APPENDIX A

FREQUENCY DISTRIBUTIONS OF ENGLISH DIGRAPHS

Frequency distributions of English digraphs appearing in 50,000 letters of government plaintext telegrams, reduced to 5,000 digraphs.

Table A-1. Frequency distribution digraphs.

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	TOTAL
A	3	6	14	27	1	4	6	2	17	1	2	32	14	64	2	12		44	41	47	13	7	3		12		374
B	4				18				2	1		6	1		4			2	1	1	2				7		49
C	20		3	1	32	1		14	7		4	5	1	1	41			4	1	14	4		1		1		155
D	32	4	4	8	33	8	2	2	27	1		3	5	4	16	5	2	12	13	15	5	3	4		1		209
E	35	4	32	60	42	18	4	7	27	1		29	14	111	12	20	12	87	54	37	3	20	7	7	4	1	648
F	5		2	1	10	11	1		39			2	1		40	1		9	3	11	3		1		1		141
G	7		2	1	14	2	1	20	5	1		2	1	3	6	2		5	3	4	2		1				82
H	20	1	3	2	20	5			33			1	2	3	20	1	1	17	4	28	8		1		1		171
I	8	2	22	6	13	10	19				2	23	9	75	41	7		27	35	27		25		15		2	368
J	1				2										2						2						7
K	1		1		6				2			1		1					1								13
L	8	3	3	9	37	3	1	1	20			27		1	13	3		2	6	8	2	2	2		10		183
M	36	6	3	1	26	1		1	9				13		10	8		2	4	2	2				2		126
N	26	3	19	52	57	9	27	4	30	1	2	5	5	8	18	3	1	4	24	82	7	3	3		5		397
O	7	4	8	12	3	25	2	3	5	1	2	19	25	77	6	25		64	14	19	37	7	8	1	2		376
P	14	1	1	1	23	2		3	6			13	4	1	17	11		18	6	8	3	1	1		1		135
Q													1					1			15						17
R	39	2	9	17	98	6	7	3	30	1	1	5	9	7	28	13		11	31	42	5	5	4		9		382
S	24	3	13	5	49	12	2	26	34		1	2	3	4	15	10		5	19	63	11	1	4		1		307
T	28	3	6	6	71	7	1	78	45			5	6	7	50	2	1	17	19	19	5		36		41	1	454
U	5	3	3	3	11	1	8		5			6	5	21	1			31	12	12		1					130
V	6				57				12						1					1							77
W	12				22			4	13			1		2	19			1	1						1		76
X	2		2	1	1	1		1	2					1	1	2		1	1	7							23
Y	6	2	4	4	9	11	1	1	3			2	2	6	10	3		4	11	15	1		1				96
Z	1				2				1																		4
TOTAL	370	46	154	217	657	137	82	170	374	8	14	189	123	397	373	130	17	368	304	462	130	75	77	23	99	4	5000

Table A-2. The 428 digraphs of Table A-1, arranged according to their absolute frequencies, accompanied by the logarithms of their assigned probabilities.

F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)
EN 111	2.05	.99	AL 32	1.51	.76	HO 20	1.30	.67	SC 13	1.11	.59
RE 98	1.99	.96	CE 32	1.51	.76	LI 20	1.30	.67	WI 13	1.11	.59
ER 87	1.94	.94	DA 32	1.51	.76	IG 19	1.28	.67	AP 12	1.08	.58
NT 82	1.91	.93	EC 32	1.51	.76	NC 19	1.28	.67	AY 12	1.08	.58
TH 78	1.89	.92	RS 31	1.49	.75	OL 19	1.28	.67	DR 12	1.08	.58
ON 77	1.89	.92	UR 31	1.49	.75	OT 19	1.28	.67	EO 12	1.08	.58
IN 75	1.88	.92	NI 30	1.48	.75	SS 19	1.28	.67	EQ 12	1.08	.58
TE 71	1.85	.91	RI 30	1.48	.75	TS 19	1.28	.67	OD 12	1.08	.58
AN 64	1.81	.89	EL 29	1.46	.74	TT 19	1.28	.67	SF 12	1.08	.58
OR 64	1.81	.89	HT 28	1.45	.74	WO 19	1.28	.67	US 12	1.08	.58
ST 63	1.80	.88	LA 28	1.45	.74	BE 18	1.26	.66	UT 12	1.08	.58
ED 60	1.78	.88	RO 28	1.45	.74	EF 18	1.26	.66	VI 12	1.08	.58
NE 57	1.76	.87	TA 28	1.45	.74	NO 18	1.26	.66	WA 12	1.08	.58
VE 57	1.76	.87	[2]2,495			PR 18	1.26	.66	FF 11	1.04	.56
ES 54	1.73	.86				AI 17	1.23	.64	FT 11	1.04	.56
ND 52	1.72	.85	AD 27	1.43	.73	HR 17	1.23	.64	PP 11	1.04	.56
TO 50	1.70	.84	DI 27	1.43	.73	PO 17	1.23	.64	RR 11	1.04	.56
SE 49	1.69	.84	EI 27	1.43	.73	RD 17	1.23	.64	SU 11	1.04	.56
[1]1,249			IR 27	1.43	.73	TR 17	1.23	.64	UE 11	1.04	.56
			IT 27	1.43	.73	DO 16	1.20	.63	YF 11	1.04	.56
AT 47	1.67	.83	LL 27	1.43	.73	DT 15	1.18	.62	YS 11	1.04	.56
TI 45	1.65	.82	NG 27	1.43	.73	IX 15	1.18	.62	FE 10	1.00	.55
AR 44	1.64	.82	ME 26	1.41	.72	QU 15	1.18	.62	IF 10	1.00	.55
EE 42	1.62	.81	NA 26	1.41	.72	SO 15	1.18	.62	LY 10	1.00	.55
RT 42	1.62	.81	SH 26	1.41	.72	YT 15	1.18	.62	MO 10	1.00	.55
AS 41	1.61	.80	IV 25	1.40	.72	AC 14	1.15	.61	SP 10	1.00	.55
CO 41	1.61	.80	OF 25	1.40	.72	AM 14	1.15	.61	YO 10	1.00	.55
IO 41	1.61	.80	OM 25	1.40	.72	CH 14	1.15	.61	FR 9	0.95	.53
TY 41	1.61	.80	OP 25	1.40	.72	CT 14	1.15	.61	IM 9	0.95	.53
FO 40	1.60	.80	NS 24	1.38	.71	EM 14	1.15	.61	LD 9	0.95	.53
FI 39	1.59	.80	SA 24	1.38	.71	GE 14	1.15	.61	MI 9	0.95	.53
RA 39	1.59	.80	IL 23	1.36	.70	OS 14	1.15	.61	NF 9	0.95	.53
ET 37	1.57	.79	PE 23	1.36	.70	PA 14	1.15	.61	RC 9	0.95	.53
LE 37	1.57	.79	IC 22	1.34	.69	AU 13	1.11	.59	RM 9	0.95	.53
OU 37	1.57	.79	WE 22	1.34	.69	DS 13	1.11	.59	RY 9	0.95	.53
MA 36	1.56	.78	UN 21	1.32	.68	IE 13	1.11	.59	YE 9	0.95	.53
TW 36	1.56	.78	CA 20	1.30	.67	LO 13	1.11	.59	DD 8	0.90	.51
EA 35	1.54	.78	EP 20	1.30	.67	[3]3,745			DF 8	0.90	.51
IS 35	1.54	.78	EV 20	1.30	.67				HU 8	0.90	.51
SI 34	1.53	.77	GH 20	1.30	.67	MM 13	1.11	.59	IA 8	0.90	.51
DE 33	1.52	.77	HA 20	1.30	.67	PL 13	1.11	.59	LT 8	0.90	.51
HI 33	1.52	.77	HE 20	1.30	.67	RP 13	1.11	.59	MP 8	0.90	.51

[1]The 18 digraphs above this line compose 25 percent of the total.
[2]The 53 digraphs above this line compose 50 percent of the total.
[3]The 117 digraphs above this line compose 75 percent of the total.

