believes that every attempt should be made to conform to the accrediting practices suggested by NCA when the suggested practices are consistent with the interests of the profession. IEEE endorses the principle that the ECPD request each participating body to determine which programs in their particular discipline of engineering should be accredited at the advanced professional level. IEEE also notes that there are programs now listed as accreditable by ECPD for which there is no cognizant participating body and some for which there are multiple cognizant societies; in such cases the EE&A Committee should be empowered to be the final arbiter in this matter.

Dean Robert M. Saunders (University of California, Irvine) is Chairman of the EAB Accreditation Committee and has been a key figure in formulating the IEEE position relative to accreditation of advanced-degree programs.

Other areas of ECPD activity your EAB has responded to include an IEEE position on the preliminary report of the ASEE Study on Engineering Technology Education (this study should have a major effect on engineering technology accreditation), and the coordination of precollege guidance activities.

COMPOW

The acronym you just read stands for a new committee recently formed in EAB called the Committee on Professional Opportunities for Women. It is concerned with the special problems that face women in electrical and electronics engineering. I invited Julia T. Apter, M.D., Ph.D., director of mathematical biology at the Presbyterian–St. Luke's Hospital of Chicago, to be chairman. She accepted the responsibility with full recognition of the need for judicious attention to the concerns of the committee. Its members are illustrious and represent diverse interests. Irene Peden, Ph.D., is professor of electrical engineering at the University of Washington in Seattle. Eleanore McElwee is director of a section of the Solid-State Division of RCA, Somerville, N.J. Esther Conwell, Ph.D., is at GTE Laboratories in Bayside, N.Y. Major Richard C. Gowen, Ph.D., is tenure professor of electrical engineering at the United States Air Force Academy. Acting as advisors to this group of engineers are Margaret Mead, Ph.D., of the American Museum of Natural History, and Alice Rossi, professor of sociology at Goucher College in Baltimore, Md.

An immediate problem facing the committee is the task of alerting young women to their potential as students of engineering courses and curriculums and to accustom engineering school faculties to this potential. To these ends, Dr. Apter has become a member of the Pre-College Guidance Committee (Joseph Casey, chairman) and COMPOW has recommended that women be included on committees that accredit departments of engineering. All problems are compounded by the fact that only 0.34 percent of IEEE membership are women; thus the potential for finding qualified personnel for the tasks ahead is limited.

Professional opportunities for minority groups

Reflecting the Institute's continuing interest in programs involving minorities, the EAB recently established the Committee for Professional Opportunities for Minority Groups. Professor L. Padulo, visiting professor at Stanford University, and former chairman of the Mathematics Department of Morehouse University, Atlanta, Ga., has accepted the chairmanship of this newly created committee within the EAB. The committee will concern itself (1) with techniques for identifying and attracting talented individuals from the minorities into engineering, and for transmitting information about existing programs, such as the "Special Opportunities Program" at Stanford; and (2) with interesting industrial concerns and other organizations in participating in special programs for the underprivileged.

Professor Padulo is in the process of assembling information on existing programs that have shown success in either attracting minority youngsters into careers in the engineering profession or in specifically aiding committed youngsters to reach that goal. This compilation will then be published by the EAB for use by Sections and individual members. Contributions to this worthwhile project are welcomed and should be forwarded to Prof. L. Padulo, Stanford University, Electrical Engineering Department, Stanford, Calif. 94305.

In future issues of "Inside IEEE" I would like to discuss other areas of EAB activity—notably precollege guidance and educational programs of international scope, and several newly emerging programs in continuing education.

Glen Wade
Chairman,
Educational Activities Board

Inside IEEE

A report from IEEE's President

A primary function of the IEEE is to disseminate information that will assist every member in solving the technical problems that arise in the pursuit of his professional career. There are indications that it is sometimes difficult for a member to find out just what Institute material is available to him and, for this reason, we are now taking steps that are designed to improve the IEEE's information retrieval process.

There are five sources of published information that are particularly valuable for our membership in attacking current technical problems. They are special applications reports that are printed in *IEEE Spectrum*, conference records, special issues of the *Proceedings of the IEEE*, the special issues of IEEE Transactions and Journals, and IEEE Standards.

Applications reports in Spectrum

Last year, at the suggestion of Ron Jurgen, Managing Editor, *IEEE Spectrum* initiated a new program of publishing applications reports. These in-depth reports serve to stimulate readers to think of ways in which they can apply the particular type of product or system under discussion to solve their own specific problems. The reports have been enthusiastically received by our members and, as a result, the program will be continued and expanded in 1972.

The first special report, published in August 1970 on the subject of minicomputer applications in the '70s, was the test case that resulted in a "go-ahead" for three additional reports in 1971—"Data Communications" (February), "A Look at Automatic Testing" (May), and "Computer Design Aids for Integrated Circuit Layout and Mask Generation" (September).

Currently under discussion by the editors of *IEEE Spectrum* are possible topics for four or five special reports for 1972. Two-way interactive cable television systems and hybrid circuit applications are two candidates. You can help improve the effectiveness of this program by suggesting topics that you would like to see covered. Send your suggestions to Ron Jurgen, Managing Editor, *IEEE Spectrum*, 345 East 47 St., New York, N.Y. 10017.

Conference records

Members often tend to overlook the valuable material that appears in our many conference records. In fact, about half of all IEEE literature is in this form.

Conference records tend to be of two distinct types: those concerned with specifics of a given technical field such as antennas, devices, or power; and those directed to general considerations, often interdisciplinary, in ways not duplicated in regular IEEE periodicals. The record of the 1971 National Telemetering Conference (Publication 71 C 10-NTC), for example, covers such diverse topics as wildlife telemetry; medicine, ecology, and law enforcement; spectrum utilization; advances in transportation control; and considerations on communications replacing transportation.

Substantial applications-oriented material is contained in conference records, which makes this a particularly good source for product designers.

In each issue of *IEEE Spectrum*, recently issued conference records, with their prices, are listed in the section on "Special Publications."

Special issues of Proceedings

The *Proceedings of the IEEE* has an outstanding record of publishing noteworthy special issues on timely topics. In fact, many of these special issues have become true classics. The first, published in October 1951 on the subject of color television, and the second, published in November 1952 on the subject of transistors, launched a publications service that over the years has provided important impetus to the major, newly emerging technologies in our field. There have been 58 special issues published to date and the frequency of publication is now about five or six per year. Not only have these special issues provided a basic reference for specialists already in the field but they have also proved invaluable in enabling our members to enter new fields. In recent years the subject matter has not always been purely technical. For example, the special issues on transportation (April 1968), technology and health services (November 1969), and engineering education (June 1971) include material dealing with important social and professional aspects of electrical and electronics engineering.

Special issues of *Proceedings* scheduled for the next 12 months are: microwave semiconductors (August 1971); thick and thin films (October 1971); computers in design (January 1972); time-shared computer systems (March 1972); time and frequency generation, dissemination, and applications (May 1972); and image processing (July 1972).

Each month in *IEEE Spectrum*, a listing of future special issues of the *Proceedings* and of our Transactions and Journals is published. If you are interested in learning what past special issues of the *Proceedings* are available and how to order them, you may obtain this information by sending a postcard to Reed Crone, Managing Editor of the *IEEE Proceedings*, at Institute Headquarters.

Special issues of Transactions and Journals

Our various IEEE Transactions and Journals are also doing an outstanding job of bringing important new areas into focus through the publication of special issues. An interesting example is the manner in which special issues of IEEE publications are covering the pertinent topic of computers and their applications. This is a particularly good illustration of how an IEEE member, by means of our publications, has access to a wealth of timely information on an important subject.

Coverage of computer applications is planned for the next year by the *Proceedings*, by four different Transactions, and by one Journal as follows: "Computers in Design" (*Proceedings*, January 1972); "Time-Shared Computer Systems" (*Proceedings*, March 1972); "Computer Simulation in Biomedical Teaching" (*IEEE Transactions on Bio-Medical Engineering*, January 1972); "Fault-Tolerant Computing" (*IEEE Transactions on Computers*, November 1971); "Application of Computers to EE Education" (*IEEE Transactions on Education*, late 1971); "Computer-Aided Design and Analysis for Reliability and Maintainability" (*IEEE Transactions on Reliability*, August 1971); and "Computer-Aided Design" (*IEEE Journal of*

Solid-State Circuits, August 1971).

Another example of coverage of a currently important topic by several IEEE publications is provided by digital circuits and communications. A special issue of the *IEEE Transactions on Circuit Theory*, scheduled for November 1971, will be devoted to active and digital circuits; and a future issue of the *IEEE Transactions on Communication Technology* will focus attention on signal processing in digital communications, although no firm date has been established as of this writing. The *IEEE Journal of Solid-State Circuits* has scheduled for October 1971 a special issue on "Semiconductor Memories and Digital Circuits" and, for December 1971, an issue on "Linear Circuits and Digital-to-Analog Conversion." Collectively, these issues will do much to advance an important art; individually, they will do much to advance the technical competence of our members.

Other special issues coming up that seem particularly significant are the August 1972 *IEEE Transactions on Reliability*, which will be on the subject "Bayesian Reliability Techniques"; an early 1972 issue of the *IEEE Transactions on Electron Devices* on the subject "Electrographics and Electroprinting"; another issue of the *ED Transactions* on "Amorphous Semiconductors"; and a late-1971 issue of the *IEEE Transactions on Systems, Man, and Cybernetics* on "Modeling Related to the Design of Social Systems."

Once again, I refer you to the listing of future special issues in *IEEE Spectrum*. I also urge you to make known your desires for special issues of the Journals and Transactions by contacting the editors of those publications. Their names, addresses, and telephone numbers were published in the January issue of *Spectrum*, pages 93 and 94.

Standards

Last, but by no means least, in the array of IEEE sources of technical information are our Standards. These are concerned with recommended practices, definitions of terms, and methods of measurement with an extremely diverse topic coverage. A list of Standards currently available can be obtained by sending a postcard to Sava I. Sherr, Manager, Standard Operations, at IEEE Headquarters.

As new Standards are issued they are listed in the "Special Publications" section of *IEEE Spectrum*. Also listed in this section are the working drafts of certain new Standards. These are available for use and comment in advance of final approval and issue.

Improving the retrieval process

In this report I have referred to the listings each month in *IEEE Spectrum* of future special issues of the *Proceedings* and our Transactions and Journals and to the listing of recently issued conference records. I have not mentioned previously that *IEEE Spectrum* also lists each month advance tables of contents for many of our publications.

Starting with the August issue of *Spectrum*, all of this information—together with additional information on available educational materials such as seminars, cassettes, and films—will be reorganized to make it easier for you, first, to determine what is available that may be helpful to you and, second, to order any material you would like to have. I urge you to look carefully at the presentation of this information in the August issue of *Spectrum*. We feel that these first steps to make it easier for you to identify and order sources of information are good ones—but we need to continue improving the process. If you have any suggestions as to how this can be done, please send them to Ron Jurgen, Managing Editor, *IEEE Spectrum*, or to me at IEEE Headquarters.

J. H. Mulligan, Jr.
President, IEEE

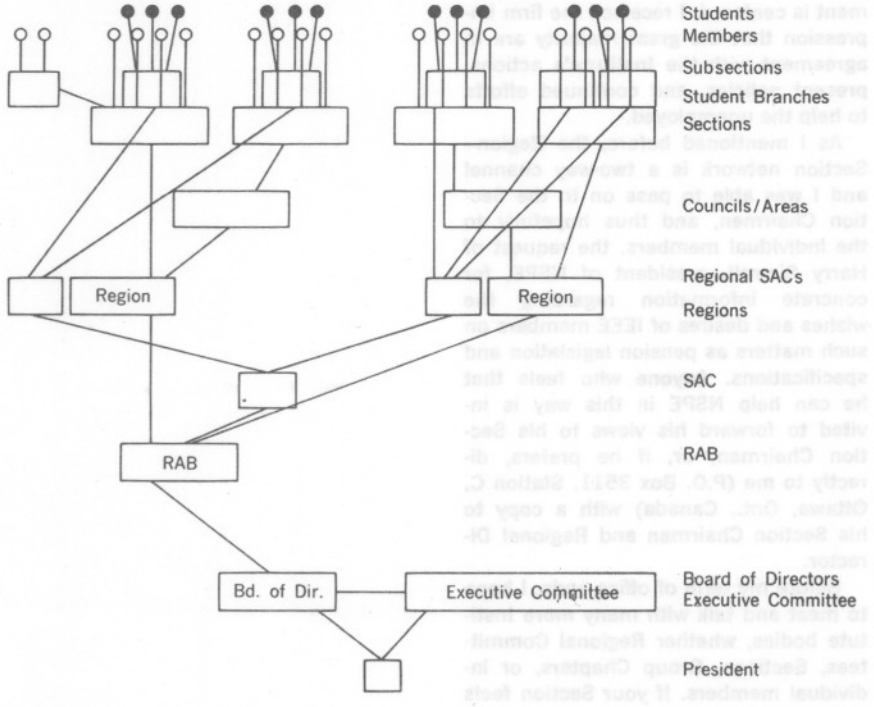
Region–Section communications network

One of the most rewarding functions of the Institute's elected Vice President is to act as a focal point in the Region–Section communications network. This system has been developed during recent years by the establishment of the Regional Activities Board (RAB), and by steps that have been taken to enhance the training of, and cooperation between, the Regional Directors who represent the ten Regions and the 207 Sections of the Institute. The network, shown in the figure, is intended to provide a fast and accurate two-way communication system between the individual member and the Board of Directors or the Executive Committee.

Let me explain that the printer has not printed the figure upside down; most organization charts show the bosses at the top and those who carry out their requests at the bottom. A moment's thought should convince you that, since the only reason for the existence of a volunteer society such as the IEEE is the satisfaction of member needs, the members are in fact the bosses. The diagram shows the way in which the student organization meshes with the Sections and Regions, and with the Institute Student Activities Committee (SAC) reporting to the Regional Activities Board. A similar chart could be drawn to illustrate the technical network of Group and Society members and Chapters, the Groups and Societies themselves, together with the Division, the Technical Activities Board, and its Operating Committee (TAB OpCom).

Since it is the Region–Section network that includes every member of the Institute, it is of great importance that it should operate efficiently so that the Board of Directors can be kept aware of the members' changing needs. To this end, since my term of office be-

ORGANIZATION chart for the Region–Section communications network.



gan on January 1, I have attended meetings of Regional Committees 3, 4, 5, 6, and 8, as well as Section meetings in Tucson and Fort Huachuca, and a gathering of Group Chapter Chairmen of the Baltimore Section. (Unfortunately a planned visit to the Miami Section had to be canceled owing to a blizzard, which grounded every plane in eastern Canada.)

