Two chapters are devoted to group extensions. The cohomology and homology groups of the group G with coefficients in the $\mathbf{Z}G$-module A are defined by

$$H^n(G, A) = \operatorname{Ext}^n_{\mathbf{Z}G}(\mathbf{Z}, A), \qquad H_n(G, A) = \operatorname{Tor}_n^{\mathbf{Z}G}(\mathbf{Z}, A),$$

and the lower-dimensional ones are interpreted. Of particular interest are $H^2(G, A)$, the group of extensions of A by G, and $H_2(G, A)$, the Schur multiplier of G according to a formula by Hopf.

There is a final chapter on spectral sequences, which occupies about one sixth of the book and which emphasizes their use as a technique for computing homology. The reviewer admits regretfully that he did not read this chapter.

It is unusual for textbook writers to bother much about who originated what. The present author should therefore be applauded for going out of his way to attribute credit for theorems and proofs.

I found this book pleasant and stimulating reading. Its enthusiastic style is infectious and managed to rekindle my interest in the subject.

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Schottky groups and Mumford curves, by L. Gerritzen and M. van der Put, Lecture Notes in Math., vol. 817, Springer-Verlag, Berlin and New York, 1980, viii + 316 pp., $19.54.

I suspect that even in this modern age of categories and functors, most mathematicians still view p-adic analysis with a certain amount of disdain. If you're one such person, before you flip back to the research announcements, please allow me to show you a very important result, due to John Tate, that will change your mind, I hope.

We begin by reviewing some well-known concepts. Let H be the upper half-plane $\{x + iy \in \mathbf{C} \mid y > 0\}$. Let $\tau \in H$ and let $L = \{\mathbf{Z} + \mathbf{Z}\tau\}$. Thus, L is a two-dimensional lattice and it is a standard beautiful fact that $\mathbf{C}/L = E$ "is" an elliptic curve. This may be seen in either of the following ways:

(a) The field of L-invariant meromorphic functions on $\mathbf{C}$ forms an elliptic function field; or,

(b) the Riemann Surface E may be embedded into $\mathbf{P}^2(\mathbf{C})$ as a nonsingular cubic

$$y^2 = 4x^3 - g_2 x - g_3,$$

via the use of the classical Weierstrass $\wp$-function: In this last case we set, as functions of E,

$$\Delta = g_2^3 - 27g_3^2 \quad \text{and} \quad j = (12g_2)^3/\Delta.$$

It is well known that $\Delta \neq 0$ and that j characterizes E up to isomorphism (algebraic or complex, they are equivalent). We can, in fact, study such cubics over any algebraically closed field in a similar manner.