Table A-2—*Continued*

F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)
NN	8 0.90	.51	DP	5 0.70	.42	SW	4 0.60	.38	BR	2 0.30	.25
OC	8 0.90	.51	DU	5 0.70	.42	WH	4 0.60	.38	BU	2 0.30	.25
OW	8 0.90	.51	FA	5 0.70	.42	YC	4 0.60	.38	DG	2 0.30	.25
PT	8 0.90	.51	GI	5 0.70	.42	YD	4 0.60	.38	DH	2 0.30	.25
UG	8 0.90	.51	GR	5 0.70	.42	YR	4 0.60	.38	DQ	2 0.30	.25
AV	7 0.85	.48	HF	5 0.70	.42	AA	3 0.48	.33	FC	2 0.30	.25
BY	7 0.85	.48	NL	5 0.70	.42	AW	3 0.48	.33	FL	2 0.30	.25
CI	7 0.85	.48	NM	5 0.70	.42	CC	3 0.48	.33	GC	2 0.30	.25
EH	7 0.85	.48	NY	5 0.70	.42	DL	3 0.48	.33	GF	2 0.30	.25
EW	7 0.85	.48	OI	5 0.70	.42	DV	3 0.48	.33	GL	2 0.30	.25
EX	7 0.85	.48	RL	5 0.70	.42	EU	3 0.48	.33	GP	2 0.30	.25
GA	7 0.85	.48	RU	5 0.70	.42	FS	3 0.48	.33	GU	2 0.30	.25
IP	7 0.85	.48	RV	5 0.70	.42	FU	3 0.48	.33	HD	2 0.30	.25
NU	7 0.85	.48	SD	5 0.70	.42	GN	3 0.48	.33	HM	2 0.30	.25
OA	7 0.85	.48	SR	5 0.70	.42	GS	3 0.48	.33	IB	2 0.30	.25
OV	7 0.85	.48	TL	5 0.70	.42	HC	3 0.48	.33	IK	2 0.30	.25
RG	7 0.85	.48	TU	5 0.70	.42	HN	3 0.48	.33	IZ	2 0.30	.25
RN	7 0.85	.48	UA	5 0.70	.42	LB	3 0.48	.33	JE	2 0.30	.25
TF	7 0.85	.48	UI	5 0.70	.42	LC	3 0.48	.33	JO	2 0.30	.25
TN	7 0.85	.48	UM	5 0.70	.42	LF	3 0.48	.33	JU	2 0.30	.25
XT	7 0.85	.48	AF	4 0.60	.38	LP	3 0.48	.33	KI	2 0.30	.25
AB	6 0.78	.45	BA	4 0.60	.38	MC	3 0.48	.33	LM	2 0.30	.25
AG	6 0.78	.45	BO	4 0.60	.38	NP	3 0.48	.33	LR	2 0.30	.25
BL	6 0.78	.45	CK	4 0.60	.38	NV	3 0.48	.33	LU	2 0.30	.25
GO	6 0.78	.45	CR	4 0.60	.38	NW	3 0.48	.33	LV	2 0.30	.25
ID	6 0.78	.45	CU	4 0.60	.38	OE	3 0.48	.33	LW	2 0.30	.25
KE	6 0.78	.45	DB	4 0.60	.38	OH	3 0.48	.33	MR	2 0.30	.25
LS	6 0.78	.45	DC	4 0.60	.38	PH	3 0.48	.33	MT	2 0.30	.25
MB	6 0.78	.45	DN	4 0.60	.38	PU	3 0.48	.33	MU	2 0.30	.25
OO	6 0.78	.45	DW	4 0.60	.38	RH	3 0.48	.33	MY	2 0.30	.25
PI	6 0.78	.45	EB	4 0.60	.38	SB	3 0.48	.33	NB	2 0.30	.25
PS	6 0.78	.45	EG	4 0.60	.38	SM	3 0.48	.33	NK	2 0.30	.25
RF	6 0.78	.45	EY	4 0.60	.38	TB	3 0.48	.33	OG	2 0.30	.25
TC	6 0.78	.45	GT	4 0.60	.38	UB	3 0.48	.33	OK	2 0.30	.25
TD	6 0.78	.45	HS	4 0.60	.38	UC	3 0.48	.33	OY	2 0.30	.25
TM	6 0.78	.45	MS	4 0.60	.38	UD	3 0.48	.33	PF	2 0.30	.25
UL	6 0.78	.45	NH	4 0.60	.38	YI	3 0.48	.33	RB	2 0.30	.25
VA	6 0.78	.45	NR	4 0.60	.38	YP	3 0.48	.33	SG	2 0.30	.25
YA	6 0.78	.45	OB	4 0.60	.38	AH	2 0.30	.25	SL	2 0.30	.25
YN	6 0.78	.45	PM	4 0.60	.38	AK	2 0.30	.25	TP	2 0.30	.25
CL	5 0.70	.42	RW	4 0.60	.38	AO	2 0.30	.25	UP	2 0.30	.25
DM	5 0.70	.42	SN	4 0.60	.38	BI	2 0.30	.25	WN	2 0.30	.25

Table A-2—***Continued***

	F	L_{10} (F)	L_{224} (2F)		F	L_{10} (F)	L_{224} (2F)		F	L_{10} (F)	L_{224} (2F)		F	L_{10} (F)	L_{224} (2F)
XA	2	0.30	.25	FD	1	0.00	.13	LN	1	0.00	.13	UF	1	0.00	.13
XC	2	0.30	.25	FG	1	0.00	.13	MD	1	0.00	.13	UO	1	0.00	.13
XI	2	0.30	.25	FM	1	0.00	.13	MF	1	0.00	.13	UV	1	0.00	.13
XP	2	0.30	.25	FP	1	0.00	.13	MH	1	0.00	.13	VO	1	0.00	.13
YB	2	0.30	.25	FW	1	0.00	.13	NJ	1	0.00	.13	VT	1	0.00	.13
YL	2	0.30	.25	FY	1	0.00	.13	NQ	1	0.00	.13	WL	1	0.00	.13
YM	2	0.30	.25	GD	1	0.00	.13	OJ	1	0.00	.13	WR	1	0.00	.13
ZE	2	0.30	.25	GG	1	0.00	.13	OX	1	0.00	.13	WS	1	0.00	.13
AE	1	0.00	.13	GJ	1	0.00	.13	PB	1	0.00	.13	WY	1	0.00	.13
AJ	1	0.00	.13	GM	1	0.00	.13	PC	1	0.00	.13	XD	1	0.00	.13
BJ	1	0.00	.13	GW	1	0.00	.13	PD	1	0.00	.13	XE	1	0.00	.13
BM	1	0.00	.13	HB	1	0.00	.13	PN	1	0.00	.13	XF	1	0.00	.13
BS	1	0.00	.13	HL	1	0.00	.13	PV	1	0.00	.13	XH	1	0.00	.13
BT	1	0.00	.13	HP	1	0.00	.13	PW	1	0.00	.13	XN	1	0.00	.13
CD	1	0.00	.13	HQ	1	0.00	.13	PY	1	0.00	.13	XO	1	0.00	.13
CF	1	0.00	.13	HW	1	0.00	.13	QM	1	0.00	.13	XR	1	0.00	.13
CM	1	0.00	.13	HY	1	0.00	.13	QR	1	0.00	.13	XS	1	0.00	.13
CN	1	0.00	.13	JA	1	0.00	.13	RJ	1	0.00	.13	YG	1	0.00	.13
CS	1	0.00	.13	KA	1	0.00	.13	RK	1	0.00	.13	YH	1	0.00	.13
CW	1	0.00	.13	KC	1	0.00	.13	SK	1	0.00	.13	YU	1	0.00	.13
CY	1	0.00	.13	KL	1	0.00	.13	SV	1	0.00	.13	YW	1	0.00	.13
DJ	1	0.00	.13	KN	1	0.00	.13	SY	1	0.00	.13	ZA	1	0.00	.13
DY	1	0.00	.13	KS	1	0.00	.13	TG	1	0.00	.13	ZI	1	0.00	.13
EJ	1	0.00	.13	LG	1	0.00	.13	TQ	1	0.00	.13		5,000		
EZ	1	0.00	.13	LH	1	0.00	.13	TZ	1	0.00	.13				

Table A-3. The 18 digraphs composing 25 percent of the digraphs of Table A-1, accompanied by the logarithms of their assigned probabilities, arranged alphabetically according to their initial letters.

