$$(12) \qquad \sum_{\substack{n \leq x \\ n \in \mathcal{P}_k}} a_n g(n), \qquad x \to \infty, k = 1, 2, \ldots,$$

under some general assumptions on $(a_n)_{n=1}^{\infty}$. In (12), g denotes a suitable weighting function, and $\mathcal{P}_k$ the set of square-free integers having exactly k prime factors. Although one of Bombieri's assumptions is usually not easy to verify for given $(a_n)_{n=1}^{\infty}$, there is no doubt that his work is an important contribution to our knowledge of general sieve methods, which is likely to influence their future development.

Hooley begins the chapters of his book with a historical survey on the relevant problem, and ends them with a discussion of other applications of the method or of possible relaxations of the hypothesis used. This practice is helpful to the reader and provides a good orientation of the subject. The book is written with great attention to detail. It affords an insight into the richness of the problems which can successfully be treated with the help of sieve methods. It can be recommended to anybody interested in sieve methods.

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Abstract analytic number theory, by John Knopfmacher, North-Holland Mathematical Library, vol. 12, North-Holland, Amsterdam & Oxford; American Elsevier, New York, 1975, ix + 322 pp., $29.50.

The reader may wonder what the title of Knopfmacher's book signifies. The word "abstract" refers to an axiomatic set-up of the material which is treated here within the framework of *arithmetical semigroups*, the standard example being the positive integers with their multiplicative structure. The word "analytic" refers to the admission of analytic functions and Cauchy's theorem as tools in proving theorems. Finally "number theory" indicates that this work arose from generalizations of theorems on ordinary integers.

The main topics treated in this book are rooted in:

(i) Dirichlet's theorem that there are infinitely many primes in every residue