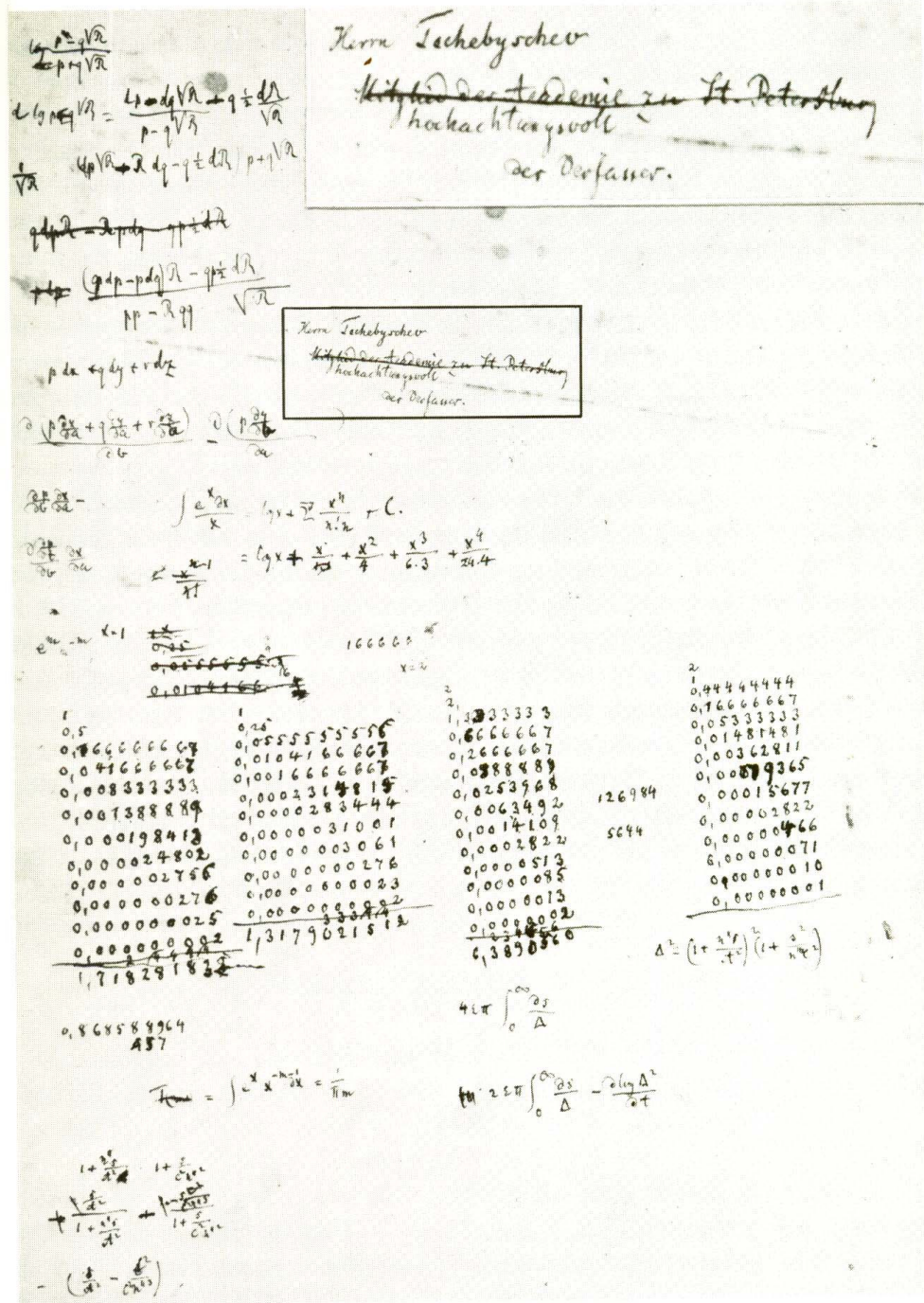


1.1 The Historical Context of the Paper



**Fig. 1.** A scrap sheet used to hold some other loose sheets in Riemann's papers. The note seems to prove that Riemann was aware of Chebyshev's work and intended to send him an offprint of his own paper. In all likelihood Riemann was practicing his penmanship in forming Roman, rather than German, letters to write a dedication to Chebyshev. (Reproduced with the permission of the Niedersächsische Staats- und Universitätsbibliothek, Handschriftenabteilung, Göttingen.)



$$\begin{aligned}
 & + \frac{1}{24} \left( f^{X4} \frac{1}{4! 2^{14} 6^4 (\pi)^4} - f^{V8} \frac{11}{3^2 5^2 2^{13} (\pi)^2} + f^N \frac{19}{2 \cdot 2^9} - f^{(s)} \frac{11 \cdot 13}{3^2 2^7 (\pi)^2} \right)
 \end{aligned}$$

**Fig. 2** This is the sheet on which the Riemann–Siegel formula appears in Riemann’s unpublished papers in the Göttingen University Library. (Here it is somewhat reduced in size.) The enlargement shows the final terms of the formula, which include the coefficient that Siegel simplified. The lack of coherent organization and of any explanation are typical of these papers, which include, along with the unexplained formulas, various random jottings such as the Chebyshev note on p. 5 and a computation of  $\sqrt{2}$  to 38 decimal places. (Reproduced with the permission of the Niedersächsische Staats- und Universitätsbibliothek, Handschriftenabteilung, Göttingen.)