(1) ACCORDING TO THEIR INITIAL LETTERS						(2) ACCORDING TO THEIR ABSOLUTE FREQUENCIES					
F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)
AN 64	1.81	.89	ON 77	1.89	.92	AN 64	1.81	.89	ON 77	1.89	.92
			OR 64	1.81	.89				OR 64	1.81	.89
ED 60	1.78	.88	RE 98	1.99	.96	EN 111	2.05	.99	RE 98	1.99	.96
EN 111	2.05	.99				ER 87	1.94	.94			
ER 87	1.94	.94	SE 49	1.69	.84	ED 60	1.78	.88	ST 63	1.80	.88
ES 54	1.73	.86	ST 63	1.80	.88	ES 54	1.73	.86	SE 49	1.69	.84
			TE 71	1.85	.91				TH 78	1.89	.92
IN 75	1.89	.92	TH 78	1.89	.92	IN 75	1.88	.92	TE 71	1.85	.91
			TO 50	1.70	.84				TO 50	1.70	.84
ND 52	1.72	.85	VE 57	1.76	.87	NT 82	1.91	.93	VE 57	1.76	.87
NE 57	1.76	.87	1,249			NE 57	1.76	.87	1,249		
NT 82	1.91	.93				ND 52	1.72	.85			

Table A-4. The 53 digraphs composing 50 percent of the digraphs of Table A-1, accompanied by the logarithms of their assigned probabilities, arranged alphabetically according to their initial letters.

(1) ACCORDING TO THEIR INITIAL LETTERS						(2) ACCORDING TO THEIR ABSOLUTE FREQUENCIES					
F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)
AL 32	1.51	.76	MA 36	1.56	.78	AN 64	1.81	.89	MA 36	1.56	.78
AN 64	1.81	.89				AT 47	1.67	.83			
AR 44	1.64	.82	ND 52	1.72	.85	AR 44	1.64	.82	NT 82	1.91	.93
AS 41	1.61	.80	NE 57	1.76	.87	AS 41	1.61	.80	NE 57	1.76	.87
AT 47	1.67	.83	NI 30	1.48	.75	AL 32	1.51	.76	ND 52	1.72	.85
			NT 82	1.91	.93				NI 30	1.48	.75
CE 32	1.51	.76				CO 41	1.61	.80			
CO 41	1.61	.80	ON 77	1.89	.92	CE 32	1.51	.76	ON 77	1.89	.92
			OR 64	1.81	.89				OR 64	1.81	.89
DA 32	1.51	.76	OU 37	1.57	.79	DE 33	1.52	.77	OU 37	1.57	.79
DE 33	1.52	.77				DA 32	1.51	.76			
			RA 39	1.59	.80				RE 98	1.99	.96
EA 35	1.54	.78	RE 98	1.99	.96	EN 111	2.05	.99	RT 42	1.62	.81
EC 32	1.51	.76	RI 30	1.48	.75	ER 87	1.94	.94	RA 39	1.59	.80
ED 60	1.78	.88	RO 28	1.45	.74	ED 60	1.78	.88	RS 31	1.49	.75
EE 42	1.62	.81	RS 31	1.49	.75	ES 54	1.73	.86	RI 30	1.48	.75
EL 29	1.46	.74	RT 42	1.62	.81	EE 42	1.62	.81	RO 28	1.45	.74
EN 111	2.05	.99				ET 37	1.57	.79			
ER 87	1.94	.94	SE 49	1.69	.84	EA 35	1.54	.78	ST 63	1.80	.88
ES 54	1.73	.86	SI 34	1.53	.77	EC 32	1.51	.76	SE 49	1.69	.84
ET 37	1.57	.79	ST 63	1.80	.88	EL 29	1.46	.74	SI 34	1.53	.77
FI 39	1.59	.80	TA 28	1.45	.74	FO 40	1.60	.80	TH 78	1.89	.92
FO 40	1.60	.80	TE 71	1.85	.91	FI 39	1.59	.80	TE 71	1.85	.91
			TH 78	1.89	.92				TO 50	1.70	.84
HI 33	1.52	.77	TI 45	1.65	.82	HI 33	1.52	.77	TI 45	1.65	.82
HT 28	1.45	.74	TO 50	1.70	.84	HT 28	1.45	.74	TY 41	1.61	.80
			TW 36	1.56	.78				TW 36	1.56	.78
IN 75	1.88	.92	TY 41	1.61	.80	IN 75	1.88	.92	TA 28	1.45	.74
IO 41	1.61	.80				IO 41	1.61	.80			
IS 35	1.54	.78	UR 31	1.49	.75	IS 35	1.54	.78	UR 31	1.49	.75
LA 28	1.45	.74	VE 57	1.76	.87	LE 37	1.57	.79	VE 57	1.76	.87
LE 37	1.57	.79	2,495			LA 28	1.45	.74	2,495		

Table A-5. The 117 digraphs composing 75 percent of the digraphs of Table A-1, accompanied by the logarithms of their assigned probabilities, arranged alphabetically according to their initial letters.

(1) ACCORDING TO THEIR INITIAL LETTERS

F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)
AC 14	1.15	.61	EP 20	1.30	.67	LL..... 27	1.43	.73	RE 98	1.99	.96
AD 27	1.43	.73	ER 87	1.94	.94	LO 13	1.11	.59	RI 30	1.48	.75
AI 17	1.23	.64	ES 54	1.73	.86				RO 28	1.45	.74
AL 32	1.51	.76	ET 37	1.57	.79	MA 36	1.56	.78	RS 31	1.49	.75
AM 14	1.15	.61	EV 20	1.30	.67	ME 26	1.41	.72	RT 42	1.62	.81
AN..... 64	1.81	.89									
AR 44	1.64	.82	FI..... 39	1.59	.80	NA..... 26	1.41	.72	SA 24	1.38	.71
AS 41	1.61	.80	FO 40	1.60	.80	NC..... 19	1.28	.67	SE 49	1.69	.84
AT 47	1.67	.83				ND..... 52	1.72	.85	SH 26	1.41	.72
AU 13	1.11	.59	GE 14	1.15	.61	NE..... 57	1.76	.87	SI..... 34	1.53	.77
			GH..... 20	1.30	.67	NG..... 27	1.43	.73	SO 15	1.18	.62
BE 18	1.26	.66				NI..... 30	1.48	.75	SS..... 19	1.28	.67
			HA..... 20	1.30	.67	NO..... 18	1.26	.66	ST 63	1.80	.88
CA 20	1.30	.67	HE..... 20	1.30	.67	NS 24	1.38	.71			
CE 32	1.51	.76	HI..... 33	1.52	.77	NT..... 82	1.91	.93	TA 28	1.45	.74
CH..... 14	1.15	.61	HO..... 20	1.30	.67				TE 71	1.85	.91
CO 41	1.61	.80	HR..... 17	1.23	.64	OF 25	1.40	.72	TH..... 78	1.89	.92
CT 14	1.15	.61	HT..... 28	1.45	.74	OL 19	1.28	.67	TI 45	1.65	.82
						OM 25	1.40	.72	TO 50	1.70	.84
DA 32	1.51	.76	IC 22	1.34	.69	ON..... 77	1.89	.92	TR 17	1.23	.64
DE 33	1.52	.77	IE 13	1.11	.59	OP 25	1.40	.72	TS 19	1.28	.67
DI 27	1.43	.73	IG 19	1.28	.67	OR..... 64	1.81	.89	TT 19	1.28	.67
DO..... 16	1.20	.63	IL 23	1.36	.70	OS 14	1.15	.61	TW 36	1.56	.78
DS 13	1.11	.59	IN..... 75	1.88	.92	OT 19	1.28	.67	TY 41	1.61	.80
DT 15	1.18	.62	IO 41	1.61	.80	OU..... 37	1.57	.79			
			IR 27	1.43	.73				UN..... 21	1.32	.68
EA 35	1.54	.78	IS..... 35	1.54	.78	PA 14	1.15	.61	UR..... 31	1.49	.75
EC 32	1.51	.76	IT 27	1.43	.73	PE 23	1.36	.70			
ED 60	1.78	.88	IV 25	1.40	.72	PO 17	1.23	.64	VE 57	1.76	.87
EE 42	1.62	.81	IX..... 15	1.18	.62	PR 18	1.26	.66			
EF 18	1.26	.66							WE 22	1.34	.69
EI 27	1.43	.73				QU..... 15	1.18	.62	WO 19	1.28	.67
EL 29	1.46	.74	LA 28	1.45	.74						
EM 14	1.15	.61	LE 37	1.57	.79	RA 39	1.59	.80	YT 15	1.18	.62
EN..... 111	2.05	.99	LI 20	1.30	.67	RD 17	1.23	.64	3,745		

