theorem states that all links may be represented as plats. Again, details of the emerging theory cannot be described here.

An appendix lists 34 research problems of various and, as admitted by the author, partly considerable degrees of difficulty. These give a very good idea of both the complexity and the promise of the existing theory.

The list of references is excellent. It is not arranged in the usual manner by authors but by the years of publication, a style introduced by Ralph Fox.

In summary it may be said that this monograph is an excellent guide to a field of research which is particularly attractive because it involves several mathematical disciplines. It has been planned with great care, and the introductions to the various chapters clearly outline the motivating ideas. It is perhaps not a textbook, but it is a very good basis for a seminar.

W. MAGNUS

Infinite-dimensional Lie algebras, by Ralph K. Amayo and Ian Stewart, Noordhoff International Publ., Leyden, The Netherlands, 1974, 425+xi pp.

Is there a theory of infinite-dimensional Lie algebras? Finite-dimensional Lie algebras over **R** or **C** (and even over p-adic fields) are forced upon us almost as soon as we begin to think about Lie groups; the introduction of linear algebraic groups and related finite groups then makes it natural to allow even more general base fields. Infinite-dimensional Lie algebras, on the other hand, have arisen only sporadically and have been investigated only in special settings, e.g.: free Lie algebras (cf. N. Bourbaki, *Groupes et algèbres de Lie*, Chapter 2, Hermann, Paris, 1972); simple algebras of infinite type (E. Cartan, S. Sternberg, V. Guillemin, V. G. Kac); Lie algebras of formal vector fields (I. M. Gel'fand, D. B. Fuks); Banach-Lie algebras (cf. P. de la Harpe, Lecture Notes in Math, vol. 285, Springer, Berlin, 1972); Lie algebras defined by generalized Cartan matrices (V. G. Kac, R. V. Moody).

Amayo and Stewart concentrate entirely on certain algebraic aspects of infinite dimensional Lie algebras, emphasizing in their preface the "surprising depth of analogy" between these and infinite groups, but adding: "This is not to say that the theory consists of groups dressed in Lie-algebraic clothing. One of the tantalising aspects of the analogy, and one which renders it difficult to formalise, is that it extends to theorems better than to proofs." This seems a fair assessment.

Their book has 18 chapters, which to some extent can be read independently of each other, grouped by the authors under six headings: (1) subideals and "coalescent" classes of Lie algebras; (2) the Mal'cev correspondence between locally nilpotent Lie algebras and certain locally nilpotent groups, along with a study of various locally nilpotent radicals; (3) finiteness conditions, especially minimal and maximal conditions on subideals; (4) properties of finitely generated solvable Lie algebras suggested by P.