At all of these meetings, the affairs of IEEE were discussed with considerable frankness. Such subjects as unemployment and the Institute's reaction to it, the value of workshops and local self-help committees, Regional approaches to career guidance and cooperation with local employment offices and committees, portable pensions, the IEEE agreement with NSPE, and many others were fully aired, together with suggestions as to how Institute services to members could be improved or extended. At these meetings I heard much praise for the steps taken by President Mulligan to involve IEEE in dialogue with the United States government and other interested organizations over the need for immediate action to alleviate the serious unemployment of engineers. Most of the people with whom I spoke felt that by cooperating with similar technical societies and throwing our combined weight behind NSPE, IEEE had taken an important and timely step in tackling an almost desperate situation, without jeopardizing its position as a world leader in technical communications. Several, however, felt that the Institute should do more to help the unemployed, though they were unable to offer specific suggestions as to how this could be done. Even in Region 6, where much of the unemployment is centered, I received the firm impression that the great majority are in agreement with the Institute's actions, present policies, and continued efforts to help the unemployed.

As I mentioned before, the Region–Section network is a two-way channel and I was able to pass on to the Section Chairmen, and thus hopefully to the individual members, the request of Harry Simrall, president of NSPE, for concrete information regarding the wishes and desires of IEEE members on such matters as pension legislation and specifications. Anyone who feels that he can help NSPE in this way is invited to forward his views to his Section Chairman, or, if he prefers, directly to me (P.O. Box 3511, Station C, Ottawa, Ont., Canada) with a copy to his Section Chairman and Regional Director.

Before my term of office ends, I hope to meet and talk with many more Institute bodies, whether Regional Committees, Sections, Group Chapters, or individual members. If your Section feels that an open forum on IEEE affairs would be of interest, have your program chairman write to me; if I cannot come myself, I will try to find some other officer or staff member to take my place. Obviously, from a practical standpoint, a tour embracing two or three adjacent Sections would be both efficient and economical. Your Regional Director could help in planning such a series of visits.

R. H. Tanner
IEEE Vice President

Inside IEEE

A report from IEEE's President

In previous issues—March, May, and June—I have reported on IEEE's role in initiating various programs intended to reduce the unemployment among engineers and scientists in the United States. It is now my pleasure to report some substantial progress in this area and to describe some new related actions.

$750 000 DOL contract

On July 19 the U.S. Department of Labor signed a $750 000 contract with the National Society of Professional Engineers (NSPE) as the contracting agency for IEEE and six other engineering societies—NSPE, American Institute of Aeronautics and Astronautics, American Institute of Chemical Engineers, American Society of Civil Engineers, American Society of Mechanical Engineers, and American Institute of Mining, Metallurgical and Petroleum Engineers. The IEEE had a leading role in developing this contract, which provides for a study of the conversion of skills of aerospace and defense engineers and scientists into more available occupations in other areas.

The conversion study will be conducted for eight months by 15-man study teams. All study-team members and leaders will be hired from the ranks of unemployed engineers and scientists. Study teams will be set up initially in Seattle, Wash., and Los Angeles, Calif., with team leaders to be hired and trained for 12 additional areas: Huntsville, Ala.; San Diego, San Jose, and Orange County, Calif.; Cape Kennedy, Fla.; Atlanta, Ga.; Boston, Mass.; St. Louis, Mo.; Long Island, N.Y.; Philadelphia, Pa.; Dallas, Tex.; and Wichita, Kans.

The new program has a fourfold objective: to identify skills needed in the near future in specific industrial fields; to identify the specific skills of unemployed professionals, which can be transferred to fill the need; to create a data base of specific information identifying those skills that are transferable, under what conditions, and to which alternate occupations; and to develop a mechanism for effecting the conversion of skills, including training reorientation and job identification.

The study team established in each location will be assigned an industry, or industries, and will be expected to evaluate the potential for employing additional engineers, scientists, and technicians in that industry. Typical industries to be included are health care and health services, power resources, food products and food services, water pollution control, wood products and building materials, and recreation.

The studies will be conducted in three phases—a background study of each assigned industrial field, an evaluation of the potential of that field, and recommended specific courses of action.

Extension of VEST program

The IEEE, in cooperation with the American Institute of Aeronautics and Astronautics (AIAA), is actively participating in the Volunteer Engineer Scientist Technician (VEST) program. VEST is a volunteer group of unemployed professionals, mainly from the engineering, scientific, and technical fields, who have gathered together to aid each other in finding employment. The purpose of VEST is to provide effective employment assistance for registered participants in the program with no charge to either the applicant or the employer. All applications and résumés are prescreened. Only the most qualified are presented to the employer for consideration. Positions are solicited from employers and a screening committee then matches applicants to the job opening. VEST is affiliated with the state employment services and uses their office facilities.

The VEST program is patterned after a program that was originally established in Los Angeles under the name Experience Unlimited. Supported by a Department of Labor contract with AIAA, the VEST program is aimed at assisting the high-impact areas first. A local group has been established in the Long Island area and is called Long Island Professionals. This group is working closely with representatives of the local and state Employment Service as well as representatives of the Regional Manpower Administration. Some Long Island Professionals members already have been placed in technical jobs.

On June 23 the VEST program commenced operations at the Dallas office of the Employment Service, with the name Dal-VEST. Members there have also been placed in technical positions. A similar program in Fort Worth was initiated the week of June 28 with the name In-VEST. At the time of this writing, the Seattle VEST program has just begun and a program in Atlanta is scheduled to begin very soon. It is anticipated that VEST programs also will be started in Wichita and in Minneapolis.

The IEEE will continue to cooperate with AIAA to the fullest possible extent to see that these successful VEST programs will benefit IEEE members.

New career development activities

Early results of studies that have been made by IEEE fact-finding committees indicate that there will probably be a major shift in the nature of engineering positions over the next decade. Furthermore, there is a strong indication that job requirements and, therefore, corresponding education requirements, will be changing at an increasing rate. And electrical/electronics engineers can be expected to make significant changes in their careers throughout their working lives to a greater extent than they have in the past.

To respond to the need for related member services, the IEEE Executive Committee, at its July meeting, authorized an expansion in IEEE's career development activity by the addition of a professional staff member. The new staff man will be experienced both in manpower data handling and in development of continuing education programs. His responsibilities and duties will include the development of interpretive reports on manpower resources and future manpower requirements in the electrical engineering profession; the development of continuing education programs designed particularly to assist the IEEE member in making a lateral or vertical shift in his position; the investigation of the use of all forms of educational media to assist in career development; and the organization and participation in specialized career development workshops.

Salaries of engineers

What we are paid for the work we do is of vital concern to all of us. It is diffi-

cult, however, to evaluate one's salary level on the basis of such factors as education, work experience, responsibilities, and geographical location without meaningful data on what other engineers, similarly situated, are earning. Four recent reports of the Engineering Manpower Commission (EMC) of Engineers Joint Council provide valuable data in this connection. A summary of one of these reports is published in this issue on pages 36–40. The complete report on which this summary was based is available to IEEE members, by special arrangement with EMC, at a reduced cost of $3.00 per copy. A boxed notice on page 36 of this issue gives specific ordering information.

Conclusion

The actions that I have described are examples of the interest of the Institute in assisting our members with the nontechnical aspects of their careers. We expect to continue to provide assistance in this area and, at the same time, maintain the high-quality effort devoted to our primary mission of disseminating relevant technical information. Comments from members regarding these activities are welcome.

J. H. Mulligan, Jr.
President, IEEE

Statements from IEEE candidates

The candidates for the 1972 offices of IEEE President, Vice President, Delegates, and Directors have been invited to provide statements for publication in the September *IEEE Spectrum*. You are urged to read these statements carefully before you fill in your ballot.

David DeWitt, Editor

Inside IEEE

A report from IEEE's President

For many individuals September signals the return to the campus at the beginning of a new academic year. It seems particularly appropriate, therefore, to devote a substantial part of this month's report to the Institute's student activities program. Also included are references to some recent developments in our continuing efforts associated with reduction of unemployment and the career development of the individual engineer.

Student affairs

Institute student activities are organized for the most part in Student Branches, which are led by elected student officers and an appointed faculty counselor. Although the organizational format is essentially the same for all Student Branches, the activities exhibit tremendous diversity due to the initiative and creative efforts of the students and faculty members in the particular Branches involved. Following are some representative activities conducted within the last few years by Branches in Regions 1 through 10:

- Development and teaching of technical and nontechnical courses in specialized areas for undergraduates and graduates.
- Encouragement of members of minority groups to elect the study of electrical engineering through counseling and tutorial programs.
- Counseling of high school students on careers in electrical engineering.
- Provision of tutoring services for underclassmen.
- Cooperation with local industry in developing meaningful summer employment for engineering students.
- Development of cooperative work study programs in local industry for electrical engineering undergraduates.
- In addition, many Branches participated in the somewhat more traditional activities of Branch meetings with guest speakers; field trips to industrial research laboratories, utilities, and manufacturing plants; joint meetings with students from other campus locations; joint meetings with nearby IEEE Sections, often in a "students' night" program; and competition in a variety of local, regional, and Institute award activities.

Student Branch meetings are the core of the student program. Monthly meetings are usual, but very active Branches may meet more frequently. These meetings give the members the opportunity to hear authorities speak on the latest developments in the field, see films on electrical and electronics engineering, participate in panel discussions, and read and discuss technical papers prepared by the members. Beyond the Branch level, the student is always welcome at Section meetings and will receive notices of local Section meetings.

Two Student Award programs—the Fortescue Fellowship and the Vincent Bendix Award—are described in the following pages. In addition to these, the Institute sponsors a number of other competitions. The Student Prize Paper contest, for example, gives undergraduates early experience in expressing technical ideas. This contest may be sponsored by the Branch, Section, or Region. The winners of Regional paper competitions in 1970 were provided with travel and living expenses during the IEEE International Convention and Exposition in New York City, and I had the pleasure of meeting with them for discussion of a number of topics of mutual interest.

Other student paper contests in the Institute include the W. D. George Memorial Award for the best undergraduate paper on instrumentation and measurement, the Storm Award for the best student paper in the field of magnetics, the Hickernell Award in the field of power engineering, and the Nuclear Science Group Student Award. Interested students can obtain additional information on the rules and deadlines for these contests by contacting their Branch Counselors.

In addition, those students who have shown particular leadership and ability in Branch operations are honored each year with Outstanding Student Branch Awards, certificates of recognition that are presented by their Section Chairman or Branch Counselor. A listing of this year's winners appears on page 12 of this issue.

Another benefit of Student membership is the publication program of the IEEE. Included in the Student membership fee is a subscription to *IEEE Spectrum* and a reduced rate of $2 for membership in any of the 30 technical Groups and Societies of the IEEE. For this low price, a Student Member can receive the Transactions and Journals of the Group or Society—as well as any special newsletters, announcements, or meeting notices. This September, as in the past, the Institute has provided each Branch with additional copies of *Spectrum* to assist officers in their fall promotional drive. Student readers should find this issue of special interest—particularly the marketing career article on page 80 and the review of graduate school evaluations by Frank Barnes, Vice Chairman of the Student Activities Committee, on page 104. Future issues of *Spectrum* will continue to include articles and news of particular interest to our Student Members.

For administrative purposes, Institute student activities come under the purview of the Regional Activities Board (RAB) and are the direct responsibility of the Student Activities Committee (SAC), whose present chairman is Dick Russ of Union College. A list of the membership of this year's SAC appears on page 10. The SAC has devoted considerable attention this year to the development of new programs and opportunities for creative involvement of Student Members in Institute affairs. The RAB has encouraged greater interaction of Sections and Student Branches in the program activity, particularly that in which Student Members can learn at first hand from their IEEE member colleagues who are already employed what diverse career possibilities exist and just exactly what is involved in getting started correctly in their pursuit.

An important Institute responsibility to its Student Members is that of assisting in the smooth transition from being a student to a practicing engineer. An important new program designed to contribute in this direction was developed by SAC in cooperation with the Institute Membership and Transfers Committee under the chairmanship of W. L. Sullivan, and it is now being implemented for the first time. The objectives are for the Section with which a recent graduate is associated to establish and maintain contact with him and to insure that he has an opportunity to avail himself of IEEE member-

ship benefits in that community, including involvement in Section committees and programs. To this end, Student Members who were graduated during this spring and summer were requested to advise the Institute where they will be located in the fall, and, on receipt of this information, the appropriate Sections have been notified. Contacts with these incoming Section members are to be made this month, followed by a welcoming to Section activities and introduction to engineering associates in the area. It is expected that the various Sections involved will develop suitable programs for the coming activities year to assist the 1971 graduates and those of recent years in the early part of their professional careers. Section officers are urged to give this program and increased cooperation with neighboring Student Branches high priority in their planning for the year ahead. Further information regarding student activities may be obtained from Dick Russ, Chairman of SAC, or Bob Loftus, Staff Coordinator of Student Activities; both may be contacted through IEEE headquarters.

Career development in engineering employment

On August 9 the Coordinating Committee, consisting of the presidents of seven major technical and professional societies,* met to review progress to date in the skills conversion study supported by the U.S. Department of Labor (DOL) aimed at identifying positions for unemployed scientists and engineers (see "Inside IEEE" in *Spectrum* for August 1971). Complete study teams have been assembled in Los Angeles and Seattle and team leaders for the other cities in the program should have been employed by mid-September, if not earlier. The first industries to be investigated by the teams in Los Angeles and Seattle are health and health services and food and food services, respectively.

The presidents also reviewed progress in other society programs concerned with alleviation of unemployment (including VEST) and arranged for a periodic exchange of information regarding programs in the broad professional development category.

On the following evening President Martin of the American Institute of Chemical Engineers described a program under way in that organization to develop guidelines for professional employment of engineers and indicated that a meeting would be held in September to which representatives of several industrial organizations had been invited to comment on the material developed to date. Among the subjects included in the guidelines are conditions of hiring and termination, professional growth and advancement, and participation in professional society activity. The IEEE is most interested in this effort, which it will continue to monitor, and will be represented at the September meeting cited.

I have continued personal contact with the president and other officers of the National Society of Professional Engineers (NSPE) to insure good communications between it and the IEEE. In a speech to the board of directors of NSPE in July, I summarized the needs of IEEE members that could be accommodated under our liaison arrangement with NSPE, including views transmitted to me to date by our members. Last month a major change was made in the organization of NSPE's legislative effort by the creation of a special department to handle government and legislative affairs under the direction of a vice president of NSPE. IEEE has been asked to furnish representatives to serve on a committee advisory to this effort that will provide an additional means of conveying information to NSPE regarding the needs of IEEE members in the legislative and related areas. Members are asked to forward their views in these matters to their Regional or Divisional Directors or the officers of the IEEE to insure prompt coordinated attention.