Table A-5—*Continued*

(2) ACCORDING TO THEIR ABSOLUTE FREQUENCIES

F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)
AN 64	1.81	.89	EI 27	1.43	.73	LI 20	1.30	.67	RA 39	1.59	.80
AT 47	1.67	.83	EP 20	1.30	.67	LO 13	1.11	.59	RS 31	1.49	.75
AR 44	1.64	.82	EV 20	1.30	.67				RI 30	1.48	.75
AS 41	1.61	.80	EF 18	1.26	.66	MA 36	1.56	.78	RO 28	1.45	.74
AL 32	1.51	.76	EM 14	1.15	.61	ME 26	1.41	.72	RD 17	1.23	.64
AD 27	1.43	.73									
AI 17	1.23	.64	FO 40	1.60	.80	NT 82	1.91	.93	ST 63	1.80	.88
AC 14	1.15	.61	FI 39	1.59	.80	NE 57	1.76	.87	SE 49	1.69	.84
AM 14	1.15	.61				ND 52	1.72	.85	SI 34	1.53	.77
AU 13	1.11	.59	GH 20	1.30	.67	NI 30	1.48	.75	SH 26	1.41	.72
			GE 14	1.15	.61	NG 27	1.43	.73	SA 24	1.38	.71
BE 18	1.26	.66				NA 26	1.41	.72	SS 19	1.28	.67
			HI 33	1.52	.77	NS 24	1.38	.71	SO 15	1.18	.62
CO 41	1.61	.80	HT 28	1.45	.74	NC 19	1.28	.67			
CE 32	1.51	.76	HA 20	1.30	.67	NO 18	1.26	.66	TH 78	1.89	.92
CA 20	1.30	.67	HE 20	1.30	.67				TE 71	1.85	.91
CH 14	1.15	.61	HO 20	1.30	.67	ON 77	1.89	.92	TO 50	1.70	.84
CT 14	1.15	.61	HR 17	1.23	.64	OR 64	1.81	.89	TI 45	1.65	.82
						OU 37	1.57	.79	TY 41	1.61	.80
DE 33	1.52	.77	IN 75	1.88	.92	OF 25	1.40	.72	TW 36	1.56	.78
DA 32	1.51	.76	IO 41	1.61	.80	OM 25	1.40	.72	TA 28	1.45	.74
DI 27	1.43	.73	IS 35	1.54	.78	OP 25	1.40	.72	TS 19	1.28	.67
DO 16	1.20	.63	IR 27	1.43	.73	OL 19	1.28	.67	TT 19	1.28	.67
DT 15	1.18	.62	IT 27	1.43	.73	OT 19	1.28	.67	TR 17	1.23	.64
DS 13	1.11	.59	IV 25	1.40	.72	OS 14	1.15	.61			
			IL 23	1.36	.70				UR 31	1.49	.75
EN 111	2.05	.99	IC 22	1.34	.69	PE 23	1.36	.70	UN 21	1.32	.68
ER 87	1.94	.94	IG 19	1.28	.67	PR 18	1.26	.66			
ED 60	1.78	.88	IX 15	1.18	.62	PO 17	1.23	.64	VE 57	1.76	.87
ES 54	1.73	.86	IE 13	1.11	.59	PA 14	1.15	.61			
EE 42	1.62	.81							WE 22	1.34	.69
ET 37	1.57	.79				QU 15	1.18	.62	WO 19	1.28	.67
EA 35	1.54	.78	LE 37	1.57	.79						
EC 32	1.51	.76	LA 28	1.45	.74	RE 98	1.99	.96	YT 15	1.18	.62
EL 29	1.46	.74	LL 27	1.43	.73	RT 42	1.62	.81	3,745		

Table A-6. The 428 digraphs of Table A-1, arranged in alphabetic order by initial letters, then by absolute frequencies, accompanied by the logarithms of their assigned probabilities.

F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)
AN 64	1.81	.89	CI 7	0.85	.48	EE 42	1.62	.81	GA 7	0.85	.48
AT 47	1.67	.83	CL 5	0.70	.42	ET 37	1.57	.79	GO 6	0.78	.45
AR 44	1.64	.82	CK 4	0.60	.38	EA 35	1.54	.78	GI 5	0.70	.42
AS 41	1.61	.80	CR 4	0.60	.38	EC 32	1.51	.76	GR 5	0.70	.42
AL 32	1.51	.76	CU 4	0.60	.38	EL 29	1.46	.74	GT 4	0.60	.38
AD 27	1.43	.73	CC 3	0.48	.33	EI 27	1.43	.73	GN 3	0.48	.33
AI 17	1.23	.64	CD 1	0.00	.13	EP 20	1.30	.67	GS 3	0.48	.33
AC 14	1.15	.61	CF 1	0.00	.13	EV 20	1.30	.67	GC 2	0.30	.25
AM 14	1.15	.61	CM 1	0.00	.13	EF 18	1.26	.66	GF 2	0.30	.25
AU 13	1.11	.59	CN 1	0.00	.13	EM 14	1.15	.61	GL 2	0.30	.25
AP 12	1.08	.58	CS 1	0.00	.13	EO 12	1.08	.58	GP 2	0.30	.25
AY 12	1.08	.58	CW 1	0.00	.13	EQ 12	1.08	.58	GU 2	0.30	.25
AV 7	0.85	.48	CY 1	0.00	.13	EH 7	0.85	.48	GD 1	0.00	.13
AB 6	0.78	.45				EW 7	0.85	.48	GG 1	0.00	.13
AG 6	0.78	.45	DE 33	1.52	.77	EX 7	0.85	.48	GJ 1	0.00	.13
AF 4	0.60	.38	DA 32	1.51	.76	EB 4	0.60	.38	GM 1	0.00	.13
AA 3	0.48	.33	DI 27	1.43	.73	EG 4	0.60	.38	GW 1	0.00	.13
AW 3	0.48	.33	DO 16	1.20	.63	EY 4	0.60	.38			
AH 2	0.30	.25	DT 15	1.18	.62	EU 3	0.48	.33	HI 33	1.52	.77
AK 2	0.30	.25	DS 13	1.11	.59	EJ 1	0.00	.13	HT 28	1.45	.74
AO 2	0.30	.25	DR 12	1.08	.58	EZ 1	0.00	.13	HA 20	1.30	.67
AE 1	0.00	.13	DD 8	0.90	.51				HE 20	1.30	.67
AJ 1	0.00	.13	DF 8	0.90	.51	FO 40	1.60	.80	HO 20	1.30	.67
			DM 5	0.70	.42	FI 39	1.59	.80	HR 17	1.23	.64
BE 18	1.26	.66	DP 5	0.70	.42	FF 11	1.04	.56	HU 8	0.90	.51
BY 7	0.85	.48	DU 5	0.70	.42	FT 11	1.04	.56	HF 5	0.70	.42
BL 6	0.78	.45	DB 4	0.60	.38	FE 10	1.00	.55	HS 4	0.60	.38
BA 4	0.60	.38	DC 4	0.60	.38	FR 9	0.95	.53	HC 3	0.48	.33
BO 4	0.60	.38	DN 4	0.60	.38	FA 5	0.70	.42	HN 3	0.48	.33
BI 2	0.30	.25	DW 4	0.60	.38	FS 3	0.48	.33	HD 2	0.30	.25
BR 2	0.30	.25	DL 3	0.48	.33	FU 3	0.48	.33	HM 2	0.30	.25
BU 2	0.30	.25	DV 3	0.48	.33	FC 2	0.30	.25	HB 1	0.00	.13
BJ 1	0.00	.13	DG 2	0.30	.25	FL 2	0.30	.25	HL 1	0.00	.13
BM 1	0.00	.13	DH 2	0.30	.25	FD 1	0.00	.13	HP 1	0.00	.13
BS 1	0.00	.13	DQ 2	0.30	.25	FG 1	0.00	.13	HQ 1	0.00	.13
BT 1	0.00	.13	DJ 1	0.00	.13	FM 1	0.00	.13	HW 1	0.00	.13
			DY 1	0.00	.13	FP 1	0.00	.13	HY 1	0.00	.13
CO 41	1.61	.80				FW 1	0.00	.13			
CE 32	1.51	.76	EN 111	2.05	.99	FY 1	0.00	.13	IN 75	1.88	.92
CA 20	1.30	.67	ER 87	1.94	.94				IO 41	1.61	.80
CH 14	1.15	.61	ED 60	1.78	.88	GH 20	1.30	.67	IS 35	1.54	.78
CT 14	1.15	.61	ES 54	1.73	.86	GE 14	1.15	.61	IR 27	1.43	.73

