ERRATA IN THE LEHMER FACTOR STENCILS

BY J. D. ELDER

In his factor stencils, D. N. Lehmer has made available a powerful tool in factorization problems. However, they present in use certain minor disadvantages. It was suggested to me that possibly these could be eliminated by using Hollerith cards. An additional advantage would be the ease of reproduction. I constructed with these cards a small set of factor stencils equivalent to the first eight columns of the Lehmer stencils. (As first constructed these were merely a partial copy of the Lehmer stencils.) These were so perfect mechanically that a thorough comparison of different stencils was extremely easy. A comparison of the new stencils for $+R$ and $-R$, for various prime values of R showed contradictions, and further investigations convinced me of the desirability of a complete recalculation of the Lehmer stencils.

This is now well under way and has been completed for the first eight columns. The number of errors found is larger than anticipated. It seems desirable to make this information available, as it will take the better part of a year to complete the entire calculation. Professor Lehmer has graciously loaned the original stencils to me for purposes of comparison; in a few entries these differ from the copy which was first used.

In the following table the number in the L-column indicates the number of the cell considered; a $+$ or $-$ indicates, respectively, that the cell in question is or is not punched. C refers to the copy of Lehmer's stencil at the University of Michigan, O to the original stencil, and K to the correct entries. The entry for C is given only if it differs from the corresponding O entry.

A comparison of the following table and the original stencils disclosed the significant fact that almost all of the errors found had been made after the direct calculation for prime values of R was completed. I had replaced Professor Lehmer's visual method of constructing stencils for composite R's by a photographic method which eliminates some of the possible sources of error; it has the additional advantage of requiring considerably less time.

R	L	K	C	O	R	L	K	C	O	R	L	K	C	O
13	3	+		—	127	14	+		—	182	601	+		—
19	302	+	—	—	127	138	+		—	183	31	+		—
22	689	+		—	127	427	+		—	186	31	+		—
26	3	—		+	127	743	+		+	186	286	—		—
31	199	+		—	130	3	—		—	187	10	+		+
38	8	+		—	131	3	+		+	187	474	+		—
38	390	+		—	131	159	+		—	191	511	+		—
38	403	+		—	131	276	+		—	191	3	+		—
38	689	+		—	134	101	+		—	193	31	+		—
42	131	+		—	134	689	+		—	195	88	+		—
42	253	+		—	138	31	+		—	195	31	+		—
42	286	+		—	138	286	—		+	195	3	+		—
46	689	+		—	138	308	+		+	199	436	+		—
51	500	+		—	138	689	+		—	199	200	+		—
62	689	+		—	142	308	+		—	203	145	+		—
65	3	—	+	—	143	3	—		+	205	100	—		+
65	744	+		+	146	94	+		—	206	416	+		—
66	286	+		—	151	54	+		—	206	294	+		—
70	689	+		—	151	260	+		—	209	252	+		—
78	30	+		—	151	272	+		—	210	480	+		—
86	689	+	+	—	151	354	+		—	211	252	+		—
91	3	—		—	151	499	+		—	214	278	+		—
94	689	+		+	157	40	+		+	214	274	+		—
102	30	+		—	157	720	—		—	214	689	+		—
102	500	+		—	157	740	—		+	221	3	—	+	+
110	511	+		—	157	31	+		+	222	30	+		—
111	4	+		—	158	19	+		—	223	184	+		—
111	31	+		+	158	70	+		—	223	476	+		—
114	21	+		—	159	31	—		+	223	528	+		—
114	31	+		—	166	3	+		—	226	101	+		—
114	286	—		+	166	33	+		—	227	476	+		—
118	466	+		—	166	45	+		—	227	528	+	+	—
118	689	+		—	166	10	+		—	231	31	—		—
123	31	—	—	+	170	11	+		+	235	100	+		—
−2	286	+	—	—	170	475	+		—	237	607	+		—
−2	428	+		—	179	475	—	—	+	238	71	+	—	+
−10	689	+		—	182	31	+		+	−194	512	+		—
−14	404	+		—	−102	286	+		—	−195	689	+		—
−14	689	+		—	−102	31	—		—	−199	200	+		—
−17	500	+		—	−106	689	+		—	−201	31	+		—
−26	3	+		—	−110	474	+		—	−206	73	+		—
−26	404	+		—	−110	689	+		—	−206	74	+		—
−26	689	+		—	−114	30	+		—	−206	180	+		—
−26	708	+		—	−119	500	+		—	−206	384	+		—
−29	72	+		—	−122	689	+		—	−209	474	+		—
−30	708	—		—	−129	31	+		—	−209	11	+		—
					−130	3	+		—	−210	29	+		—
					−131	3	+		+	−210	252	—		—
					−138	30	+		—					

R	L	K	C	O
−34	500	+		−
−35	101	+		−
−37	3	−		+
−38	303	+		−
−39	509	+		−
−41	101	+		−
−62	13	+		−
−65	3	+		−
−66	30	+		−
−69	42	+		−
−74	4	+		−
−74	689	+		−
−77	27	+		−
−78	31	−		+
−78	286	+		−
−85	500	+		−
−86	73	+		−
−86	86	+		−
−91	3	−		+
−93	31	−		+
−93	184	+		−

R	L	K	C	O
−141	31	+		−
−141	688	+	−	+
−142	576	+	−	+
−143	3	+		−
−157	720	−		+
−157	740	+		−
−158	19	+		−
−165	31	+		−
−166	45	+		−
−166	147	+		−
−170	500	+		−
−170	689	+		−
−173	46	+	−	+
−174	31	+		−
−174	286	+		−
−177	31	+		−
−181	45	+		−
−182	3	+		−
−187	500	+		−
−190	11	+		−
−193	3	−		+

R	L	K	C	O
−213	31	+		−
−214	100	+		−
−214	176	+		−
−215	100	+		−
−215	161	+		−
−218	689	+		−
−221	3	+		−
−221	476	+		−
−221	500	+		−
−221	528	+		−
−222	31	+		−
−222	100	+		−
−222	286	+		−
−226	101	+		−
−229	528	+		−
−231	31	−		+
−235	161	+		−
−237	31	+		−
−238	500	+		−
−238	689	+		−

Note by the Editors. This table has been examined by D. N. Lehmer and is thought by him to be correct. It has been re-checked by the author independently from the galley proofs, so that there should be no typographical errors. THE EDITORS.

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