J. H. Mulligan, Jr.
President, IEEE

* American Institute of Aeronautics and Astronautics; American Institute of Chemical Engineers; American Institute of Mining, Metallurgical, and Petroleum Engineers; American Society of Civil Engineers; The American Society of Mechanical Engineers; The Institute of Electrical and Electronics Engineers; National Society of Professional Engineers.

Your IEEE ballot has been mailed

When you receive your IEEE ballot, you will be able to cast your vote for or against proposed constitutional amendments as well as vote for IEEE President, Vice President, Regional Delegate/Director, and Divisional Delegate/Directors.

Included with the ballot is a leaflet containing, in full, the petition for amendments to the IEEE Constitution, together with the recommendation of the IEEE Board of Directors to the voting members and the petitioners' statement and response to the Board position. Please read the petition and the accompanying statements carefully before you vote.

Also included with the ballot are biographies of the candidates for whom you may vote. Refer to pages 52–58 of this issue for statements from these candidates on their views about IEEE's mission, policies, and performance.

IEEE supports standards activities bill

Recently IEEE gave its support to a proposed bill, S. 1798, which is before the U.S. Senate's Foreign Commerce and Tourism Subcommittee, that will "foster fuller U.S. participation in international trade by the promotion and support of representation of U.S. interests in international voluntary standards activities."

Sava I. Sherr, Manager of Standards Operations of IEEE and Secretary of the IEEE Standards Committee, appeared before the subcommittee on July 16. Following is the complete text of his remarks.

"Mr. Chairman and Members of the Subcommittee:

"I am Sava I. Sherr, Manager of Standards Operations of the Institute of Electrical and Electronics Engineers, Inc., commonly known as IEEE. I am appearing on behalf of IEEE, which is located at the United Engineering Center, 345 E. 47 St., New York, N.Y. 10017. I serve as Secretary of the IEEE Standards Committee.

"The IEEE, with a membership of 150 000 scientists, engineers, and technicians, is the largest nonprofit organization engaged in voluntary standardization activities in the United States. More than 200 technical committees within IEEE's 30 professional Groups and Societies are actively involved in development of standards within the scope of the Institute's activities, and close to 200 of its members serve as its representatives on almost 100 standards committees organized under the procedures of ANSI (American National Standards Institute).

"Many standards that have achieved worldwide recognition through adoption by the IEC (International Electrotechnical Commission) and the ISO (International Organization for Standardization) were developed within IEEE or within its two predecessor societies, the American Institute of Electrical Engineers and the Institute of Radio Engineers, that merged in 1963. Many of the documents of IEC and ISO incorporate methods of measurement, tests, and definitions developed within IEEE. Our work has also played an important part in the international standards activities of special standards groups concerned with such matters as modern telephone and radio communications, radio interference, electrical machinery, and power generation.

"Because IEEE is an organization of individual scientists and engineers whose prime interest is technological advancement, the organization limits its standards activities to areas having broadest potential for international acceptance. It is concerned specifically with standards whose applications lead to greater commonality of information within the scientific community. It is active in standardization of symbols and units, terminology and definitions, methods of measurement, and test procedures.

"Acting in response to your request to present its views, IEEE believes that S. 1798 can serve a useful and valuable purpose in promoting and supporting the participation of United States interests in international standardization. We support the proposed bill together with the spirit of those modifications recommended by the American National Standards Institute. In particular, we believe it imperative to formalize and strengthen United States participation in international standards activities.

"In reviewing the history of United States participation, one finds that our capacity to function effectively in the international standardization arena diminishes in direct proportion to the generality of the subject matter to be standardized. As the scope of standardization projects becomes more closely tied to the specific product, effectiveness of United States standardization is enhanced. This is largely due to the fact that individual industrial concerns can readily identify areas related to their products and provide funding to send delegates to represent the United States at technical meetings. However, as standardization projects become more general, and therefore more far-reaching in their impact, an anomaly develops because, as the area of interest broadens, the interest of individual industrial organizations becomes more diluted. As a result, the United States may often be represented at such meetings by those people who happen to be on the scene in connection with some other activity rather than by delegates who are best qualified to handle the subject. As subjects become still more general, so that they cover the entire range of a technology, industrial funding for representation becomes virtually nonexistent. Yet, it is precisely in these most general areas that the United States tends to suffer in the international standardization area and in its impact on trade. Other nations are expertly represented in these areas and have used standardization as a mechanism for gaining competitive advantage, independent of the technical merits of the standards proposed.

"It is obvious that standardization in the areas of terminology, units, symbols, test methods, reliability, and similar areas that generally apply to all technology deserves the most expert representation this country can provide.

"Because industry recognizes that professional societies are the most qualified to provide expertise in the broad, general technological standardization areas, IEEE is often called upon to provide technical experts to participate in international standards meetings. Since its membership is made up of individuals engaged in education, research, manufacturing, public service, government, maintenance and repair, and distribution, IEEE's position on matters within its scope is a consensus of the electrical and electronics profession and the organization has available to it human resources best able to represent that position on an international standardizing level. However, in delegating representatives for international standards meetings, IEEE must limit its selection to those experts who are affiliated with organizations prepared to underwrite the expense of

such representation, even though this may sometimes result in the elimination of the best qualified individual in representing our technical interest.

"During the past five years, there have been a number of occasions when it has been vital to our interest for experts to present this country's position at the working group level at international meetings on such subjects as terminology, units, symbols, and methods of measurement. We have been successful in obtaining contributions from private sources to pay transportation costs for properly qualified experts to attend these meetings. This meager effort has resulted in the development of international standards with a far greater degree of compatibility with United States practices. However, this has not provided sufficient funding to properly support needed effort. The proposed bill should provide a mechanism to allow professional societies to effectively carry out such activity, an effort for which technical societies are best able to provide appropriately qualified manpower.

"In the electrical and electronics world, the standards pioneered by IEEE are basic to all scientific communication and commerce. Electrical units, symbols for these units, symbols for schematic drawings, and definitions of technical terms assure us that the buyer in one country is specifying the item the seller in another country is prepared to sell; and the test methods and methods of measurement make it possible for all concerned parties to make meaningful comparisons between similar products and services.

"IEEE supports the recommendations of ANSI to provide an International Standards Advisory Committee. It recognizes the importance of those groups that manufacture, use, buy, sell, distribute, and certify, but it is also conscious of the major role played by the scientific and engineering professionals—whose interests are frequently broader than those of any single group and whose inputs are also likely to produce more meaningful and lasting standards because of the greater concern with underlying technical principles on the part of these professionals. The only organizations that can speak for these professionals are the technical societies, and these should have representation on the advisory committee.

"It is hoped that through the provisions of this proposed bill, it will be possible for the United States to achieve the type of representation in all areas of international standardization activities that the technological stature of this country deserves and needs.

"Thank you very much, Mr. Chairman, for permitting me to appear here today."

IEEE forms new Group on Manufacturing Technology

G-Mfg T is the abbreviation of the new IEEE Group on Manufacturing Technology, recently formed as a result of information gathered by an *ad hoc* committee set up in 1968 to assess the role of IEEE in that field.

The four sessions sponsored by the committee at various meetings (NEREM, WESCON, and the IEEE Convention) were attended by more than 1000 people. It was determined that a large number of engineers have no home in any of the existing IEEE Groups and would welcome a new Group covering their specialty of manufacturing technology.

The general field of interest of G-Mfg T will be all aspects of manufacturing technology as it relates to the manufacturing of electric and electronic equipment. The Group was not conceived to duplicate efforts in solving the detailed manufacturing problems covered by other Groups, but to cut across all the present Group activities to establish and work in those areas that are common to basic modern manufacturing systems.

The new Group will publish newsletters on a quarterly basis, starting in late 1971. *Transactions* are scheduled to begin publication in 1972.

The fee for IEEE members wishing to be placed on the active list of G-Mfg T is $5.00 for 1972. Members may use the application form on this page or request to be billed. Billing will be included in the composite billing for 1972 that will be mailed to all members in October.

Anyone not presently a member of IEEE and interested in the new Group should join both IEEE and the Group in a single application. This would require a $5.00 IEEE membership application fee, $25.00 for IEEE dues, and a $5.00 G-Mfg T fee—a total of $35.

Volunteers are needed to serve in various capacities in the new Group. Those interested in staffing committees, reviewing papers, presenting new ideas, organizing local chapters, and developing standards and definitions should contact the Technical Activities Office at IEEE Headquarters, 345 E. 47 St., New York, N.Y. 10017.

Statements from IEEE candidates

This year the IEEE elections are of special interest because some of our members believe we should be more than a medium for displaying, sharing, and teaching electrical science and technology. What the IEEE actually accomplishes in the near future depends very much on the men we elect this fall. To help each member vote effectively we have asked the candidates for President; Vice President; Regional Delegates/Directors for Regions 1, 3, 5, 7, and 9; and Divisional Delegates/Directors for Divisions I and V, to make statements of their beliefs about the IEEE, what their intentions are, and their own qualifications. Statements were received from all candidates except one.

David DeWitt, Editor

Robert H. Tanner— Candidate for President

Discussions with a considerable sampling of members at various IEEE meetings convince me that a vast majority wish to see the Institute develop steadily and rationally, rather than be swept into an upheaval which would change its nature entirely. I have heard much praise for the active program followed during 1971 by President Mulligan and the Board of Directors, whereby IEEE has led in urging the U.S. Government to act to correct the very serious unemployment situation among engineers. I intend to continue and broaden this program, encouraging joint action between major U.S. engineering societies, so that the profession may display a united front toward government, industry, and the public. From contacts I have had with U.S. Government officials, I am convinced that my Canadian nationality will be more help than hindrance, since it places me outside U.S. domestic politics.

While the unemployment situation is of obvious and paramount importance, IEEE must not neglect nor weaken its primary role as a medium for the exchange and propagation of high quality technical information. However, it must not equate "high quality" with "academic abstraction" and must ensure that its publications cover the whole of its field, not only by disciplines, but also by technical level, including papers and articles of interest and value to the engineer in the factory, as well as the researcher in the laboratory. We must remember too that we are human beings in a world desperately in need of the kind of technology which will help solve its problems rather than create new ones, and must open Institute channels to the discussion of the social impact of our work. At the same time we should develop the unique transnational character of IEEE which is making it a unifying force among electrical engineers all over the world.

Robert H. Tanner

Harold Chestnut— Candidate for Vice President

The IEEE and its members have an important mission in today's world. They have responsibilities for making more effective the processes of conceiving, defining, acquiring, operating, and maintaining technical and other equipment having a significant electrical or electronic content. They also have responsibilities for the education, standards, theory, and science associated with such equipment and its application.

The members of the IEEE have an opportunity to make the results of their efforts useful to society and their fellowmen. The IEEE must seek improved ways with which the skills of its members and other engineers and scientists are used effectively in solving those problems of society for which they are qualified. I believe the cooperative efforts of the IEEE, NSPE, and other engineering societies should be strengthened to help bring about such improvements.

The IEEE as a transnational institute serves as a unifying influence to enable engineers and scientists from all countries of the world to share their experiences and to improve their own abilities. This transnational role of the IEEE is a very useful one and should be strengthened.

Starting as a Student member, I have been associated with the IEEE in many Sectional and technical activities. I believe my background and experience on both the IEEE Board of Directors and the Executive Committee can be of benefit in the position of IEEE Vice President.

The record of the IEEE and its members is one of which they can be proud. But more can and must be done to serve our members more effectively. If elected, I shall be glad to work with the other officers to so serve the Institute and its members.

Harold Chestnut

Candidates for Regional Delegate/Director for Regions 1, 3, 5, 7, and 9

Richard C. Benoit, Jr.—Candidate for Regional Delegate/Director of Region 1

(No statement was received from Mr. Benoit because of the recent death of his wife.)

Harold S. Goldberg—Candidate for Regional Delegate/Director of Region 1

After over a year of intense personal involvement with our professional problems in New England, I am convinced we need a professional organization. I am less convinced that it should be the IEEE.

My background in this area includes being last year's Boston Section Chairman, Chairman of NEREM's "Brown Bag" meeting with Dr. Mulligan, Chairman of the IEEE Economic Analysis Committee, organizer of NEREM's Employment Opportunity Room, a member of the Massachusetts Engineers Council with MSPE and ASME, a founder and director of ATP, and a person very concerned about our basic problem.

In my opinion, we require an organization working on our behalf on the national, state, and local levels. It must be strong, aggressive, organized toward lobbying, self-help, and mutual well-being. I believe an organization like the IEEE with its complete technical bent may be a liability. IEEE is heterogeneous, internationally organized, and its only common bond is its technology. The IEEE also represents many who are not involved in this problem, either due to differences in field, or in position, or just indifference. As a volunteer technical organization depending on inexperienced subleaders, its procedures are adequate. But, when we have attempted to use IEEE structure for other purposes, we have been disappointed.

Moreover, the professional problems involve other specialties, such as mechanical engineers, chemical engineers, chemists, physicists, biologists, etc. A larger, more inclusive society should be able to have a greater impact than just the IEEE alone.

A restructured NSPE, coordinating with the other societies, could do the job. IEEE and ASME both recently affiliated with NSPE. Nonlicensed engineers can now become members of NSPE. With active participation of new members, with direction from society affiliates which are now forming, I believe we have the best opportunity to make an impact.

Harold S. Goldberg

Haroun Mahrous—Candidate for Regional Delegate/Director of Region 1

The engineer needs a strong advocate to promote his interests. This means the exercise of influence over industrial and government policy in areas which impact him both as a professional and as a citizen.

To achieve effective lobbying is costly. The larger the common interest group, the lower the individual cost and the more powerful the influence. Therefore, there is a need for a single, new organization to represent the technical community of the nation, to speak for all the employed engineers and scientists.

The NSPE in its present form could not satisfy this requirement. Its membership base is too narrow and it is committed to goals not consistent with those of the entire technical community.

The most effective way to form such an organization would be to have the leadership of the existing technical societies take the initiative, with IEEE leading the way. IEEE and the other societies would be loosely affiliated with the new organization and need not change their present technical activities or their tax status. At the same time their membership lists and communication media would be available to enlist extended membership for the new organization.

If elected, I will:

1. Promote this purpose and the maximum possible role of the IEEE in behalf of the professional interests of the membership.