Table A-6—*Continued*

F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)
IT 27	1.43	.73	LM..... 2	0.30	.25	NH..... 4	0.60	.38	PT 8	0.90	.51
IV 25	1.40	.72	LR 2	0.30	.25	NR..... 4	0.60	.38	PI 6	0.78	.45
IL 23	1.36	.70	LU 2	0.30	.25	NP 3	0.48	.33	PS..... 6	0.78	.45
IC 22	1.34	.69	LV 2	0.30	.25	NV..... 3	0.48	.33	PM..... 4	0.60	.38
IG 19	1.28	.67	LW..... 2	0.30	.25	NW 3	0.48	.33	PH 3	0.48	.33
IX..... 15	1.18	.62	LG 1	0.00	.13	NB..... 2	0.30	.25	PU 3	0.48	.33
IE 13	1.11	.59	LH 1	0.00	.13	NK..... 2	0.30	.25	PF..... 2	0.30	.25
IF..... 10	1.00	.55	LN 1	0.00	.13	NJ 1	0.00	.13	PB 1	0.00	.13
IM 9	0.95	.53				NQ..... 1	0.00	.13	PC 1	0.00	.13
IA 8	0.90	.51	MA 36	1.56	.78				PD 1	0.00	.13
IP 7	0.85	.48	ME 26	1.41	.72	ON.....77	1.89	.92	PN 1	0.00	.13
ID 6	0.78	.45	MM.....13	1.11	.59	OR.....64	1.81	.89	PV 1	0.00	.13
IB 2	0.30	.25	MO 10	1.00	.55	OU.....37	1.57	.79	PW..... 1	0.00	.13
IK..... 2	0.30	.25	MI 9	0.95	.53	OF 25	1.40	.72	PY 1	0.00	.13
IZ 2	0.30	.25	MP..... 8	0.90	.51	OM 25	1.40	.72			
			MB 6	0.78	.45	OP 25	1.40	.72	QU.....15	1.18	.62
JE..... 2	0.30	.25	MS..... 4	0.60	.38	OL 19	1.28	.67	QM 1	0.00	.13
JO..... 2	0.30	.25	MC 3	0.48	.33	OT 19	1.28	.67	QR 1	0.00	.13
JU..... 2	0.30	.25	MR 2	0.30	.25	OS 14	1.15	.61			
JA..... 1	0.00	.13	MT 2	0.30	.25	OD.....12	1.08	.58	RE 98	1.99	.96
			MU 2	0.30	.25	OC 8	0.90	.51	RT 42	1.62	.81
KE..... 6	0.78	.45	MY 2	0.30	.25	OW 8	0.90	.51	RA 39	1.59	.80
KI..... 2	0.30	.25	MD 1	0.00	.13	OA 7	0.85	.48	RS 31	1.49	.75
KA..... 1	0.00	.13	MF..... 1	0.00	.13	OV 7	0.85	.48	RI 30	1.48	.75
KC..... 1	0.00	.13	MH 1	0.00	.13	OO 6	0.78	.45	RO 28	1.45	.74
KL..... 1	0.00	.13				OI 5	0.70	.42	RD 17	1.23	.64
KN..... 1	0.00	.13				OB 4	0.60	.38	RP 13	1.11	.59
KS 1	0.00	.13	NT.....82	1.91	.93	OE 3	0.48	.33	RR 11	1.04	.56
			NE.....57	1.76	.87	OH..... 3	0.48	.33	RC 9	0.95	.53
LE 37	1.57	.79	ND.....52	1.72	.85	OG..... 2	0.30	.25	RM 9	0.95	.53
LA 28	1.45	.74	NI.....30	1.48	.75	OK..... 2	0.30	.25	RY 9	0.95	.53
LL.....27	1.43	.73	NG.....27	1.43	.73	OY 2	0.30	.25	RG 7	0.85	.48
LI 20	1.30	.67	NA.....26	1.41	.72	OJ..... 1	0.00	.13	RN 7	0.85	.48
LO 13	1.11	.59	NS 24	1.38	.71	OX..... 1	0.00	.13	RF 6	0.78	.45
LY 10	1.00	.55	NC.....19	1.28	.67				RL 5	0.70	.42
LD 9	0.95	.53	NO.....18	1.26	.66				RU 5	0.70	.42
LT 8	0.90	.51	NF 9	0.95	.53	PE 23	1.36	.70	RV 5	0.70	.42
LS..... 6	0.78	.45	NN..... 8	0.90	.51	PR 18	1.26	.66	RW 4	0.60	.38
LB 3	0.48	.33	NU..... 7	0.85	.48	PO 17	1.23	.64	RH..... 3	0.48	.33
LC 3	0.48	.33	NL..... 5	0.70	.42	PA 14	1.15	.61	RB 2	0.30	.25
LF..... 3	0.48	.33	NM 5	0.70	.42	PL.....13	1.11	.59	RJ..... 1	0.00	.13
LP..... 3	0.48	.33	NY..... 5	0.70	.42	PP.....11	1.04	.56	RK..... 1	0.00	.13

Table A-6—*Continued*

F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)
ST 63	1.80	.88	TS 19	1.28	.67	UF 1	0.00	.13	XN 1	0.00	.13
SE 49	1.69	.84	TT 19	1.28	.67	UO 1	0.00	.13	XO 1	0.00	.13
SI 34	1.53	.77	TR 17	1.23	.64	UV 1	0.00	.13	XR 1	0.00	.13
SH 26	1.41	.72	TF 7	0.85	.48				XS 1	0.00	.13
SA 24	1.38	.71	TN 7	0.85	.48	VE 57	1.76	.87			
SS 19	1.28	.67	TC 6	0.78	.45	VI 12	1.08	.58	YT 15	1.18	.62
SO 15	1.18	.62	TD 6	0.78	.45	VA 6	0.78	.45	YF 11	1.04	.56
SC 13	1.11	.59	TM 6	0.78	.45	VO 1	0.00	.13	YS 11	1.04	.56
SF 12	1.08	.58	TL 5	0.70	.42	VT 1	0.00	.13	YO 10	1.00	.55
SU 11	1.04	.56	TU 5	0.70	.42				YE 9	0.95	.53
SP 10	1.00	.55	TB 3	0.48	.33	WE 22	1.34	.69	YA 6	0.78	.45
SD 5	0.70	.42	TP 2	0.30	.25	WO 19	1.28	.67	YN 6	0.78	.45
SR 5	0.70	.42	TG 1	0.00	.13	WI 13	1.11	.59	YC 4	0.60	.38
SN 4	0.60	.38	TQ 1	0.00	.13	WA 12	1.08	.58	YD 4	0.60	.38
SW 4	0.60	.38	TZ 1	0.00	.13	WH 4	0.60	.38	YR 4	0.60	.38
SB 3	0.48	.33				WN 2	0.30	.25	YI 3	0.48	.33
SM 3	0.48	.33	UR 31	1.49	.75	WL 1	0.00	.13	YP 3	0.48	.33
SG 2	0.30	.25	UN 21	1.32	.68	WR 1	0.00	.13	YB 2	0.30	.25
SL 2	0.30	.25	US 12	1.08	.58	WS 1	0.00	.13	YL 2	0.30	.25
SK 1	0.00	.13	UT 12	1.08	.58	WY 1	0.00	.13	YM 2	0.30	.25
SV 1	0.00	.13	UE 11	1.04	.56				YG 1	0.00	.13
SY 1	0.00	.13	UG 8	0.90	.51	XT 7	0.85	.48	YH 1	0.00	.13
			UL 6	0.78	.45	XA 2	0.30	.25	YU 1	0.00	.13
TH 78	1.89	.92	UA 5	0.70	.42	XC 2	0.30	.25	YW 1	0.00	.13
TE 71	1.85	.91	UI 5	0.70	.42	XI 2	0.30	.25			
TO 50	1.70	.84	UM 5	0.70	.42	XP 2	0.30	.25			
TI 45	1.65	.82	UB 3	0.48	.33	XD 1	0.00	.13	ZE 2	0.30	.25
TY 41	1.61	.80	UC 3	0.48	.33	XE 1	0.00	.13	ZA 1	0.00	.13
TW 36	1.56	.78	UD 3	0.48	.33	XF 1	0.00	.13	ZI 1	0.00	.13
TA 28	1.45	.74	UP 2	0.30	.25	XH 1	0.00	.13	5,000		

Table A-7. The 428 digraphs of Table A-1, arranged in alphabetic order by final letters, then by absolute frequencies, accompanied by the logarithms of their assigned probabilities.

