

is hard to take it seriously. One is more likely to think of a certain Swiss hotelier and the German word for seat. Though these are colorful words they bear no relation to the concepts they represent. Extremes of brevity are reached in such statements as "After it has been established that  $GVF \subset ST$  and  $PSA = ST$  it is natural also to ask whether  $GVF = ST$ " (p. 596).

Fully three quarters of the chapter are devoted to a discussion of RITZ fractions, that is regular  $C$ -fractions or continued fractions of the form  $K(a_n z/1)$ . RITZ-fractions are soon specialized to the  $S$ -fractions of Stieltjes, here all  $a_n > 0$ , and  $z$  is replaced by  $1/z$ ,  $S$ -fractions are studied in their relation to positive symmetric functions, functions expressible as Stieltjes transforms  $\int_0^\infty d\psi(t)/(z+t)$ , as well as to the moment problem. A sketch of the theory of Stieltjes integrals as well as inclusion of proofs of the Montel and Vitali theorems help in making the material accessible to readers of modest preparation.

The computational aspects of the subject are always kept in mind. Not only are many examples considered and worked out, but also if there is a more constructive as well as a more existential approach to a topic, the former is usually chosen. It is thus not surprising that a good deal of emphasis is placed on the quotient-difference algorithm (treated in Chapter 7 in the first volume) which was introduced by Rutishauser in 1954. The q.-d. scheme can be used to compute the coefficients of the RITZ expansion of a formal power series. It is also used in giving a solution to the problem, proposed and solved by Hurwitz, of finding necessary and sufficient conditions for a polynomial with real coefficients to have all of its roots in  $R(w) < 0$ . (The problem can be solved by means of terminating RITZ fractions.)

In conclusion the author must be congratulated on having written an eminently readable account of a series of interesting topics. This is a book one wants to browse in.

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BULLETIN OF THE  
AMERICAN MATHEMATICAL SOCIETY  
Volume 84, Number 5, September 1978  
© American Mathematical Society 1978

*Convex analysis and measurable multifunctions*, by C. Castaing and M. Valadier, Lecture Notes in Math., no. 580, Springer-Verlag, Berlin, Heidelberg, New York, 1977, vii + 278 pp., \$11.00.

A "multifunction"  $\Gamma$  from  $X$  to  $Y$  is simply a map from  $X$  into the set  $\mathcal{P}(Y)$  of all subsets of  $Y$ . This has also been called a "correspondence", or a "multi-valued mapping" by other authors. Whatever the name, the concept is quite elementary, so much so that it is not clear at a glance that there is anything to be learned from it. For instance, it is a straightforward exercise in general topology to define continuity for compact-valued multifunctions from one metric space to another. The set  $\mathcal{K}(Y)$  of all compact nonempty subsets of  $Y$  is endowed with the Hausdorff metric:

$$\delta(K_1, K_2) = \max \left\{ \sup_{x_1 \in K_1} d(x_1, K_2), \sup_{x_2 \in K_2} d(x_2, K_1) \right\}$$

and  $\Gamma$  should be continuous if and only if it is continuous as a map from  $X$