2. Encourage the Sections to hold forums to discuss important issues which affect the professional and economic status of IEEE members.

3. Promote cooperation of Section Chapters and of neighboring Sections to hold more effective technical meetings.

Haroun Mahrous

Grover F. Daussman—Candidate for Regional Delegate/Director of Region 3

IEEE's mission is well reflected in the Constitution: "advancement of the theory and practice of electrical engineering, electronics, radio, allied branches of engineering or the related arts and sciences." Although from a puritanical point of view it may be desirable, such advancement cannot be void of economic considerations, nor should there be geographical or political constraints.

Present policies of the IEEE seem aimed toward advancing the profession. However, unless continually reviewed, policies become archaic. In view of changing society, a review now seems imminent. This is not to advocate capricious change but serious assessment of policies and how they might be most responsive to our massive but diverse membership.

By comparison with a number of other technical and professional organizations in which I hold membership, IEEE's performance appears outstanding; I am proud to have been nominated to this responsible position.

If elected, I expect to advance our profession through:

1. Meetings, conferences, conventions, expositions, and seminars which promote greater knowledge among our members in the Southeast in their chosen field, as well as serve to enhance the profession in the minds of the general public and those persons and organizations which contribute most toward the advancement of the profes-

sion. In particular, the aim will be to give greater recognition to the engineer and the engineering profession.

2. Special attention to the employment problems of the Southeast, especially in the aerospace field and for the graduating engineer. Recognizing the profession's obligation to society, the profession should show greater responsiveness to society's needs. New opportunities will be sought where the engineering profession can make significant contributions.

3. Communications through newsletters or other media, so that members might be well informed as to what the Institute is doing in their behalf, and the services that are available to them.

4. Continuation of the Region's strong Student Activities Program.

Grover F. Daussman

Hugh S. Landes—Candidate for Regional Delegate/Director of Region 3

The mission of IEEE should be that stated in the Constitution; namely, the advancement of electrical engineering in theory and practice, but scientific and educational in purpose. I oppose any constitutional change that would give IEEE a trade union structure. I believe that IEEE should be concerned with the socio-economic aspects of the member, but should act only in an advisory capacity and in cooperation with other societies, such as NSPE, whose mission is chiefly oriented in this direction.

The future success of IEEE depends on a more intimate "grass roots" participation of the entire membership. For this reason, I maintain the concept of areas within a region, now in existence in Region 3, to be a vital part of the IEEE structure for the future. The success of this concept has been ably demonstrated in Region 3.

If elected, I intend working toward maintaining the present Constitution and mission of the IEEE, and to retaining, expanding if such is possible, the usefulness of the Area Chairman concept in Region 3.

I am associate professor of electrical engineering at the University of Virginia, Charlottesville, Va. I am currently Chairman of Area I, Region 3, and have also served on the IEEE Merger Committee for the State of Virginia (1962–63), as Chairman of the Central Virginia Section (1964–65), Chairman of the Blue Ridge Subsection of AIEE (1960–61) and the Piedmont Subsection of the IRE (1962–63), as well as Student Branch Counselor to the University of Virginia (1958–60 and 1971–72).

Hugh S. Landes

Lloyd B. Cherry—Candidate for Regional Delegate/Director of Region 5

A dormant idea does no one any good, for regardless of its merit an idea must be awakened and developed if it is to have value. The IEEE is uniquely equipped to bring to the attention of industry and governmental agencies ideas which, upon development, will provide employment for designers, analysts, test engineers, sales engineers, and others. Doubtless a number of ideas which could contribute to industrial expansion have already been published and simply need to be evaluated and brought to the attention of those in a position to implement them.

At the Section level IEEE may well take a more active part in counseling with high school students who have demonstrated mathematical ability. A "protégé program," assigning one, two, or three students to each member of IEEE who expresses an interest, would redirect many students who would do better in other fields and attract others who have real potential but have never considered the study of electrical engineering. This program could result in a better "match" of ability and interest with an attendant increase in efficiencies in learning and, ultimately, in greater employment.

A stronger link is needed between the electrical engineering departments of the universities and current requirements of industry. The IEEE may provide this link by arranging for meetings of electrical engineering department heads and faculty with engineers from industry through the Groups and Societies. Besides, IEEE might take an active part in helping electrical engineering faculty members find meaningful work in industry during the summer months. In turn, the faculty will become aware of applied research projects in industry to suggest to graduate students.

My attention has been given to these endeavors in the past, and as president-elect of Eta Kappa Nu my energies will be given to the promotion of these activities.

Lloyd B. Cherry

William E. Cory—Candidate for Regional Delegate/Director of Region 5

Our IEEE stands at the crossroads of change. Some members are trying to push it toward a union, others a lobbying organization, while others desire to maintain a strict technical society. Look closely at our publications, conference programs, and TAB, RAB, and EAB activities; you will see that our elected officers and Directors and our appointed committeemen have made considerable progress toward (1) improved communications between members, Sections, Regions, and Headquarters; (2) improved cooperation between IEEE and other technical societies; (3) improved services to our members; (4) improved or established relationships between IEEE and other professional organizations; and (5) have made concerted effort to evaluate and solve our IEEE problems. You will be asked to choose among several candidates for most of the elected offices and to vote on proposed revisions to the IEEE Constitution and Bylaws. One of these revisions will completely alter the nature of our IEEE. For the first time in many years, it is very important that each IEEE member consider the candidates and proposals and then *vote*.

Where do I stand on major issues before our IEEE today? I am for maintaining a strong technical society within which the pros and cons of technological and sociotechnological issues are freely discussed in our publications and conferences; against IEEE becoming a union or lobbying organization; for expanding IEEE activities aimed at improving the professional well-being of our members, here providing technology assessments and

forecasts and expanded employment opportunity information may help; for expanding current efforts to improve communications between all members—professional cross-fertilization can lead the way to more effective use of today's technology for solution of today's and tomorrow's problems; for expanding communications between IEEE members and their national government organizations and international organizations; and for expanding the international aspects of our IEEE.

William E. Cory

Joel P. Kesler—Candidate for Regional Delegate/Director of Region 5

The IEEE must be more than a technical society. The reorientation required to better serve its members and society need not be radical; in fact, it is already under way. While the emphasis on the technical aspects must continue, the trend toward increasing the services to the individual illustrated by the actions to minimize unemployment and underemployment, and arrangements with NSPE for government liaison must continue. Like ASME, the Institute should consider acting directly to influence legislation, yet retain its tax-exempt status. We must look more toward the future and convince both government and private industry of the necessity for tremendously increasing our research and development efforts. Such a program will aid our maturing industries and especially help nurture new industries such as farming and mining the oceans. Our contribution in informing the layman on the technical aspects of our social problems must be increased so that better decisions can be made.

If elected, my efforts will conform to the philosophy above, but as a Delegate I would especially emphasize improvements at the local level. Greater enthusiasm should be created for group activity at the Section level as a means of providing the technical renewal of our local members. I would also solicit greater support by employers (including government) of member participation in Section activities. The feasibility of obtaining secretarial service for the Section activities by sharing the service and expense with other societies will be pursued. Implementation of such service in some Sections will permit the officers to better plan and direct the Section activities.

Joel P. Kesler

Douglas V. Carroll—Candidate for Regional Delegate/Director of Region 7

As a candidate for Director of Region 7 (Canada), I emphasize I am not soliciting votes for this position. If, however, the Canadian Region members feel that I can do a job for them as their Regional Director, then I am willing to serve on their behalf, as I have tried to serve the IRE/IEEE for the past twenty-odd years both in the Ottawa Section and on the International Sections Committee.

Yes, I have represented the Ottawa Section and IEEE on many committees and helped make important decisions on their behalf, on many occasions; but this is part of being a member of a body that has in its constitution a purpose to which I fully subscribe. Section 2 of our Constitution reads, in part, "Its purposes are scientific, literary and educational directed toward the advancement of the theory and practice of electrical engineering, electronics, radio, allied branches of engineering or the related arts and sciences, etc."

To achieve this, the primary function of the Institute is to disseminate information in an effort to assist every member in the pursuit of his professional career. This is done through Regions, Councils, and Sections, along with the technical Group structures and the literature disseminated by Headquarters.

To continue this in Canada, augmented with Canadian ideas by close communications between the Canadian Councils and Sections while maintaining close liaison with the international body, will be my goal, if asked to serve the Canadian Region as your Director, by the members of our Region.

The urge to obtain national identity in all walks of life is becoming part of the Canadian scene. This too can be achieved by the Canadian IEEE Region but I hope not to the detriment of losing our international IEEE contacts.

Douglas V. Carroll

Douglas M. Hinton—Candidate for Regional Delegate/Director of Region 7

The Institute is a learned society which can only maintain its eminent worldwide position by the service it provides its members. That service is the provision of a forum where technical matters of concern to electrical and electronics engineers can be discussed and published. In essence, the Institute is a communication medium.

As a valid communication medium it has a parallel in a communication network, with inputs and outputs at the membership level. The elected officers exist to maintain the efficiency of the network or medium—they are not the medium. The medium serves its members and the officers maintain the medium with responsibilities delegated, on election, by the membership.

Elected officers must be sensitive to their members' needs or desires. In the Canadian Region (7) the need for greater identity is voiced—this must be examined and solutions decided. The solution may be the decentralization, on a regional basis, of some Headquarters functions and the establishment of a Canadian Region office. If this is the desire of the Canadian members then the Regional Director must respond with a critical appraisal of the cost and benefits to Canadian Region members and the IEEE.

If elected, it is my intention to serve the members of the Canadian Region in particular and the Institute in general. I will continue the programs of my two predecessors, R. H. Tanner and W. H. Thompson. I know the value of their programs, having served as Secretary-Treasurer with Mr. Tanner and as Council Chairman with Mr. Thompson. My most immediate goal will be the furtherance of the "Canadian identity," either by the creation of a Regional Office located in Canada, or the organization of a Canadian Society within IEEE. This must not detract from the aims of the Institute, but

enhance the Institute's function as a communication medium within the Canadian sphere of interest.

Douglas M. Hinton

Gilles A. Perron—Candidate for Regional Delegate/Director of Region 7

"A primary function of the IEEE is to disseminate information that will assist every member in solving the technical problems in the pursuit of his professional career." (President Mulligan)

There are other objectives, but I have doubts that welfare should be one. Professional associations should be better qualified, and even that is not too sure. However, the majority should define the options.

IEEE problems tend to illustrate that we are not reaching down to members. In any organic democracy, ideas should stem from the masses. Notwithstanding some efforts, members don't feel that IEEE is "their thing" and have not shown enough participation. Here I am willing to help.

Canada has 8000 members distributed over a vast country. The scattered region is now a more unified area through the Councils. There is a growing feeling for better identity and a need for increased exchanges within the country itself.

The need for identity is natural to any group. Canadian electrical engineers are looking for a common voice and their own publication.

Present diffusion is not satisfactory. The high quality of documentation is often beyond the average electrical engineer. Without decreasing the standard, more members could be reached.

To satisfy Canadian members, we may remain as we are: Region 7, part of a strong, centralized organization; or become exclusively Canadian and accept whatever losses that may result.

Or perhaps IEEE Canada remains bound to the international Institute with looser ties. It may be worth the extra cost. The majority will decide, but let's make sure the choice is right.

These are personal views. I offer simply willingness and some experience in the association field: over 25 years of involvement with AIEE and IEEE, and four years as responsible officer for the Corporation of Engineers of Quebec with some 15000 members—or maybe I should retire! Your vote is my decision.

Gilles A. Perron

Hector R. Ayllon—Candidate for Regional Delegate/Director of Region 9

It is my sincere belief that IEEE is one of the most efficient and best-organized technical societies at the service of its membership, which is kept excellently informed of the latest technical advances in its field, and also enjoys effective means of communication for the necessary exchange of technical knowledge.

However, considering its present status of international organization, certainly an evolution from its original formation as a national organization, I feel that there are some situations that should be taken into account in order to optimize the services rendered by the Institute. For instance, there are those situations affecting the members of the Institute as a result of the different conditions and problems prevailing in the countries or zones where they perform their activities. Besides, it is important to give thought to the fact that, outside of the United States, there are in almost all countries local associations of engineers of our specialty, which pursue the same objectives aimed at by our Institute.

Consequently, I believe that IEEE should develop a policy to investigate the necessities of its members in the different zones where they work in order to implement the services most adequate to fill those needs. Also, contacts should be made with similar institutions so that, through mutual collaboration, a profitable relationship may be obtained and possibly result in an increase of the membership of the corresponding Section of the Institute.

This is, to me, the major task that Regional Directors should undertake and what I expect to do if I have the privilege of being elected by my colleagues of Region 9.

Hector R. Ayllon

Ernesto Obregon—Candidate for Regional Delegate/Director of Region 9

I believe the purpose of IEEE is not only the advancement of theory and practice of electrical engineering and electronics, but also the development of the individual, recognition of this development, and satisfaction of the needs of each one of the members and of the society in which they live. This is accomplished through conventions, seminars, meetings, and various technical publications.

IEEE is perhaps unique due to its transnational focus, which I feel is of great importance and could be emphasized more. Many engineering problems are universal and all of us can benefit from the exchange of ideas and solutions.

In the Latin American Region (Region 9) I hope it will be possible to organize new Sections. This is very important since Sections are the basic units of IEEE. By stressing the benefits, importance, and transnational scope of our organization many engineers in the Region would be encouraged to join IEEE; the potential is enormous.

There should be more contact between Sections. Since many of our situations are similar we could benefit from visits, lectures, and exchange of publications.

I feel it is possible to contribute much more in the field of publications not only for our own ELECTROLATINA but for other IEEE publications. The people in Region 9 are very capable; perhaps with more encouragement and facilities for publishing they will share their experience.

Special attention must be directed toward Student Branches. We should help orientate the student technically and professionally as well as members of our society. Engineers who are not members of IEEE can also benefit from lectures, conferences, etc., since IEEE should stress cooperation, not competition, with the local or national engineering societies.

I hope that by setting up goals, planning our efforts, and concentrating on cooperation and contribution, we can achieve more and the society and the individual member will benefit from this common effort.