F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)
RA 39	1.59	.80	EC 32	1.51	.76	RE 98	1.99	.96	MF 1	0.00	.13
MA 36	1.56	.78	IC 22	1.34	.69	TE 71	1.85	.91	UF 1	0.00	.13
EA 35	1.54	.78	NC 19	1.28	.67	NE 57	1.76	.87	XF 1	0.00	.13
DA 32	1.51	.76	AC 14	1.15	.61	VE 57	1.76	.87			
LA 28	1.45	.74	SC 13	1.11	.59	SE 49	1.69	.84	NG 27	1.43	.73
TA 28	1.45	.74	RC 9	0.95	.53	EE 42	1.62	.81	IG 19	1.28	.67
NA 26	1.41	.72	OC 8	0.90	.51	LE 37	1.57	.79	UG 8	0.90	.51
SA 24	1.38	.71	TC 6	0.78	.45	DE 33	1.52	.77	RG 7	0.85	.48
CA 20	1.30	.67	DC 4	0.60	.38	CE 32	1.51	.76	AG 6	0.78	.45
HA 20	1.30	.67	YC 4	0.60	.38	ME 26	1.41	.72	EG 4	0.60	.38
PA 14	1.15	.61	CC 3	0.48	.33	PE 23	1.36	.70	DG 2	0.30	.25
WA 12	1.08	.58	HC 3	0.48	.33	WE 22	1.34	.69	OG 2	0.30	.25
IA 8	0.90	.51	LC 3	0.48	.33	HE 20	1.30	.67	SG 2	0.30	.25
GA 7	0.85	.48	MC 3	0.48	.33	BE 18	1.26	.66	FG 1	0.00	.13
OA 7	0.85	.48	UC 3	0.48	.33	GE 14	1.15	.61	GG 1	0.00	.13
VA 6	0.78	.45	FC 2	0.30	.25	IE 13	1.11	.59	LG 1	0.00	.13
YA 6	0.78	.45	GC 2	0.30	.25	UE 11	1.04	.56	TG 1	0.00	.13
FA 5	0.70	.42	XC 2	0.30	.25	FE 10	1.00	.55	YG 1	0.00	.13
UA 5	0.70	.42	KC 1	0.00	.13	YE 9	0.95	.53			
BA 4	0.60	.38	PC 1	0.00	.13	KE 6	0.78	.45	TH 78	1.89	.92
AA 3	0.48	.33				OE 3	0.48	.33	SH 26	1.41	.72
XA 2	0.30	.25				JE 2	0.30	.25	GH 20	1.30	.67
JA 1	0.00	.13				ZE 2	0.30	.25	CH 14	1.15	.61
KA 1	0.00	.13	ED 60	1.78	.88	AE 1	0.00	.13	EH 7	0.85	.48
ZA 1	0.00	.13	ND 52	1.72	.85	XE 1	0.00	.13	NH 4	0.60	.38
			AD 27	1.43	.73				WH 4	0.60	.38
			RD 17	1.23	.64	OF 25	1.40	.72	OH 3	0.48	.33
AB 6	0.78	.45	OD 12	1.08	.58	EF 18	1.26	.66	PH 3	0.48	.33
MB 6	0.78	.45	LD 9	0.95	.53	SF 12	1.08	.58	RH 3	0.48	.33
DB 4	0.60	.38	DD 8	0.90	.51	FF 11	1.04	.56	AH 2	0.30	.25
EB 4	0.60	.38	ID 6	0.78	.45	XF 11	1.04	.56	DH 2	0.30	.25
OB 4	0.60	.38	TD 6	0.78	.45	IF 10	1.00	.55	LH 1	0.00	.13
LB 3	0.48	.33	SD 5	0.70	.42	NF 9	0.95	.53	MH 1	0.00	.13
SB 3	0.48	.33	YD 4	0.60	.38	DF 8	0.90	.51	XH 1	0.00	.13
TB 3	0.48	.33	UD 3	0.48	.33	TF 7	0.85	.48	YH 1	0.00	.13
UB 3	0.48	.33	HD 2	0.30	.25	RF 6	0.78	.45			
IB 2	0.30	.25	CD 1	0.00	.13	HF 5	0.70	.42	TI 45	1.65	.82
NB 2	0.30	.25	FD 1	0.00	.13	AF 4	0.60	.38	FI 39	1.59	.80
RB 2	0.30	.25	GD 1	0.00	.13	LF 3	0.48	.33	SI 34	1.53	.77
YB 2	0.30	.25	MD 1	0.00	.13	GF 2	0.30	.25	HI 33	1.52	.77
HB 1	0.00	.13	PD 1	0.00	.13	PF 2	0.30	.25	NI 30	1.48	.75
PB 1	0.00	.13	XD 1	0.00	.13	CF 1	0.00	.13	RI 30	1.48	.75

Table A-7—*Continued*

F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)
DI 27	1.43	.73	UL 6	0.78	.45	TN 7	0.85	.48	SP..... 10	1.00	.55
EI 27	1.43	.73	CL 5	0.70	.42	YN 6	0.78	.45	MP..... 8	0.90	.51
LI 20	1.30	.67	NL 5	0.70	.42	DN..... 4	0.60	.38	IP 7	0.85	.48
AI 17	1.23	.64	RL 5	0.70	.42	SN 4	0.60	.38	DP 5	0.70	.42
WI 13	1.11	.59	TL 5	0.70	.42	GN..... 3	0.48	.33	LP..... 3	0.48	.33
VI 12	1.08	.58	DL 3	0.48	.33	HN..... 3	0.48	.33	NP 3	0.48	.33
MI 9	0.95	.53	FL..... 2	0.30	.25	WN 2	0.30	.25	YP 3	0.48	.33
CI 7	0.85	.48	GL 2	0.30	.25	CN 1	0.00	.13	GP 2	0.30	.25
PI 6	0.78	.45	SL..... 2	0.30	.25	KN..... 1	0.00	.13	TP 2	0.30	.25
GI 5	0.70	.42	YL 2	0.30	.25	LN 1	0.00	.13	UP 2	0.30	.25
OI 5	0.70	.42	HL 1	0.00	.13	PN 1	0.00	.13	XP 2	0.30	.25
UI 5	0.70	.42	KL 1	0.00	.13	XN..... 1	0.00	.13	FP..... 1	0.00	.13
YI 3	0.48	.33	WL..... 1	0.00	.13				HP 1	0.00	.13
BI 2	0.30	.25				TO 50	1.70	.84			
KI 2	0.30	.25	OM 25	1.40	.72	CO 41	1.61	.80	EQ 12	1.08	.58
XI 2	0.30	.25	AM 14	1.15	.61	IO 41	1.61	.80	DQ 2	0.30	.25
ZI 1	0.00	.13	EM 14	1.15	.61	FO 40	1.60	.80	HQ..... 1	0.00	.13
			MM..... 13	1.11	.59	RO 28	1.45	.74	NQ..... 1	0.00	.13
AJ 1	0.00	.13	IM 9	0.95	.53	HO..... 20	1.30	.67	TQ 1	0.00	.13
BJ 1	0.00	.13	RM 9	0.95	.53	WO 19	1.28	.67			
DJ 1	0.00	.13	TM 6	0.78	.45	NO..... 18	1.26	.66	ER 87	1.94	.94
EJ 1	0.00	.13	DM 5	0.70	.42	PO 17	1.23	.64	OR..... 64	1.81	.89
GJ 1	0.00	.13	NM 5	0.70	.42	DO..... 16	1.20	.63	AR 44	1.64	.82
NJ 1	0.00	.13	UM 5	0.70	.42	SO 15	1.18	.62	UR..... 31	1.49	.75
OJ 1	0.00	.13	PM..... 4	0.60	.38	LO 13	1.11	.59	IR 27	1.43	.73
RJ 1	0.00	.13	SM..... 3	0.48	.33	EO 12	1.08	.58	PR 18	1.26	.66
			HM 2	0.30	.25	MO 10	1.00	.55	HR..... 17	1.23	64
CK..... 4	0.60	.38	LM..... 2	0.30	.25	YO 10	1.00	.55	TR 17	1.23	.64
AK..... 2	0.30	.25	YM 2	0.30	.25	GO 6	0.78	.45	DR 12	1.08	.58
IK..... 2	0.30	.25	BM 1	0.00	.13	OO 6	0.78	.45	RR 11	1.04	.56
NK..... 2	0.30	.25	CM 1	0.00	.13	BO 4	0.60	.38	FR 9	0.95	.53
OK..... 2	0.30	.25	FM..... 1	0.00	.13	AO 2	0.30	.25	GR 5	0.70	.42
RK..... 1	0.00	.13	GM 1	0.00	.13	JO..... 2	0.30	.25	SR 5	0.70	.42
SK 1	0.00	.13	QM 1	0.00	.13	UO 1	0.00	.13	CR 4	0.60	.38
						VO 1	0.00	.13	NR..... 4	0.60	.38
AL 32	1.51	.76	EN 111	2.05	.99	XO..... 1	0.00	.13	YR 4	0.60	.38
EL 29	1.46	.74	ON..... 77	1.89	.92				BR 2	0.30	.25
LL..... 27	1.43	.73	IN 75	1.88	.92	OP 25	1.40	.72	LR 2	0.30	.25
IL 23	1.36	.70	AN..... 64	1.81	.89	EP 20	1.30	.67	MR 2	0.30	.25
OL 19	1.28	.67	UN..... 21	1.32	.68	RP 13	1.11	.59	QR 1	0.00	.13
PL..... 13	1.11	.59	NN..... 8	0.90	.51	AP 12	1.08	.58	WR 1	0.00	.13
BL 6	0.78	.45	RN 7	0.85	.48	PP..... 11	1.04	.56	XR..... 1	0.00	.13

