linear operator from V into R^n. Then the problem

$$(14) \qquad P: \inf_{u,p} \int_\Omega f[x, u(x), p(x)]\, dx, \qquad u = Gp, \quad p \in [L^1(\Omega)]^n,$$

has at least one solution. If f satisfies all the conditions above except the convexity in ξ, it is true that the problem

$$(15) \qquad PR \equiv P^{**}: \int_\Omega f^{**}[x, u(x), p(x)]\, dx$$

has at least one solution and

$$(16) \qquad \min(P^{**}) = \inf(P).$$

We can also say that if $(\bar{u}, \bar{p})$ with $\bar{u} = G\bar{p}$ is a solution of (PR), then there is a minimizing sequence (u_q, p_q), with $u_q = Gp_q$, for (P) such that $u_q \to \bar{u}$ a.e. and $p_q \to \bar{p}$ weakly in L_1 (actually more can be said about the convergence); *any such sequence contains a subsequence $(u_{q'}, p_{q'})$ such that $u_{q'} \to \bar{u}$ and $Gp_{q'} \to G\bar{p}$ in L_1.*

Chapter X extends and refines many of the results obtained in the preceding chapters. The fundamental problem of the calculus of variations

$$(P) \qquad \inf \int_\Omega f[x, u(x), \operatorname{grad} u(x)]\, dx, \qquad u - u_0 \in W_0^{1,\alpha}(\Omega),$$

receives special attention. The chapter concludes with a discussion of results involving the Euler equations and the problems (*PR*) (i.e., (P^{**})).

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Characteristic classes by John W. Milnor and James D. Stasheff, Ann. of Math. Studies No. 76, Princeton Univ. Press, Princeton, New Jersey, 1974, vii+330 pp., $10.00

In 1957 there appeared notes by Stasheff of lectures on characteristic classes by Milnor at Princeton University. These notes are a clear concise presentation of the basic properties of vector bundles and their associated characteristic classes. Since their appearance they have become a standard text regularly used by graduate students and others interested in learning the subject.

The present, long-anticipated book is based on those notes. It follows the order of the notes but is considerably expanded with more detail and discussion. In addition, exercises have been added to almost each section, there are many useful references to the textbooks on algebraic topology that are available now, and there is an epilogue summarizing main developments in the subject since 1957. All of these strengthen the book and make it even more valuable as a text for a course as well as a book that can be read by students on their own. The material covered should be required for doctoral students in algebraic or differential topology and strongly recommended for those in differential geometry.