Ernesto Obregon

Candidates for Divisional Delegate/Director for Divisions I and V

Arthur P. Stern—Candidate for Divisional Delegate/Director of Division I

The Director of Division I represents on the IEEE Board of Directors the Audio and Electroacoustics Group, the Circuit Theory Group, the Control Systems Society, and the Information Theory Group. These are sizable, successfully managed organizations, acknowledged internationally for their leadership, contributing significantly to expanding the theoretical and conceptual foundations of electronics and system engineering. The Division Director should not attempt to "manage" these organizations but should influence the Institute to continue providing a flexible environment in which these Groups can contribute responsively to our changing society and correspondingly changing profession. The principal future requirements include: to achieve closer academic–industrial coupling, to bring the primarily conceptual results of the Division's Groups to other organizations that emphasize engineering practice and applications, to accelerate assimilation of new theory into practice, and to learn from the practitioners so that the Division's Groups concentrate their endeavors in areas of greatest potential benefit to our science–technology-based society. While emphasizing financial responsibility, the Division Director must assure ample IEEE resources for theoretical and conceptual activities so that significant advances and information are not impeded by inadequate financial support.

Besides representing the constituent technical Groups on IEEE's Board, the Division Director, as advisor to IEEE's President and Officers, must strive to make IEEE more responsive to the social demands of our profession. IEEE must not become an ossified organization of old-timers—it must promote the ideals of our young colleagues and must accept the challenge to our profession caused by abruptly changed national priorities which jeopardize the contributing ability and livelihood of many, both young and experienced, professionals. IEEE must involve itself more actively in coping with the emerging crisis and must act to protect our fellow professionals and, through them, our society's future.

The Institute should elect Directors who are most dedicated and effective in pursuing these objectives.

Arthur P. Stern

M. E. Van Valkenburg—Candidate for Divisional Delegate/Director of Division I

The primary responsibility of a Divisional Director is to the interests of the Groups he represents. These interests include technical activities such as conferences, Group Chapters, and publications. My own experience in IEEE has come through a variety of assignments in the Circuit Theory and Education Groups and in publication activities, including the Chairmanship of the Publications Board. This experience may be of value in influencing the deliberations of the Board of Directors.

I have had a long-term interest in the development of the interface of professional engineering with economic and political problems of society. I have no doubt that the IEEE must assign more importance to these interfaces in the future. However, I believe that this can and should be done in the context of the historical IEEE role of professional and technical leadership.

We should continue to search for more efficient methods of information dissemination including printing, for more effective ways to involve the membership in technical meetings, and for improved techniques for continuing education. These objectives must have high priority, but they should be done after careful experimentation and step-by-step planning.

M. E. Van Valkenburg

John Zaborszky—Candidate for Divisional Delegate/Director of Division I

IEEE and other similar organizations are performing admirably in fostering, recording, and communicating technical progress. Yet many aspects of the professional life of the individual engineer and many necessary services to the membership are ignored.

Accordingly, I believe that:

1. The engineering profession must develop a strong voice that is heard and counted in decision making which affects our economic, legal, and professional affairs, specifically, *portable pensions*, *financial security*, *licensing*, and policy on *research and development*. *IEEE*, the largest and strongest engineering society, led by its Board of Directors, *must take the initiative*. This could mean direct action by IEEE or finding a solution to set the combined strength of the engineering profession into action at the levels of the public media, the corporation, and Congress. Only a strong "esprit de corps" can make either solution effective. Such seems to be developing now and this trend must be enhanced.

2. Broadening of national interests dictates that the engineering profession establish its rightful place in societal systems work, such as *transportation*, *pollution*, *economic*, *utility*, and *urban* systems. The engineer's propensity for realistic, workable solutions enables him to make vast *contributions* here. This will require much learning and hard work by members and Directors alike, but it will substantially *benefit the profession* and serve the best interests of mankind.

3. Often the technical activities of IEEE lack immediate usefulness in the practical engineering pursuits of many members. This calls for *expanding the applicable content* of our general *technical activities* as well as expanding such *services* by IEEE as *continuing education*, *retraining*, visiting lecturers for Chapters, and a library of "cassette" lectures. I have been pursuing objectives 2 and 3 as Chairman of G-AC and of Joint Automatic Control Conference 1971 and in my other IEEE offices.

If elected, I will continue this work and will make a maximum effort toward furthering all the objectives described above.

John Zaborszky

Theodore H. Bonn—Candidate for Divisional Delegate/Director of Division V

The IEEE is meeting the technical needs of our profession, but has not effectively responded to the mounting economic and social needs. These needs differ from those of the rest of society, and we bring a different and valuable perspective on technical–political problems.

The scientific, cultural, and educational excellence of the IEEE should be preserved and enhanced, and this should remain the primary purpose of the organization. But a significant proportion of the Institute's resources should be devoted to the other areas. How many of us want our sons to be engineers? A small percentage. The IEEE should have as a goal the improvement of the economic and social factors affecting the electrical and electronics engineering profession so that all of us find our careers more rewarding in terms of tangible and intangible satisfactions.

At the very least we should try to formulate the problems, quantify them, and develop possible solutions to them. We should provide the facts, alternative courses of action, and membership opinions to those in the political arena.

The first step is to provide staff at Headquarters reporting at the highest level, that would focus on economic, social, and technical–political problems only. The staff would organize committees of members to work on the problems and the staff would provide needed services, including factual research, membership surveys, and publicity for the results of the studies.

I have been involved in these issues for some time. As Technical Program Chairman of the 1969 SJCC I stimulated the organization of panels on "Computers and the Disadvantaged" and "Urgent—Increased Dialog with Society."

I am particularly proud of my work as Chairman of the Computer Group Publications Committee, and, with Harry Huskey and John Kirkly, in establishing the magazine COMPUTER, setting its tone, and starting the Computer Society Repository in that magazine.

Theodore H. Bonn

Linder Charlie Hobbs—Candidate for Divisional Delegate/Director of Division V

Three major problems face the IEEE management:

1. New technologies and markets are changing the scope and nature of our industry and spawning new technical societies. The IEEE must make organizational changes to adapt to rapidly changing technology and to give greater emphasis and flexibility to technical specialties, such as computers and digital systems. The technical Groups and Societies within the IEEE must exercise greater influence on policies and actions.

2. Technical communications must be improved to cover the ever-increasing scope of our technology while still meeting the needs of individual members. Conferences, symposia, publications, and new means of disseminating technical information must be developed, both to meet the needs of the young engineer to broaden his experience and knowledge and to meet the needs of the older engineer to keep abreast of new technical developments.

3. Our members face serious problems in the high unemployment and lack of adequate professional status in engineering. The IEEE must give urgent attention to these problems that face both the new graduate and the 25-year veteran. We must stop encouraging an oversupply of engineering students and must work with government and industry leaders to stabilize requirements for engineers. Needs for technical manpower must be created and met on a long-range basis, rather than generating short-term peak demands with unemployment taking care of the valleys between. Most present transients are caused by government policies rather than by the normal working of an orderly marketplace.

During two terms as Chairman of the IEEE Computer Group and several additional years on the Administrative Committee, I have worked actively (and achieved some results) on restructuring the IEEE and improving our dissemination of technical information. While those areas are of continuing importance, the time has come when we must all place greater emphasis on creating a more stable environment for professional engineering employment.

Linder Charlie Hobbs

Samuel Levine—Candidate for Divisional Delegate/Director of Division V

The IEEE is facing a critical period with problems such as unemployment of members, financial problems in providing essential services to its members, and the need for applying technology to the solution of social problems and for greater interaction with government and society.

There is also pressure from a segment of the membership that the IEEE should change its role to also consider the economic problems of its membership.

The IEEE leadership is addressing all of these problems within the constraints of its charter.

There is a need for further discourse between the IEEE membership and its leadership on all of these matters. Only then can the IEEE leadership obtain the guidance necessary to meet the needs of its membership.

In the area of its clear responsibility, technical dissemination of information, the IEEE can do a more effective job. The IEEE Groups and Societies have been effective in providing high-quality Transactions for primarily theoretical articles of archival quality. There is greater need for its publications to provide an outlet for the practicing engineer on applications and hardware design subjects. There is also need for more aggressive action in continuing education and retraining programs.

As a past chairman of the Computer Group, as a member of TAB operating committee, and currently as Appointed Director of Division V (nonvoting), I have been in the forefront of action to change the structure of the IEEE to provide greater recognition for the Groups. I have been instrumental in the action to organize the Groups into six Divisions, each with representation on the Board of Directors, and, in particular, I played a major role in developing the concept of Society status—this status to provide greater recognition and autonomy to major professional Groups, such as the Computer Society.

As an elected member of the Board of Directors, I can be even more effective in addressing the problems of the IEEE and the Division (Computer Society).

Samuel Levine

Inside IEEE

A Report from IEEE's President

The report to the membership on Institute activities this month consists of a series of comments by the chairmen of several of the major Boards of the Institute. Taken together they provide a good indication of the progress that is being made in the development of new activities responsive to member needs. Comparable reports were made to the Board of Directors at its meeting in August as part of the discussion associated with the 1972 Institute budget. I believe that you will find them both informative and interesting.

At the meeting of the Board in August considerable progress was made in adjusting the various items in the budget proposed for 1972 to reflect priorities indicated by contacts with individual members. The final version of the budget will be considered by the Board in November, although no substantial changes are expected to be made from the draft discussed in August. Some of the features associated with 1972 plans are increased attention to career development activities to meet the needs of individual members, visiting lectureships for local Section meetings to provide greater attention to new technical developments, and provision for Region-wide experimental programs directed to satisfaction of specific member needs. Members are invited to contact me, Treasurer Ray Sears, or any other Board member to express views concerning priorities of Institute activities or for further details on present budget plans for 1972. It would be highly desirable to have as much member reaction as possible to the proposed budget by the time of the next Board meeting in mid-November.

J. H. Mulligan, Jr.
President, IEEE

New success in improving Region/Section organization

The necessity for the Board of Directors, Executive Committee, and Headquarters staff to know in real time the desires and needs of the members has never been greater than it is today. For this reason, we are redoubling our efforts to make the Region/Section network an ever-improving two-way communications system. Two recent successes along these lines have been the member surveys conducted by Regions 3 and 6, the first using a questionnaire technique with random but high return, and the second being carried out by telephoning a random sampling of members with almost 100 percent return. Initial results have been reported to the Board of Directors, and final figures will be published in *Spectrum*. Similar surveys are planned for 1972, to keep abreast of membership needs.

The Regional organization is giving full support to President Mulligan's actions to alleviate the U.S. unemployment situation—by holding workshops in the worst-hit centers; by cooperation with local employment offices, committees, and self-help groups; and by submitting proposals to the U.S. Government for more far-reaching schemes. This initiative has led to a $750 000 study contract on skill conversion. Meanwhile, Region 2 is conducting an experimental program on technological forecasting and assessment, which, if successful, will be expanded in 1972 to cover at least Regions 1–6. Cooperation with NSPE and other engineering and scientific societies is increasing and deepening, as the profession pulls together as it never has before.

Meanwhile, in Regions 7–10 experiments are under way or planned to develop the Institute's organization in ways best suited to the needs of its non-U.S. members. Here again cooperation is the watchword, not only between technical and geographical units of IEEE, but also with national societies and similar bodies in various countries. The distinguished lecture series, more fully described in the technical activities report, should get into high gear in 1972. It originated in discussions with European engineers, and is planned to have a worldwide scope.

To give the Regional Directors greater flexibility in handling their responsibilities, changes have been made in the financial structure of Regional operations. Some sweeping proposals designed to bring the member and the staff closer together have been discussed, but their implementation must await better financial conditions within the industry and the Institute.

Fears of a serious drop in membership resulting from industrial recession in the United States and elsewhere have proved groundless, largely as a result of the efforts of local Section committees, spurred on by the Institute Membership and Transfers Committee. A well-planned program of information and action drastically reduced the number of members in dues arrears. Another program, directed toward involving the recent graduate in the affairs of his new Section, is now in full swing and should be showing results before the end of the year.

Robert H. Tanner
IEEE Vice President

Recent developments in technical activities

Technical meetings. Despite generally unfavorable economic conditions some major Group technical conferences have been well attended and financially successful. The Magnetics and ComTech Groups and the IEEE Power Engineering Society have had particularly good conferences this spring and summer.

The NEC board decided not to hold the 1971 National Electronics Conference and the IEEE has taken action to sponsor the major portion of the technical program that had been planned largely by IEEE Groups. The 1971 IEEE Fall Electronics Conference will be held in Chicago at the same time as NEC was originally scheduled.

Publications. The number of Group and Society Transactions and of IEEE Journals that have been published during or before their stated month has increased significantly. The work of Managing Editor Jim Carter and his staff has been noted by Bob Cotellessa, chairman of the TAB Publications Committee.

Applications of electrotechnology to social problems. An interim report from the Cory *ad hoc* committee working on this subject reveals that considerable activity is taking place in the IEEE at the committee, Group, and Society levels. Some IEEE organizations that have carried on activities recently and have continuing activities planned include the Transportation Committee; the Geoscience Electronics Group; the Systems, Man, and Cybernetics Group; the Industrial Electronics and Control Instrumentation Group; the IEEE Power Engineering Society; the IEEE Control

Systems Society; and the IEEE Computer Society.

The availability in early September of the IEEE Press volume on the Clean Air Act makes it possible for the IEEE to have a more positive position relative to the government's legislative and executive branches. A policy statement describing how the IEEE should interact with the U.S. Government in Congress and elsewhere is being prepared for Board approval. Our efforts continue to try to initiate specific new IEEE technical activities with the government.

An IEEE Steering Committee under Dr. E. Wolff has been established with members from several Groups and Societies to assist IEEE efforts toward setting up a United States Environment and Resources Council (USERC) patterned after AFIPS and a World Environment and Resources Council (WERC) patterned after IFAC. The objective of these councils would be to provide a national federation and an international federation of technical societies and organizations, which could hold meetings and discuss plans for addressing some of the global problems in these critical areas of environment and resources. Hopefully, these organizations can help supplement and carry on ideas of the June 1972 U.N. Conference on the Human Environment, which will be held in Stockholm.

An experiment was recently held on the subject of technological forecasting and assessment at the Region 2 meeting earlier in October in Washington with joint Regional technical participation. It is hoped that these efforts will be judged sufficiently successful and worthwhile to warrant more comprehensive studies of this sort to be carried out in 1972, followed by a major contribution to the 1973 International Convention if this appears desirable.

Group/Society activities. Currently the IEEE Computer Society is entering into negotiations with the Simulation Council for bringing in the latter organization as a part of the IEEE Computer Society. It is proposed that the title "Simulation Council" would be used to designate this part of the society.

Four Groups currently have submitted petitions for Society status. These include the Magnetics Group; the Systems, Man, and Cybernetics Group; the Industry and General Applications Group; and the Communication Technology Group. In addition, in order to review these requests by the TAB Group/Society Review Committee, a TAB OpCom *Ad Hoc* Task Force has been formed to consider some of the longer-range implications of the Group/Society structure as it may affect TAB finances.