Table A-7—*Continued*

F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)
ES 54	1.73	.86	OT 19	1.28	.67	JU 2	0.30	.25	HW 1	0.00	.13
AS 41	1.61	.80	TT 19	1.28	.67	LU 2	0.30	.25	PW 1	0.00	.13
IS 35	1.54	.78	DT 15	1.18	.62	MU 2	0.30	.25	YW 1	0.00	.13
RS 31	1.49	.75	YT 15	1.18	.62	YU 1	0.00	.13			
NS 24	1.38	.71	CT 14	1.15	.61				IX 15	1.18	.62
SS 19	1.28	.67	UT 12	1.08	.58	IV 25	1.40	.72	EX 7	0.85	.48
TS 19	1.28	.67	FT 11	1.04	.56	EV 20	1.30	.67	OX 1	0.00	.13
OS 14	1.15	.61	LT 8	0.90	.51	AV 7	0.85	.48			
DS 13	1.11	.59	PT 8	0.90	.51	OV 7	0.85	.48	TY 41	1.61	.80
US 12	1.08	.58	XT 7	0.85	.48	RV 5	0.70	.42	AY 12	1.08	.58
YS 11	1.04	.56	GT 4	0.60	.38	DV 3	0.48	.33	LY 10	1.00	.55
LS 6	0.78	.45	MT 2	0.30	.25	NV 3	0.48	.33	RY 9	0.95	.53
PS 6	0.78	.45	BT 1	0.00	.13	LV 2	0.30	.25	BY 7	0.85	.48
HS 4	0.60	.38	VT 1	0.00	.13	PV 1	0.00	.13	NY 5	0.70	.42
MS 4	0.60	.38				SV 1	0.00	.13	EY 4	0.60	.38
FS 3	0.48	.33	OU 37	1.57	.79	UV 1	0.00	.13	MY 2	0.30	.25
GS 3	0.48	.33	QU 15	1.18	.62				OY 2	0.30	.25
BS 1	0.00	.13	AU 13	1.11	.59				CY 1	0.00	.13
CS 1	0.00	.13	SU 11	1.04	.56	TW 36	1.56	.78	DY 1	0.00	.13
KS 1	0.00	.13	HU 8	0.90	.51	OW 8	0.90	.51	FY 1	0.00	.13
WS 1	0.00	.13	NU 7	0.85	.48	EW 7	0.85	.48	HY 1	0.00	.13
XS 1	0.00	.13	DU 5	0.70	.42	DW 4	0.60	.38	PY 1	0.00	.13
			RU 5	0.70	.42	RW 4	0.60	.38	SY 1	0.00	.13
NT 82	1.91	.93	TU 5	0.70	.42	SW 4	0.60	.38	WY 1	0.00	.13
ST 63	1.80	.88	CU 4	0.60	.38	AW 3	0.48	.33			
AT 47	1.67	.83	EU 3	0.48	.33	NW 3	0.48	.33			
RT 42	1.62	.81	FU 3	0.48	.33	LW 2	0.30	.25	IZ 2	0.30	.25
ET 37	1.57	.79	PU 3	0.48	.33	CW 1	0.00	.13	EZ 1	0.00	.13
HT 28	1.45	.74	BU 2	0.30	.25	FW 1	0.00	.13	TZ 1	0.00	.13
IT 27	1.43	.73	GU 2	0.30	.25	GW 1	0.00	.13	5,000		

Table A-8. The 18 digraphs composing 25 percent of the digraphs of Table A-1, accompanied by the logarithms of their assigned probabilities, arranged alphabetically by final letters.

(1) ACCORDING TO THEIR FINAL LETTERS						(2) ACCORDING TO THEIR ABSOLUTE FREQUENCIES					
F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)
ED 60	1.78	.88	IN 75	1.88	.92	ED 60	1.78	.88	IN 75	1.88	.92
ND 52	1.72	.85	ON 77	1.89	.92	ND 52	1.72	.85	AN 64	1.81	.89
NE 57	1.76	.87	TO 50	1.70	.84	RE 98	1.99	.96	TO 50	1.70	.84
RE 98	1.99	.96				TE 71	1.85	.91			
SE 49	1.69	.84	ER 87	1.94	.94	NE 57	1.76	.87	ER 87	1.94	.94
TE 71	1.85	.91	OR 64	1.81	.89	VE 57	1.76	.87	OR 64	1.81	.89
VE 57	1.76	.87				SE 49	1.69	.84			
			ES 54	1.73	.86				ES 54	1.73	.86
TH 78	1.89	.92				TH 78	1.89	.92			
			NT 82	1.91	.93				NT 82	1.91	.93
AN 64	1.81	.89	ST 63	1.80	.88	EN 111	2.05	.99	ST 63	1.80	.88
EN 111	2.05	.99	1,249			ON 77	1.89	.92	1,249		

Table A-9. The 53 digraphs composing 50 percent of the digraphs of Table A-1, accompanied by the logarithms of their assigned probabilities, arranged alphabetically by final letters.

(1) ACCORDING TO THEIR FINAL LETTERS											
F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)
DA 32	1.51	.76	NE 57	1.76	.87	AN 64	1.81	.89	AS 41	1.61	.80
EA 35	1.54	.78	RE 98	1.99	.96	EN 111	2.05	.99	ES 54	1.73	.86
LA 28	1.45	.74	SE 49	1.69	.84	IN 75	1.88	.92	IS 35	1.54	.78
MA 36	1.56	.78	TE 71	1.85	.91	ON 77	1.89	.92	RS 31	1.49	.75
RA 39	1.59	.80	VE 57	1.76	.87						
TA 28	1.45	.74							AT 47	1.67	.83
			TH 78	1.89	.92	CO 41	1.61	.80	ET 37	1.57	.79
EC 32	1.51	.76				FO 40	1.60	.80	HT 28	1.45	.74
			FI 39	1.59	.80	IO 41	1.61	.80	NT 82	1.91	.93
			HI 33	1.52	.77	RO 28	1.45	.74	RT 42	1.62	.81
ED 60	1.78	.88	NI 30	1.48	.75	TO 50	1.70	.84	ST 63	1.80	.88
ND 52	1.72	.85	RI 30	1.48	.75						
			SI 34	1.53	.77				OU 37	1.57	.79
			TI 45	1.65	.82						
CE 32	1.51	.76				AR 44	1.64	.82	TW 36	1.56	.78
DE 33	1.52	.77				ER 87	1.94	.94			
EE 42	1.62	.81	AL 32	1.51	.76	OR 64	1.81	.89	TY 41	1.61	.80
LE 37	1.57	.79	EL 29	1.46	.74	UR 31	1.49	.75	2,495		

Table A-9—*Continued*

(2) ACCORDING TO THEIR ABSOLUTE FREQUENCIES

F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)
RA 39	1.59	.80	EE 42	1.62	.81	EN 111	2.05	.99	ES 54	1.73	.86
MA 36	1.56	.78	LE 37	1.57	.79	ON 77	1.89	.92	AS 41	1.61	.80
EA 35	1.54	.78	DE 33	1.52	.77	IN 75	1.88	.92	IS 35	1.54	.78
DA 32	1.51	.76	CE 32	1.51	.76	AN 64	1.81	.89	RS 31	1.49	.75
LA 28	1.45	.74									
TA 28	1.45	.74							NT 82	1.91	.93
			TH 78	1.89	.92	TO 50	1.70	.84	ST 63	1.80	.88
EC 32	1.51	.76				CO 41	1.61	.80	AT 47	1.67	.83
						IO 41	1.61	.80	RT 42	1.62	.81
			TI 45	1.65	.82	FO 40	1.60	.80	ET 37	1.57	.79
ED 60	1.78	.88	FI 39	1.59	.80	RO 28	1.45	.74	HT 28	1.45	.74
ND 52	1.72	.85	SI 34	1.53	.77						
			HI 33	1.52	.77				OU 37	1.57	.79
RE 98	1.99	.96	NI 30	1.48	.75						
TE 71	1.85	.91	RI 30	1.48	.75	ER 87	1.94	.94	TW 36	1.56	.78
NE 57	1.76	.87				OR 64	1.81	.89			
VE 57	1.76	.87	AL 32	1.51	.76	AR 44	1.64	.82	TY 41	1.61	.80
SE 49	1.69	.84	EL 29	1.46	.74	UR 31	1.49	.75	2,495		

Table A-10. The 117 digraphs composing 75 percent of the digraphs of Table A-1, accompanied by the logarithms of their assigned probabilities, arranged alphabetically by final letters.

