$$t_i\gamma_2 = m_i^2 + m_i(\gamma_1 + 2 - \alpha_i^2) + n_i(\gamma_1 + \alpha_i^2) + \gamma_1$$

$$h_ik^2(1 - k^2) = (\alpha_i^2 - k^2)(k^4 + 2k^2\gamma_1 + r^2).$$

This permits us to write formulas 416.00, 417.00, 437.00 and 438.00 with no explicit appearances of m_1 or m_2. For example, 416.00 becomes:

$$416.00'\colon a\Pi(\alpha^2) + \bar{a}\Pi(\bar{\alpha}^2) = \frac{2}{s_1\,t_2 - s_2\,t_1}\{[a_1(t_1 - t_2) + b_1(s_1 - s_2)]K + n_2(a_1\,t_1 + b_1\,s_1)\Pi(\alpha_2^2) - n_1(a_1\,t_2 + b_1\,s_2)\Pi(\alpha_1^2)\}$$

A similar simplification is possible in the special case when $m_1 = 0 = \alpha_1^2$. In this case we multiply the second equation of (3) by m_2 as above, and multiply equation (8) by r^2 to obtain

$$s_1\,\Pi_1 + t_1\,\Pi_2 = -k^2F(\phi) + r\tanh^{-1}\frac{r\cos\phi\sin\phi}{\Delta}$$

where

$$s_1 = r^2 - k^2$$

$$t_1\gamma_2 = 2r^2 + r^2\gamma_1 + k^2$$

(n_2, s_2 and t_2 are defined as in (7').) This permits us to write formulas 418.00, 419.00, 439.00, and 440.00 with no explicit appearances of m_2 or r_2 (But note that the two occurrences of r in formulas 439.00 and 440.00 are preserved.) For example, 439.00 (with the sign changes mentioned in Section 4 incorporated) becomes

$$439.00'\colon a\Pi(u_1, \alpha^2) + \bar{a}\Pi(u_1, \bar{\alpha}^2) = \frac{2}{s_2\,t_1 - t_2\,s_1}\left\{[a_1(k^2t_2 - t_1) + b_1(k^2s_2 - s_1)]u_1 - n_2(a_1\,t_1 + b_1\,s_1)\Pi(u_1, \alpha_2^2) + (a_1\,t_1 + b_1\,s_1)r^2 - r(a_1\,t_2 + b_1\,s_2)\tanh^{-1}\frac{r\cos\phi\sin\phi}{\Delta}\right\}.$$

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1. G. J. Hoüel, *Recueil de Formules et de Tables Numériques*, Gauthier-Villars, Paris, 1901.
2. Paul F. Byrd & Morris D. Friedman, *Handbook of Elliptic Integrals for Engineers and Physicists*, Springer-Verlag, Berlin, 1954.

The Numerical Evaluation of the Eighteenth Perfect Number

By D. Scheffler and R. Ondrejka

On November 17, 1959 the IBM 709 installation at the National Aviation Facilities Experimental Center in Atlantic City, New Jersey computed the largest known perfect number, corresponding to the eighteenth Mersenne prime [1]. The result was checked by recomputation one week later. Running time for this cal-

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culation was approximately five minutes. This perfect number has 6433 proper divisors, and its decimal representation is as follows:

$2^{3216}(2^{3217} - 1) =$

		33	57083	21319	86724	43701	08772	11080	38484
11380	28499	87972	54549	96241	57348	21584	50444	04288	20487
78809	43769	03884	49535	77426	08498	85573	69475	99061	73841
15743	84247	30130	80704	76236	55942	23617	48505	09108	53782
76585	90642	32548	24947	61473	19657	90746	56099	91860	07644
04702	18166	02944	69121	77873	79658	22199	90166	34780	93006
07502	23592	23201	84998	56361	44177	18592	54020	78185	07301
50450	97727	08485	94647	43635	53778	15002	84915	88024	48863
06461	78598	29560	72060	01347	49556	17851	48168	01859	88557

13660	92248	41817	87708	36089	51191	12317	48852	26416	13068
31977	10667	39235	10073	74503	75540	33525	31476	22794	35900
71651	70269	75942	41031	95552	98989	71218	00121	46417	74673
13494	44715	62560	95717	96578	81556	41912	21029	35450	29975
18133	40515	17095	61679	51095	45364	94855	76150	66010	16891
60658	01177	01932	74226	30828	05077	86835	04954	91125	76654
51011	96704	56745	93989	01942	05255	17538	44844	89909	32896
76469	88163	15598	24715	64998	19626	16327	51283	12787	95091
98074	25319	34095	80454	56248	86643	83465	37988	50027	35506
15398	88515	06645	13775	92755	53988	21942	54397	64732	39982

47124	38125	05411	75238	37438	25674	44370	55019	44105	10064
89972	34160	91179	78404	56379	49920	04873	05751	84557	48701
44495	12383	77139	62049	42879	82489	52982	72331	40637	01483
74088	56156	19951	54576	69607	96405	21269	08149	26560	17860
94447	59556	04400	59050	09176	35471	14092	25537	13974	25807
86755	43521	12542	19478	48154	94784	27620	11708	45949	27467
46329	85210	42107	55317	84918	35892	66903	95463	64972	14522
65405	71348	43880	43911	63448	54323	58638	80664	53138	26206
59113	12662	32422	00783	55773	45584	22572	03105	18698	14337
67362	19283	02111	92876	17896	14688	55848	60065	04887	63157

01088	79621	95936	40826	31162	22733	28035	60330	94756	42390
80449	94601	56797	85536	10182	46696	10125	39222	54567	24090
83153	85468	24093	18461	66962	49598	34076	07141	60125	18895
44407	00881	58747	44654	76950	72686	78051	75774	69568	91212
48545	62611	21386	66740	77111	39619	07153	09233	55823	17866
27053	74393	03504	90226	03882	47974	23347	99407	13028	01487
69298	59774	37781	93050	34874	97407	86928	09603	39062	95910
19923	81813	38557	85697	81918	60647	25620	97081	68229	11615
63009	78059	19702	68557	26877	64976	70726	84960	46345	27631
60384	09383	82922	77544	91185	78596	58328	88833	26285	25056.

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1. H. Riesel, "A new Mersenne prime," *MTAC*, v. 12, 1958, p. 60.