Discussion of Group mergers continues in an effort to find more operating economies in the face of stringent financial conditions. As another economy measure, TAB is requesting that the Groups and Societies monitor the credentials of their affiliate members and free TAB from this expense.

In an effort to stimulate the IEEE Groups and Societies to be more responsive to IEEE membership needs, TAB OpCom has voted to make the TAB financial support to Groups and Societies in 1972 not directly proportional to membership. An effort is being made to encourage new activities such as tutorial educational programs, special workshops, and other novel and worthwhile activities. TAB OpCom will review these recommendations.

Regional/technical cooperative activities. Meetings have been held in France and Germany to enable the IEEE Sections in these countries to work more effectively in the technical arena with the national electrical engineering societies. Discussions appear cordial at this time.

A plan for instituting Regional Outstanding Lecture Tours has been formulated with initial emphasis on Region 8 and Regions 1–6. A number of persons interested in presenting such lectures have been recommended, but to date the acceptance has been small. It is hoped that in the fall more lectures will be scheduled under this plan.

A proposed policy statement outlining Section/Group Chapter/Society cooperation has been prepared by the RAB and the TAB Planning Committees and was recommended for endorsement by the Board.

Education. Several more Groups and Societies have formed committees to provide tutorial and applications-oriented educational material for use by Groups, Group Chapters, and Sections alike. It is hoped that Section interests in such material will be greater than they have been in the past, although some very successful educational meetings have been held at the Section level.

Awards. A review of the awards activities of the Groups and Societies has been completed recently to update the status of each organization. TAB at its August meeting voted to endorse a request from the Fellows Committee that the Groups and Societies cooperate in the screening process of the nominees for IEEE Fellow recognition.

Harold Chestnut
Vice President, Technical Activities

Report of publication activities

IEEE Press. The IEEE Press has approved five reprint volumes for publication. Their titles and sponsors are: *Cleaning the Air: The Impact of the Clean Air Act on Technology*, Geoscience Electronics Group; *Active Inductorless Filters*, Educational Activities Board; *Applications of Minicomputers*, Computer Society; *Digital Signal Design*, Audio and Electroacoustics Group; *Applications of High-Power Semiconductor Devices*, IEEE Press. The first three volumes are being published this year and the last two will appear early in 1972.

Spectrum editor. Both the Publications Board and the Executive Committee have approved a full-time editor for *Spectrum* beginning in January 1972. One of the items actively being considered by the Publications Board in preparation for this change is means by which guidance, assistance, and evaluation can be provided a full-time editor in regard to *Spectrum* serving member needs and being consistent with approved editorial policy. Recommended procedures for accomplishing these objectives will be presented to the Executive Committee before the end of the year.

SDI study. For a number of years, the rapid expansion of the volume of technical literature, the more specialized interests of members, and the increasing availability of the digital computer have made increasingly attractive the concept of providing members with technical material that is selected according to their individual interests. Heretofore, the limitation to such a service has been the administrative cost.

Currently the Information Services Committee of the Publications Board is formulating a plan for an experiment on Selective Dissemination of Information (SDI) and is studying the economic feasibility of conducting such an experiment on a small scale. The committee has not completed the study; therefore, it is mentioned for information purposes only since a number of members have indicated that the Institute should offer such a service. If the experiment is judged feasible, it would provide valuable information concerning the number of members who really would find SDI useful.

If the feasibility again seems questionable, a summary of the experiment and the basis of evaluation will be provided for information purposes.

IEEE journal viability. Despite all efforts to utilize publication methods for those IEEE journals for which they provide an economic benefit, publication costs continue to increase annually. These have been offset in part by *ad hoc* actions such as reducing journal size, increasing subscription rates, initiating author page charges, etc. The future, however, is far from bright as most of the options, as heretofore considered, have been exhausted.

Page charge rates have been increasing 15–20 percent a year, in part because economic conditions are such that only a small percentage of the authors can honor them. Clearly a tougher policy of page charge collection can and probably should be adopted, but the limiting policy of publishing only those papers for which page charges are honored would cripple many IEEE journals under current page charge rates, and it is doubtful that such action would be in the best interest of the Institute.

The extent to which size can be reduced and a viable journal still maintained is also limited because of adverse reactions of both subscribers and authors; and, in fact, this limit already may have been exceeded in some cases. Subscription rates, likewise, must be consistent with the value of the product to the reader. This is further complicated because many members view Institute membership dues as part of the subscription charges for the journals they receive.

The Publications Board is conducting a study of subscription rates, page charges, journal size, and production costs for IEEE journals. The study will consider how these items are related to subscriber and author acceptance and provide information and guidance for determining values such that IEEE journals remain economically and technically viable. Fundamental to this study are questions of production methods and associated costs. To date, these have received the major attention.

Publication costs can be materially reduced for most IEEE journals by going to author-typed composition and thereby removing most editing and all composition charges. This would correspondingly remove author page charges as the purpose of these is to cover part of the editing and composition costs. The result of this change would be a significant degradation in the appearance and accuracy of most journals. One question to be answered is whether the IEEE will tolerate the degradation in quality. Another is to determine whether procedures can be suggested that would minimize this without adding to the publication costs. These questions, as well as pricing policies, will be considered by the Publications Board in the coming months.

C. L. Coates, Jr.
Chairman, Publications Board

Educational Activities Board reports progress

As I have reported to you in the past, the Educational Activities Board has been organized into three basic committee areas: accreditation, continuing education, and precollege guidance. In the past few months, additional committees have been established that are involved in career development, professional concerns of women, and professional concerns of minority groups.

In the area of accreditation, ECPD activities have been followed closely by the chairman of our Accreditation Committee, Dean Robert Saunders. The two areas of great interest to the Institute are: (1) current discussions on restructuring the accreditation activities into an academic commission with two committees reporting to the commission, one of which would act on accreditation of programs at the first professional level and the other on programs in "allied" engineering (at its most recent meeting EAB endorsed this concept); (2) ECPD negotiations for recognition as the national accrediting agency for advanced engineering degrees with the National Commission on Accreditation—a member of EAB has been appointed to a small committee of NCA and ECPD to work out the details.

At the request of our representative to the board of directors of ECPD, negotiations are being held to accomplish a reduction in the budget to minimize its impact on IEEE funds without seriously affecting the important areas of ECPD activity in accreditation and precollege guidance.

The IEEE Guidelines for ECPD *ad hoc* visitors are being updated, and we plan to augment this pamphlet with audio–visual review material for visitors' use prior to making an inspection visit.

In precollege guidance, the Guidance Committee has published a summary of the career decision report prepared by Dr. D. E. Super for distribution to IEEE entities and sister societies. A guidance "support program" has been assembled and made available to Sections, which includes the afore-mentioned summary, "Decisions About Careers in Engineering"; a new, inexpensive brochure, "Take a Look at Electrical or Electronic Engineering"; and information on availability of the IEEE–Eta Kappa Nu guidance film and a 20-minute technology film. Educational kits and counselor lecture aids are under consideration by the committee for future programs in the guidance area.

A statement was issued to the Sections on the importance of taking a long-term outlook when considering career guidance during the currently difficult economic climate.

The Institute participated in the International Science and Engineering Fair as a Special Awards Sponsor under the aegis of the Precollege Guidance Committee, and the EAB has recommended the continuance of this sponsorship.

In continuing education, the Continuing Education Committee has organized into the following areas of project responsibility: slide tapes—Dr. S. H. Durrani; bibliographies and books—Dr. M. A. K. Hamid; self-study courses—Prof. R. W. Grow; short courses—Prof. S. K. Mitra; Cassette Colloquia (DATE)—Dr. J. M. Biedenbach; IEEE Soundings—Dr. W. R. Beam; university support—Dr. E. C. Gentle; CES credit program—Dr. R. H. Mattson; and special projects—open. These subcommittees will generate new material,

review and edit projects received from outside sources, and recommend their suitability to existing or proposed programs.

The committee as a whole will be responsible for recommending EAB policy, planning and identifying major activities in continuing education, coordinating activities with other societies, and coordinating continuing education activities with TAB and RAB.

The following are continuing education programs that have been continued/or augmented.

DATE service. Results of numerous studies indicated that engineers utilize interpersonal communication as a primary means of problem solution (in contrast, scientists use primary literature). DATE was conceived as a competent and authoritative substitute for the "man next door" to which the practicing engineer could turn to obtain "start-up" information on a topic about which he had little or no knowledge. The concept is now being test-marketed.

Short courses. In the past, short courses sponsored by the EAB have proved pedagogically successful, but in some cases financially marginal if not unsuccessful. The best judgment of past Boards was that, owing to certain policies, the short courses were in essence priced out of the marketplace. At the same time, input from Regions indicated a desire to have such offerings. Therefore, rather than completely eliminate these offerings, a different approach was suggested whereby the EAB would be responsible for development of course material, but the Region Section/Chapter would assume the financial risk involved in offering the course.

Professor Mitra has begun work on generating short-course material and, in addition, is working with local organizations by providing his experience and counsel in putting on the course. At present, he sees a minimum of 15 such offerings presented during 1972, including the following titles, which may be presented at different times and locations: "Active Inductorless Filters"; "Minicomputer Applications"; "High-Power Semiconductor Device Applications"; and "Digital Signal Processing."

In addition, the committee, in cooperation with Dr. Julia Apter (chairman of COMPOW), is giving consideration to the preparation of a course on the application of engineering techniques to the practice of medicine. This is in response to the increasing need for a new professional on medical teams—the medical engineer.

Cassette Colloquia. This series of offerings was conceived on the basis of providing the IEEE member with the opportunity to hear what transpired at one of IEEE's numerous meetings—either to refresh his memory if he attended, or to allow him to pick up information he missed by not attending. The series is unique in that it does not conflict or overlap with any printed output from these meetings. The colloquia consist of timely tutorial panel discussions or single presentations for which no other record exists, primarily because the material presented was given extemporaneously, or the author did not prepare a complete manuscript for publication.

The series has been in existence for about a year and now has five titles. We are adding four titles during October and will continue to augment the series during 1972.

Soundings. Conceived as a complementary series to Cassette Colloquia, Soundings provides a highly edited, compact source of tutorial information on selected subjects of high current interest. It is offered quarterly on both a subscription basis and individual unit sale. Titles to date include: "Systems Engineering: Art, Science, and Politics," "Electronics in Commercial Aviation," "The Environment—Its Engineering Challenges," and "The Human Voice . . . and the Computer."

Slide tape lectures. One of the first and most popular programs of the Continuing Education Committee is its series of slide tape lectures developed for use by IEEE Sections and Student Branches as program material for meetings or lecture series. The lectures are derived from presentations made at IEEE sponsored meetings, workshops, and conferences, and are also developed by invitation of the EAB in conjunction with IEEE Groups.

Self-study courses. These courses fall into two basic categories—correspondence and "packaged self-study courses." We are not contemplating programmed texts for the future owing to development costs, which are extremely high. The self-study concept came into being as a result of the realization that short courses, refresher courses (two or more weeks in duration), and extension courses, as well as advanced-degree-oriented work, were being taken advantage of by relatively few of the total number of engineers. In addition, the cost/student/hour tends to be high and is considered a major barrier to enrollment, especially in a period of economic decline. It was felt by EAB that self-study material would be able to overcome the cost/student/hour barrier and simultaneously provide the potential student with a degree of time flexibility not available through the use of the other techniques.

Under the first category, the EAB has sponsored and will add to the program of management games. In addition to the two current courses—"Management Games I" and "EDP Games"—three additional courses are being presented this fall: "Management Games II," "Your Personal Career Development Program," and the "Continuing Manage-Game Service."

In the second category, EAB has undertaken the development of a "packaged self-study course" entitled "Hybrid Microelectronic Circuits," which was prepared by Prof. R. A. Rikoski of the Moore School of Electrical Engineering, University of Pennsylvania. The course consists of a study outline, course notes, textbook, and book of reprints (in cooperation with IEEE Press).

New programs under development include additional autoinstructional courses similar to the foregoing, a self-study program in cooperation with the Institution of Electrical Engineers of Great Britain, and a work–study exchange program with Regions 8 and 9. Details are being studied by the committee with regard to a program of IEEE certification of continuing education studies.

A manager of career development will be added to the staff in response to the needs of our members. A major shift in engineering job and education requirements in the future indicates electrical/electronics engineers will be required to make significant changes in their careers throughout their working lives. This changing pattern indicates a need for a variety of information and educational activities focused on monitoring and developing the skills of IEEE members. Sources of information and data on shifts in manpower supply and demand—engineering content of prospective job opportunities, and ascending and declining technologies supporting segments of the industry—will have to be developed and continually maintained, and reports on the outlook generated. Educational programs will need to be developed that will focus on the new needs of our members, both in technology and in the general area of professional concern. All of these aspects of career development will be coordinated at Headquarters through this new office.

The EAB Committee for Professional Opportunities for Women and the Committee for Professional Opportunities for Minority Groups are still in the organizational phase; however, it is anticipated that, before the year's end, they will stimulate interest in and programs for developing expanding opportunities for women and minority groups in electrical/electronics engineering.

Other activities in which the EAB is cooperating with the Regions and Sections include the development of a visiting lecturer program on an experimental basis in Region 8, which can be utilized

by other Regions, and active participation by the Sections in the guidance program.

The IEEE Societies and Groups have been contacted directly by the Vice President for Technical Activities, the Chairman of EAB, and the staff Directors of Technical Services and Educational Services and requested to: (1) appoint an Education Committee (if one does not already exist) and provide the name of the chairman to EAB; (2) prepare an inventory of available educational material; (3) prepare bibliographies in their respective fields; (4) submit material and suggestions for IEEE's cassette and slide tape programs. In addition, the Groups have been asked to cooperate in the development of material for courses, seminars, and self-study use. The response and cooperation from the Groups has been encouraging and several new programs are under way as a result.

The year 1971 continues to be a year of expanding educational activities and services for our members as is evidenced, I believe, by this brief review of what we are doing. As always, I welcome your comments and suggestions.

Glen Wade
Chairman, EAB

Progress is reported in three programs on engineering skills—conversion and employment

Representatives of IEEE, the National Society of Professional Engineers (NSPE), and five other engineering societies met with U.S. Labor Department officials last month to map out plans for the conversion of skills of aerospace and defense engineers into other areas of the economy. The IEEE had a leading role in organizing the Joint Societies Employment Advisory Committee (JSEAC), which is administering the program under a $750 755 grant from the Department of Labor (August *Spectrum*, p. 7).