(1) ACCORDING TO THEIR FINAL LETTERS

F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)
CA 20	1.30	.67	TE 71	1.85	.91	AN 64	1.81	.89	IS 35	1.54	.78
DA 32	1.51	.76	VE 57	1.76	.87	EN 111	2.05	.99	NS 24	1.38	.71
EA 35	1.54	.78	WE 22	1.34	.69	IN 75	1.88	.92	OS 14	1.15	.61
HA 20	1.30	.67				ON 77	1.89	.92	RS 31	1.49	.75
LA 28	1.45	.74	EF 18	1.26	.66	UN 21	1.32	.68	SS 19	1.28	.67
MA 36	1.56	.78	OF 25	1.40	.72				TS 19	1.28	.67
NA 26	1.41	.72				CO 41	1.61	.80			
PA 14	1.15	.61	IG 19	1.28	.67	DO 16	1.20	.63			
RA 39	1.59	.80	NG 27	1.43	.73	FO 40	1.60	.80	AT 47	1.67	.83
SA 24	1.38	.71				HO 20	1.30	.67	CT 14	1.15	.61
TA 28	1.45	.74	CH 14	1.15	.61	IO 41	1.61	.80	DT 15	1.18	.62
			GH 20	1.30	.67	LO 13	1.11	.59	ET 37	1.57	.79
AC 14	1.15	.61	SH 26	1.41	.72	NO 18	1.26	.66	HT 28	1.45	.74
EC 32	1.51	.76	TH 78	1.89	.92	PO 17	1.23	.64	IT 27	1.43	.73
IC 22	1.34	.69				RO 28	1.45	.74	NT 82	1.91	.93
NC 19	1.28	.67	AI 17	1.23	.64	SO 15	1.18	.62	OT 19	1.28	.67
			DI 27	1.43	.73	TO 50	1.70	.84	RT 42	1.62	.81
AD 27	1.43	.73	EI 27	1.43	.73	WO 19	1.28	.67	ST 63	1.80	.88
ED 60	1.78	.88	FI 39	1.59	.80				TT 19	1.28	.67
ND 52	1.72	.85	HI 33	1.52	.77	EP 20	1.30	.67	YT 15	1.18	.62
RD 17	1.23	.64	LI 20	1.30	.67	OP 25	1.40	.72			
			NI 30	1.48	.75						
BE 18	1.26	.66	RI 30	1.48	.75	AR 44	1.64	.82	AU 13	1.11	.59
CE 32	1.51	.76	SI 34	1.53	.77	ER 87	1.94	.94	OU 37	1.57	.79
DE 33	1.52	.77	TI 45	1.65	.82	HR 17	1.23	.64	QU 15	1.18	.62
EE 42	1.62	.81				IR 27	1.43	.73			
GE 14	1.15	.61	AL 32	1.51	.76	OR 64	1.81	.89	EV 20	1.30	.67
HE 20	1.30	.67	EL 29	1.46	.74	PR 18	1.26	.66	IV 25	1.40	.72
IE 13	1.11	.59	IL 23	1.36	.70	TR 17	1.23	.64			
LE 37	1.57	.79	LL 27	1.43	.73	UR 31	1.49	.75	TW 36	1.56	.78
ME 26	1.41	.72	OL 19	1.28	.67						
NE 57	1.76	.87							IX 15	1.18	.62
PE 23	1.36	.70	AM 14	1.15	.61	AS 41	1.61	.80			
RE 98	1.99	.96	EM 14	1.15	.61	DS 13	1.11	.59	TY 41	1.61	.80
SE 49	1.69	.84	OM 25	1.40	.72	ES 54	1.73	.86	3,745		

Table A-10—*Continued*

(2) ACCORDING TO THEIR ABSOLUTE FREQUENCIES

F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)	F	L_{10} (F)	L_{224} (2F)
RA 39	1.59	.80	BE 18	1.26	.66	EN 111	2.05	.99	RS 31	1.49	.75
MA 36	1.56	.78	GE 14	1.15	.61	ON 77	1.89	.92	NS 24	1.38	.71
EA 35	1.54	.78	IE 13	1.11	.59	IN 75	1.88	.92	SS 19	1.28	.67
DA 32	1.51	.76				AN 64	1.81	.89	TS 19	1.28	.67
LA 28	1.45	.74	OF 25	1.40	.72	UN 21	1.32	.68	OS 14	1.15	.61
TA 28	1.45	.74	EF 18	1.26	.66				DS 13	1.11	.59
NA 26	1.41	.72				TO 50	1.70	.84			
SA 24	1.38	.71	NG 27	1.43	.73	CO 41	1.61	.80			
CA 20	1.30	.67	IG 19	1.28	.67	IO 41	1.61	.80	NT 82	1.91	.93
HA 20	1.30	.67				FO 40	1.60	.80	ST 63	1.80	.88
PA 14	1.15	.61	TH 78	1.89	.92	RO 28	1.45	.74	AT 47	1.67	.83
			SH 26	1.41	.72	HO 20	1.30	.67	RT 42	1.62	.81
EC 32	1.51	.76	GH 20	1.30	.67	WO 19	1.28	.67	ET 37	1.57	.79
IC 22	1.34	.69	CH 14	1.15	.61	NO 18	1.26	.66	HT 28	1.45	.74
NC 19	1.28	.67				PO 17	1.23	64	IT 27	1.43	.73
AC 14	1.15	.61	TI 45	1.65	.82	DO 16	1.20	.63	OT 19	1.28	.67
			FI 39	1.59	.80	SO 15	1.18	.62	TT 19	1.28	.67
ED 60	1.78	.88	SI 34	1.53	.77	LO 13	1.11	.59	DT 15	1.18	.62
ND 52	1.72	.85	HI 33	1.52	.77				YT 15	1.18	.62
AD 27	1.43	.73	NI 30	1.48	.75	OP 25	1.40	.72	CT 14	1.15	.61
RD 17	1.23	.64	RI 30	1.48	.75	EP 20	1.30	.67			
			DI 27	1.43	.73				OU 37	1.57	.79
RE 98	1.99	.96	EI 27	1.43	.73				QU 15	1.18	.62
TE 71	1.85	.91	LI 20	1.30	.67	ER 87	1.94	.94	AU 13	1.11	.59
NE 57	1.76	.87	AI 17	1.23	.64	OR 64	1.81	.89			
VE 57	1.76	.87				AR 44	1.64	.82			
SE 49	1.69	.84	AL 32	1.51	.76	UR 31	1.49	.75	IV 25	1.40	.72
EE 42	1.62	.81	EL 29	1.46	.74	IR 27	1.43	.73	EV 20	1.30	.67
LE 37	1.57	.79	LL 27	1.43	.73	PR 18	1.26	.66			
DE 33	1.52	.77	IL 23	1.36	.70	HR 17	1.23	.64	TW 36	1.56	.78
CE 32	1.51	.76	OL 19	1.28	.67	TR 17	1.23	.64			
ME 26	1.41	.72							IX 15	1.18	.62
PE 23	1.36	.70	OM 25	1.40	.72	ES 54	1.73	.86			
WE 22	1.34	.69	AM 14	1.15	.61	AS 41	1.61	.80	TY 41	1.61	.80
HE 20	1.30	.67	EM 14	1.15	.61	IS 35	1.54	.78	3,745		