

**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
FL.....	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

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

Table A-2—Continued

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-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	<u>1,249</u>			NE	57	1.76 .87	<u>1,249</u>		
NT	82	1.91 .93				ND	52	1.72 .85			

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
IL	23	1.38	.70	LU	2	0.30	.25	NJ	1	0.00	.13	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
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	10.00.13	XN	1	10.00.13
SE	49	1.69.84	TT	19	1.28.67	UO	1	10.00.13	XO	1	10.00.13
SI	34	1.53.77	TR	17	1.23.64	UV	1	10.00.13	XR	1	10.00.13
SH	26	1.41.72	TF	7	0.85.48				XS	1	10.00.13
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	10.00.13	YS	11	1.04.56
SF	12	1.08.58	TL	5	0.70.42	VT	1	10.00.13	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	10.00.13	WI	13	1.11.59	YC	4	0.60.38
SN	4	0.60.38	TQ	1	10.00.13	WA	12	1.08.58	YD	4	0.60.38
SW	4	0.60.38	TZ	1	10.00.13	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	10.00.13	YP	3	0.48.33
SG	2	0.30.25	UN	21	1.32.68	WR	1	10.00.13	YB	2	0.30.25
SL	2	0.30.25	US	12	1.08.58	WS	1	10.00.13	YL	2	0.30.25
SK	1	10.00.13	UT	12	1.08.58	WY	1	10.00.13	YM	2	0.30.25
SV	1	10.00.13	UE	11	1.04.56				YG	1	10.00.13
SX	1	10.00.13	UC	9	0.90.51	XT	7	0.85.48	YH	1	10.00.13
TU	33	1.70.84	UM	3	0.70.42	XI	2	0.30.25			
TI	45	1.65.82	UB	3	0.48.33	XD	1	10.00.13	ZE	2	0.30.25
TY	41	1.61.80	UC	3	0.48.33	XE	1	10.00.13	ZA	1	10.00.13
TW	36	1.56.78	UD	3	0.48.33	XF	1	10.00.13	ZI	1	10.00.13
TA	28	1.45.74	UP	2	0.30.25	XH	1	10.00.13		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	11	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-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	ES 54	1.73	.86	SE 49	1.69	.84	ES 54	1.73	.86
TH 78	1.89	.92	NT 82	1.91	.93	TH 78	1.89	.92	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
TA 28	1.45	.74	TH 78	1.89	.92	CO 41	1.61	.80	AT 47	1.67	.83
EC 32	1.51	.76	FI 39	1.59	.80	FO 40	1.60	.80	ET 37	1.57	.79
ED 60	1.78	.88	HI 33	1.52	.77	IO 41	1.61	.80	HT 28	1.45	.74
ND 52	1.72	.85	NI 30	1.48	.75	RO 28	1.45	.74	NT 82	1.91	.93
CE 32	1.51	.76	RI 30	1.48	.75	TO 50	1.70	.84	RT 42	1.62	.81
DE 33	1.52	.77	SI 34	1.53	.77				ST 63	1.80	.88
EE 49	1.69	.81	TI 45	1.65	.82	AR 44	1.64	.82	OU 37	1.57	.79
LE 37	1.57	.79	AL 38	1.51	.76	ER 87	1.94	.94	TW 36	1.56	.78
			EL 29	1.46	.74	OR 64	1.81	.89	TY 41	1.61	.80
						UR 31	1.49	.75	2,495		

Table A-9—Continued

(2) ACCORDING TO THEIR ABSOLUTE FREQUENCIES

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