In a related development, Dr. Edward E. David, Jr., Science Advisor to the President, announced a program of one-year internships in science and engineering. The $3 million effort is expected to open more than 400 training opportunities in federally funded laboratories across the United States. The announcement came two weeks after a September 1 meeting at which Dr. David had discussed unemployment among scientists and engineers with science advisors to the governors of the 50 states.

Engineering skills conversion. Attendees at the four-day meeting of JSEAC, which was held in Port Ludlow, Wash., took a hard look at the ground covered by two pilot teams that went into action during August. In addition, the group proposed strategy plans for other target areas.

Fifteen-man study teams, composed of unemployed engineers and scientists, were set up in Seattle and Los Angeles and have recently been established in other areas of high engineering unemployment around the U.S. The target and pilot project areas include: Huntsville, Ala.; Los Angeles, San Diego, Orange County, and San Jose, Calif.; Cape Kennedy, Fla.; Atlanta, Ga.; Boston, Mass.; St. Louis, Mo.; Long Island, N.Y.; Philadelphia, Pa.; Dallas, Tex.; Seattle, Wash.; and Wichita, Kans. Among the industries selected to be evaluated in these regions are oceanography, banking and finance, recreation, environmental sciences, medical instrumentation, mining and mineral processing, and data processing.

The teams are each assigned specific local industries and attempt to evaluate the potential for employing additional engineers, scientists, and technicians in these industries. The NSPE is acting as administrative and fiscal agent in the study on behalf of JSEAC, which—in addition to NSPE and IEEE—consists of the American Institute of Aeronautics and Astronautics, the American Institute of Chemical Engineers, the American Institute of Mining, Metallurgical, and Petroleum Engineers, the American Society of Civil Engineers, and the American Society of Mechanical Engineers.

During the meeting, the chairmen of the two pilot teams outlined in detail the activities required to start up the program locally. The Los Angeles pilot team has been examining the health care and service industry, the transportation industry, and the solid waste disposal industry. The Seattle pilot team was assigned the food products and service industry, the water pollution and control industry, the wood products and building material industry, and recreation.

Members of the study teams, all of them unemployed aerospace and defense engineers, were selected for the program after extensive screening and interviews. Project leader is Donald Ledbetter, Special Staff Consultant on Long-Range Engineering Employment to NSPE, and himself a job-terminated engineer from Aerojet Nuclear Systems Company.

The teams have four specific goals: within target industries, to determine professional job opportunities within the next three to five years; to identify skill requirements and to compare them with existing skills of unemployed engineers, scientists, and technicians; to develop a plan to match these skills to the target industries; and to develop plans to bring employer and employee together in a mutually beneficial way. The teams are currently gathering data on the target industries preparatory to contacting top management to assess current and future job opportunities. Each team follows a rigid time schedule—in Seattle and Los Angeles, teams were recruited and put to work in less than four weeks.

After this meeting, the new teams returned to their home bases to get their research activity into motion. Further progress report meetings are scheduled this month. JSEAC members hope to complete the program within eight months.

Presidential internships. According to U.S. Labor Secretary J. D. Hodgson, the science and engineering internships announced by Dr. David are designed to "strengthen the nation's effort to hold on to its pool of trained scientists and engineers."

Dr. David, whose Office of Science and Technology developed the program, noted that engineers and scientists provide a unique source of skills and resources, "much of it developed at taxpayers' expense in colleges, universities, and various laboratories. We would hope to expose the trainees to both the problems and the capabilities of government research and development and put them in positions where they can best benefit the nation and themselves."

He pointed out that the internships should be particularly beneficial for unemployed younger scientists and engineers who hold advanced degrees. Those under 30 are among the hardest hit by the current job squeeze; they have an unemployment rate of 5.3 percent according to a recent National Science Foundation survey.

The fields in which they would have the greatest impact, Dr. David explained, are those of social concern: pollution, trash disposal, management and integration of large projects, and nuclear medicine and power systems.

This program was the second Administration initiative taken in September aimed at enhancing the utilization of scientific and engineering techniques through existing manpower programs. At the meeting on September 1, Dr. David outlined an employment program under which states, counties, and local governments could hire scientists and engineers under federal matching programs. The Emergency Employment Act of 1971 makes it financially possible to put part of this reservoir of unemployed specialists into previously unfilled or undeveloped positions. The Science Advisor said the purpose of the September 1 meeting was to acquaint the governors' scientific and technical experts with the financial elements of the Employment Act so that chief executives will be able to take full advantage of the available funds.

"The injection of scientific and technology personnel and expertise into the framework of state, municipal, and other governmental units serves two purposes," said Dr. David. "One is the employment of scientists and engineers, an underutilized national resource of brainpower and advanced conceptual thinking. The other is the implementation of new techniques that smaller governmental units have been unable to evaluate or employ because of an inability to hire qualified personnel."

Under the internship program, candidates may apply directly to federally financed laboratories for one-year, nonrenewable internships that will be administered by the National Science Foundation. Veterans and those from high unemployment areas will receive preference. The laboratories will be allotted $7000 for each intern and must match that amount with either cash or research support.

Those interested in obtaining information should contact the laboratory's personnel director, whose name is listed in the Directory of Federal R&D Installations (NSF 7–23). This directory may be found at most public libraries.

Inside IEEE

A report from IEEE's President

I have reported in this column earlier this year many examples of my efforts, as well as those of members of the Board of Directors and the Section and Group/Society officers, to make the Institute more useful to its members. This month I wish to appeal to the individual member to increase his attention to this objective.

In recent weeks I have attended several Section meetings, usually meeting as well with the Section Executive Committee. I have participated in training sessions for Section Chairmen and other officers, and have reviewed in detail several programs in progress aimed at more effective dissemination of relevant technical information and the development and distribution of timely nontechnical information concerning the development of one's career in the electrical engineering profession. These experiences have convinced me of the great personal commitment that many individuals have made to improving the total effectiveness of the IEEE. At the same time, however, it seems equally apparent to me that greater involvement of the individual Institute member in shaping events that could affect him directly—either in his local Section or in the Group/Society to which he belongs—is an important factor meriting much additional attention.

On this basis, it seemed to me that it might serve a useful purpose to suggest here several specific directions in which the individual member might contribute directly to improving total Institute effectiveness. At the outset I should note that many members have already moved in this general direction; most of the nontechnical activities that have been initiated Institute-wide in 1971 have resulted directly from attempts to respond to expressions of member needs. It appears, however, that substantial further stimulus to Section and Group/Society activity planning and implementation by individual members would be extremely valuable.

What can you, as one individual, do in this regard? Initially you can ask some questions about the gap between what is and what should be in your Section or Group/Society as you perceive it. For example, if you are interested in greater technical activity, what kind of activity do you have in mind? Do you want more field trips, lectures, panel discussions, specific educational programs (in single sessions or in a series), specialized publications, or something else? Is your particular interest at the moment in the nontechnical area? In your opinion, should there be more attention to factors concerned with individual professional growth to assist you in your career planning and decision making? What specific activities are of direct concern to you?

One aspect of the problem involved is how existing Institute resources can be brought to bear on meeting needs in your specific geographical and/or technical area to provide greater benefits to you. If new resources seem to be needed, possibly local consultations with Institute officers would help in bringing this about; these discussions can be arranged, usually rather easily.

To pursue this line of reasoning further, suppose you have developed some thoughts that indicate action is needed. At this point you should consult an officer of the Section or Group/Society with which you are associated. You should express your views, and hopefully you'll obtain a positive response. Furthermore, it would not be surprising if you were asked to assist your local organization in bringing some of your ideas to fruition. You might be asked to arrange specific programs, possibly to organize a Group/Society Chapter, or perhaps be requested to assume some more modest responsibility. In any event, your individual effort can be the first step in producing IEEE activities that are much more meaningful to you.

The activities of the Institute are carried out for the most part by its members—volunteers who are assisting each other in their professional careers. When the individual member communicates to the Section or Group/Society officers his particular needs and is willing to contribute his time and knowledge, the Institute membership as a whole will benefit. Greater effort in this direction will add much to the vitality of our organization.

J. H. Mulligan, Jr.
President, IEEE

The EAB and the unemployment situation

An area of major concern to the Educational Activities Board has been the development of meaningful and effective activities directed toward alleviating the unemployment situation. We have discussed some of these programs in this column, and I would now like to describe to you an effective educational activity, which I feel holds great promise for expansion and use in many other Sections throughout the Institute. In what follows I shall quote directly from a report written by LeRoy Barncastle, Chairman of the Santa Barbara Section, and acknowledge, hereby, his significant contribution in developing this program.

"One of the greatest concerns today at the IEEE Section level is how to cope with this 'real' unemployment problem and the current effects of shifts in the nature of engineering positions. Awareness of vast unemployment in our neighboring Sections of the main Los Angeles areas results in realization that we, in the outlying Santa Barbara area, are also affected but in a proportionate population manner.

"During the summer when the Santa Barbara Section traditionally would be less active, the time was dedicated to establishing a committee for studying the general unemployment problem, specifically within the Section. At the outset, special Section meetings were held to discuss unemployment. After several Section and subsequent committee meetings, a group of interested volunteers soon became the nucleus for an active Unemployment Committee. Because we were interested in problems of not only IEEE, we welcomed close coordination with Experience Unlimited of Santa Barbara. We have continued these efforts in a mutual cause to aid each other in strengthening our efforts.

"The initial efforts were in determining the Section's employment status and member needs. This was initially attempted by a questionnaire as part of

the meeting notices. Because only 10 percent of the questionnaires were returned, it appeared that a realistic survey could not be achieved. However, it became apparent that there were significant unemployed members, and a general problem did exist. To strengthen our mailer survey, the committee conducted a telephone survey.

"The purpose of the telephone survey was to ascertain the severity of unemployment. Initially it was planned to contact all members; however, it was difficult to seek out, trace, and contact all the Section membership. This involved considerable time and effort; however, the committee did manage to go through 424 names. Of those 424 members surveyed, 80 members were not available, 97 were students, 49 were out of the local dialing area, and one was deceased. Of the 198 members contacted, the results are the following:

Employed	169
Underemployed	9
Unemployed	6
Consultants	7
Retired	7

The 15 underemployed or unemployed engineers amount to 7.5 percent of the total number contacted. With a few minor exceptions all those contacted were in favor of the IEEE becoming directly involved in the unemployment problem. Many members, including employed members, offered to assist the Unemployment Committee in its operations. Moreover, some members advised of job openings that could be investigated.

"It soon became apparent that studying the unemployment problem was complex and time consuming, not to mention costly, if an effective approach was to be formulated and implemented. The local Section Ladies' Auxiliary, a very active group, contributed, along with various IEEE members, certain moneys to support our initial efforts and assist with needed funds.

"Basically, a program was initiated to (1) classify unemployed members according to capabilities and interest; (2) institute self-help programs, including improvement of résumés and interview skills; and (3) conduct educational (retraining) seminars on subjects such as computer applications and environmental technology. Moreover, a method of close communication for advising the unemployed of potential job openings through 'word of mouth' was implemented. With the consent of the unemployed IEEE member, his résumé, after screening by the Committee, is submitted to potential or desirous employers who have indicated specific requirements. The rest is up to them.

"As part of the unemployment effort, the president and personnel manager of all prospective companies in the Santa Barbara area were contacted. This was to introduce them to our unemployment activities, our concern, and especially our services, which could aid them in fulfilling their engineering labor needs at minimum costs. To support this a relatively inexpensive answering service was established by the Section for the convenience of potential employers who require immediate local engineering talent. This effort is effective, as already communication has been established between 11 companies for 26 jobs. The committee has done personnel screening, submitted nine résumés, and filled one position.

"It became apparent that education and retraining are an important necessity in the current engineering and scientific unemployment subject. The interest in retraining and education by the Employment Committee led to the establishment of an Education Committee, whose initial efforts have been the creation of the education program previously mentioned. The program is being offered to the Section members and is intended to update the skills of the practicing engineer. This program, which is planned to become a continuing activity, starts with a course in computer applications. Its organization is solely the result of initiative by local members who volunteered their services in the Section Education Committee and helped draft the program. The committee was motivated by the desire to have the IEEE render a truly useful service to those members temporarily unemployed and to others who would benefit professionally by learning new skills. Although the conducting of technical courses is not unique to the IEEE, it is relatively new to the Section.

"The course is not under the jurisdiction of any public educational institution, nor is it intended to conflict with educational efforts of the local university. No fee is charged and the prescribed textbooks and class notes are supplied free to members who are temporarily unemployed and at cost to others. The staff is IEEE members employed by the University of California at Santa Barbara (U.C.S.B.) and selected local firms. Presently, the class enrollment is 36, including ten unemployed members. This, excluding Associate and Student members, is approximately 10 percent of the membership. The course will run for 15 weeks and will last for three hours each session with lecture and computer laboratory combined. It is intended initially to use computers at U.C.S.B.; however, spare computer time from local industry has been offered for additional training purposes.

"The IEEE Student Chapter of the Santa Barbara Section has been actively working with the Santa Barbara Section in both structuring and teaching the computer course. The students have specifically undertaken the teaching of Fortran and are helping lecture on many applications, including computer-aided network analysis and computer simulation techniques. The students also will assist in debugging procedures and in key punching many of the assigned programs.

"The Section has worked actively with the Student Chapters in improving university and industry relations. A student coordinator, who is generally the president of his chapter, actively sits on Executive Board meetings to en-

hance communications and awareness. A similar computer course is being considered for the San Luis Obispo area of our Section. It is planned to involve the IEEE Student Members at the California State Polytechnic College (Cal Poly) at San Luis Obispo in this endeavor. Thus the students are a very important part of the Section."

The past summer unemployment and education activity has strengthened the Santa Barbara Section in a very worthwhile cause. If the results of current activities have been to help reemploy but one member, they have been more than worthwhile.

Mr. Barncastle specifically asked me to acknowledge the contributions made by Dr. James A. Howard, vice chairman of the program committee, and the co-chairmen, Dwain E. Hunt, John E. Steen, Michael E. Bloom, and their committees.

Discussions are now being held with the Regional Directors to establish the most effective route whereby a course such as the one just described can be "exported" from Santa Barbara to other regions in the United States. More on this subject will appear in future issues of *Spectrum*.

Glen Wade
Chairman, EAB

Inside IEEE

A report from IEEE's President

The results of the IEEE 1971 election became available early in November. A total of 129 832 ballots was mailed to the members and in a return of some 47 000 votes, a vote approximately 50 percent larger than last year, Robert H. Tanner and Harold Chestnut were elected President and Vice President respectively, and the proposed constitutional amendment was defeated. Although the favorable vote of at least two thirds of all ballots cast, which is required for the adoption of the amendment, was not received, a substantial number of members did express the need for change. The votes in favor of adoption (23 266) virtually equalled the votes against (23 633).

The substantial interest on the part of our members in the economic issues affecting the profession has been recognized by the Institute leadership for some time. This is one reason that I have directed considerable personal effort to the broad area of professional development, starting early in this year. Frequently during the year I have reported in this column with regard to programs intended to alleviate unemployment, to provide mid-career guidance, and otherwise to deal effectively with the individual engineer's professional development. Two items included in this issue of *Spectrum*, noted below, are a direct result of this effort. At the same time, however, during 1971 emphasis was placed on improving the technical programs of the Institute. Particular attention was given to providing technical material dealing with applications as well as reporting the results of research and development. The appointment of a full-time Editor for *Spectrum*, who will assume responsibility starting with the January 1972 issue, and the publication in November of two books in the IEEE Press Series, "Clearing the Air: The Impact of the Clean Air Act on Technology" and "Active Inductorless Filters," are examples of actions responsive to this philosophy.

Concern with increased effectiveness in meeting member needs has pervaded discussions among the officers and other members of the Board of Directors throughout the year. At its meeting in August, the Board of Directors authorized the inclusion of a Regional Member Service Experiment Fund (REMSEF) in the 1972 budget and requested proposals from the Regional Directors for pilot projects to be conducted on a Regional basis that would be directed to improved satisfaction of member needs. At the November meeting of the Board REMSEF programs were authorized for implementation in 1972 in Regions 5, 6, 7, and 8. Detailed information concerning the specific programs can be obtained by contacting the respective Regional Directors.

The results of the voting concerning the proposed constitutional amendment noted above are open to a variety of interpretations. The balloting was the subject of considerable discussion during both formal sessions and informal gatherings at the November meeting of the Board. Although surveys of membership opinion were conducted this year by the Directors in Regions 3 and 6, it is recognized that further data would be desirable, particularly with reference to priorities to be associated with the attention given to nontechnical programs. In the development of activities within the Institute that go beyond the dissemination of technical information to the membership, it is clear that members in different countries may have substantially different interests and desires for action. On the basis of information presently available concerning the view of our members, however, the Board took the following actions at the November meeting: (1) It requested the Regional Directors of Regions 1–6 (those in the U.S.) acting as a group to formulate recommendations to the Board concerning actions desirable to meet member needs in the area of "professionalism." (2) It approved in principle the assessment of Regional dues on a selective basis to finance programs associated with a particular Region and requested formulation of detailed proposals for implementation. (3) It authorized the establishment of an Institute office in Washington, D.C. The last action is intended to facilitate the exchange of information between members of the Institute and the Congress and executive agencies of the U.S. government. It should be possible to provide a systematic process by which policy-making members of executive agencies and members of Congress are adequately informed of the technical resources of the Institute and the manner in which its members might contribute to the legislative and executive processes. On the other hand, the action should contribute significantly to ensuring that IEEE members are adequately informed of the myriad actions of the U.S. government that may affect the electrical engineering profession.

In an action concerned with expansion of technical activities the Board requested the Technical Activities Board (TAB) to develop recommendations for specific action programs in the sociotechnology area. The TAB has as a basis for this a report, entitled "Applications of Electrotechnology to Social Problems," recently completed by one of its committees. The Board also approved transitions from Group to Society status that created the Industry and General Applications Society; Communications Society; Magnetics Society; and the Systems, Man and Cybernetics Society. There are now seven Societies within the Institute; the others are the Computer Society, Control Systems Society, and Power Engineering Society.

Limitations of space prevent my reporting the many other topics that were discussed at the Board meeting. I would be remiss, however, if I did not attempt to convey the intense interest and desire on the part of members of the Board to institute those new activities and to make changes in the present operations of IEEE that respond appropriately to the challenge of our times. Earlier this year I requested W. O. Fleckenstein to chair a committee that would assess the economic conditions in the electronics, electrical, and related industries. The work of the committee has been concluded and the resulting report contains valuable information in the areas of demand for engineers, government spending, industry growth, and related matters. A summary of the Fleckenstein report will be found in this issue on pages 63–71. I urge you to read it.

Also in this issue, page 10, you will find information about the new ASME/

.E Employment Information Exchange hat has just opened on the sixth floor of the United Engineering Center in New York. It is functioning in a manner similar to the AIAA's VEST (Volunteer Engineers, Scientists, and Technicians) program and Experience Unlimited, which operates in the state of California.

This is the last report I shall make in these columns as President of the Institute, and I wish to take this opportunity to express my appreciation to all those volunteers and members of the staff who have contributed to the success of our many operations. These are times of change and challenge throughout the world, and it is to be expected that the Institute must review and possibly change many aspects of its operations to respond not only to the needs of today but to prepare for those of the future as well. From the excellent support that I have received this year from the Board of Directors and its Executive Committee, the membership, and the staff, I am confident that our Institute will respond well in meeting the continuing challenge of service to the electrical engineering profession and society as a whole in the years ahead.

J. H. Mulligan, Jr.
President, IEEE

Technology and forecasting assessment looks beneficial

The IEEE Technical Activities Board (TAB) Planning Committee, concerned with the need to anticipate the technical future of our profession, has undertaken an experiment this year that may be of interest to some members. The experiment was conducted by eight Washington, D.C., Group Chapters between May and October.

The experiment, Technology Forecasting and Assessment, involved dedicated and continued effort over the summer months by approximately 50 members. The effort culminated in a day-long technical presentation of the forecasting methods and results at the first Region 2 Conference on October 8, 1971.

In the opinion of the TAB Planning Committee, the IEEE, because of its diversity, has a tendency to drift along on the technological sea without always having a clear idea of where it has been, where it is going, what it will find on the distant shores, what course it should steer, and how best to use its limited resources. At the same time, a large portion of society is becoming disenchanted with science and technology and related goals. IEEE and its members cannot ignore this challenge.

PRESIDENT James Mulligan (second from right) discusses the Technology Forecasting and Assessment experiment at the Region 2 conference in Washington, D.C., with (from left to right) George Abraham, Director of Region 2 and conference general chairman; Edward Wolff, TAB Vice Chairman and conference program chairman; IEEE Vice President Robert Tanner; and Harold Chestnut, Vice President, Technical Activities. The conference was held October 8.

Experiment description. This technology forecasting and assessment experiment serves as a lighthouse in the fog to illuminate a solution to the technological drift problem. It is designed to show how IEEE can chart the sea, locate and survey the distant shores, set the course, and assist the crew to train itself to be prepared for the future.

This experiment was initiated somewhat apprehensively to determine if it is feasible to undertake the mobilization of the entire Institute for technology forecasting and assessment. We have endeavored to develop techniques for implementing such a total program and to identify pitfalls to be avoided.

The 18 Washington Chapters of the IEEE Groups/Societies were invited to participate, and most were at least partially involved. Half were able to stay to the end and take part in the program. A learning-by-doing format was adopted with monthly workshops (starting in May) for reporting and instructing and convening meetings among participants for planning and program development. The Chapters began by constructing technological trees to define their fields. They then selected one small part of their tree for forecasting. Chapters generally used trend extrapolation and straw-man techniques. Some of the more ambitious were able to undertake

more than one forecast. Following the forecast they made a small start in assessment by identifying the major impact areas of their forecast. Time did not permit additional work.

The Chapters participating and their subjects were:

G-AES—synchronous communication satellite technology; environmental monitoring

G-AP—radar array antennas; spacecraft communication array antennas

G-ComTech—communication needs for public service

G-ED—high-power microwave tubes; display devices in topographic problems

G-EM—management information systems

G-IM—frequency and time

G-MTT—solid-state microwave power sources

G-R—maintainability and reliability

The results achieved in the experiment far exceeded the expectations of the TAB Planning Committee. We were impressed with what a few volunteers were able to accomplish in a short time without funding and with the usual exigencies present in the summer.

A total Institute program. With the experiment successfully behind us it is appropriate to look ahead at a total IEEE program that would generate a detailed technical description of electrical and electronics engineering. Such a program would determine the probabilities of specific technical achievements in the field and would determine the consequences, beneficial and detrimental, of these achievements.

In a total program all of the IEEE entities would work together toward a common goal. The total program would be coordinated at the top by an *ad hoc* committee of the Board of Directors. The Groups/Societies (with TAB coordination and Chapter assistance) would generate the description of the field and would forecast probable achievements. The Sections (with Regional Activities Board coordination and Chapter assistance) would determine the consequences of the achievements for the individual members, students, Institute, profession, and society. The Educational Activities Board would determine the consequences for education (precollege, undergraduate, graduate, continuing, Institute member, and society). The Publications Board would assist by providing the necessary educational material in *Spectrum* and elsewhere as required. The Group/Society results would be documented in the *Transactions*. The total technical program of the 1973 International Convention would be devoted to a presentation of the results with coordinated support on historical developments by exhibitors. Each major IEEE Board and committee would determine the consequences for its scope of activity.

Total program benefits. The IEEE members would be major beneficiaries of a total program. They would obtain career planning information on the changing nature of their field, opportunities for services that will develop, and training that will be required. Members would benefit by obtaining an Institute that provides better service and better communications with society and governments. The various IEEE entities would benefit by obtaining information to evaluate the usefulness of activities and areas of improvement. The IEEE would benefit by stimulating communications among its parts to focus total resources more effectively for maximum benefit. The profession would benefit by obtaining information on its contribution to society to improve community understanding and support of technology. A major benefit accrues to those members who elect to participate in such an experiment. This was attested to by the experiment participants. They developed skills applicable to their jobs and obtained priceless information.

Conclusion. The potential benefits of a total Institute forecasting and assessment effort appear to be significant. The experiment has shown that the effort required will not be trivial, but is in itself rewarding. We have a challenge.

The Board of Directors will be asked to approve a total Institute program. A key point will be the availability of a sufficient supply of willing manpower. If you have any suggestions or an interest in participating, a postal card so indicating would be desirable. What you say *does* make a difference.

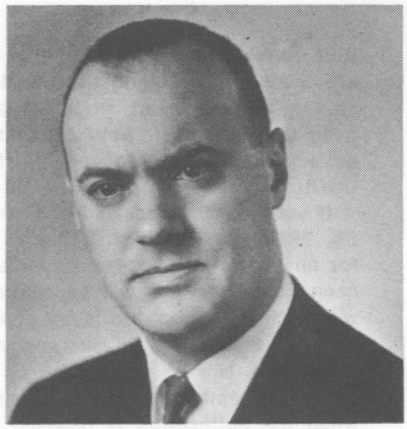
Edward A. Wolff
TAB Vice Chairman

Christiansen named to head Spectrum staff

Donald Christiansen (SM), formerly editor-in-chief of *Electronics* magazine, has been appointed to the newly created staff position of Editor of *IEEE Spectrum*.

In his new capacity, Mr. Christiansen will have full and continuing editorial responsibility for *Spectrum*. In the past this responsibility had been assumed by volunteer members of IEEE on a part-time basis. The appointment signifies IEEE's determination to continue to increase *Spectrum's* readability and service to its more than 160 000 members. Mr. Christiansen will be backed by an editorial staff in depth under the experienced direction of Managing Editor Ron Jurgen.

Mr. Christiansen brings to *Spectrum* an impressive background both in technical journalism and in engineering practice. He was graduated from Cornell University with the B.E.E. degree. For the past ten years he has had extensive editorial experience. Prior to serving as editor-in-chief of *Electronics* he was on the editorial staffs of *Electronic Design* and *EEE*. Before his career in journalism, he gained valuable industrial experience, particularly in the semiconductor and integrated circuit areas, with CBS Electronics. He was also affiliated with the Philco Corporation, Worthington Corporation, Cornell-Dubilier, and Kingston-Conley Electric Company.



Donald Christiansen

Mr. Christiansen is a registered professional engineer in Massachusetts. He belongs to several professional and honor societies and has been a prolific writer and speaker on various aspects of the electronics industry.

Special benefits available to IEEE's unemployed, retired

The Board of Directors of IEEE has extended for 1972 the special policy begun in 1971 whereby unemployed members may continue their IEEE membership by payment of one half of the established dues and fees.

Since unemployment remains at a high level, IEEE is continuing this policy for the coming year (only). Those currently unemployed through involuntary termination and actively seeking reemployment may continue IEEE membership through December 1972 with all privileges, publications, and services covered by membership dues (and by Group or Society fees, and subscription fees, if any) by payment of one half of the dues and fees.

Certain retired members are also entitled to reduced dues. A new IEEE Bylaw allows members who are 65 years old to apply for reduced membership dues, providing they are not gainfully employed and do not qualify for Life Membership status. Those interested should contact IEEE Headquarters for information.

Unemployed members wishing to take advantage of the continued policy must submit a signed statement to

IEEE Headquarters indicating that they are involuntarily unemployed and are seeking reemployment. No action to reduce the dues or to rebate payments already made can be taken until Headquarters is notified.

If notification is received by February 28, 1972 (the established cutoff date for all members whose dues have not been paid), services will be continued without interruption. If it is not possible to meet that date, the unemployment notification can be accepted until July 1, 1972. Membership will be resumed when the notification is received and, when requested, publication services will be carried back to the first of the year, subject to availability of back issues.

If members do not submit their payment with the notification, IEEE will bill for the half-payment prior to July 1.

ASME/IEEE Employment Information Exchange opens

The IEEE and the American Society of Mechanical Engineers have jointly established an employment information office on the sixth floor of the United Engineering Center, 345 E. 47 St., New York, N.Y. The floor space was made available by ASME.

Following an inauguration meeting on October 25, the ASME/IEEE Employment Information Exchange began its operations. It is functioning in the same manner as the AIAA's "VEST" (Volunteer Engineers, Scientists, and Technicians) program, which has eight locations around the United States, and as "Experience Unlimited," which operates 21 offices in California. Although these two programs are eligible for Department of Labor grants, the ASME/IEEE program does not qualify for such assistance.

Established for the convenience of ASME and IEEE members, it is open to members of all organizations.

Manned by volunteer unemployed engineers from both IEEE and ASME, the exchange is able to solicit job openings anywhere in the U.S.

Employers are requested to help in this venture by sending in descriptions of job openings in their firms. Write to John M. Kinn, Director of Educational Services, IEEE Headquarters, 345 E. 47 St., New York, N.Y. 10017.

Unemployed engineers able to volunteer their services to staff the exchange are invited to do so.