(iii) *There is no sequence* $P_{i_1}, \cdots, P_{i_k} \ni P_{i_k} = P_{i_1}$, *and* $W_{P_{ij}} \cap W^*_{P_{ij+1}} \neq \emptyset$ *for* $1 \leqq j \leqq k-1$.

Let a^i_j be the number of P's whose stable manifold is of dimension $i+j$. Then the numbers

$$M_q = \sum_{k=0}^{n} \sum_{i=0}^{k} \binom{k}{i} a^k_{q+i} \text{ and } R_q = \dim H^q(M; F),$$

satisfy the Morse inequalities.

BIBLIOGRAPHY

1. S. Diliberto, *Perturbation theorems for periodic surfaces*, Rend. Circ. Mat. Palermo **9** (1960), 1–35, ibid. **10** (1961), 1–51.
2. M. Morse, *Calculus of variations in the large*, Amer. Math. Soc. Colloq. Publ. Vol. 18, Amer. Math. Soc., Providence, R. I., 1934.
3. E. Pitcher, *Inequalities of point set theory*, Bull. Amer. Math. Soc. **64** (1958), 1–30.
4. S. Smale, *Morse inequalities for a dynamical system*, Bull. Amer. Math. Soc. **66** (1960), 43–49.
5. ———, *Stable manifolds for differential equations and diffeomorphisms*, Columbia University, mimeographed notes.

UNIVERSITY OF CALIFORNIA, BERKELEY AND
COLUMBIA UNIVERSITY

COHOMOLOGY OF CYCLIC GROUPS OF PRIME SQUARE ORDER

BY J. T. PARR

Communicated by George Whaples, December 23, 1963

1. **Introduction.** Let G be a cyclic group of order p^2, p a prime, and let U be its unique proper subgroup. If A is any G-module, then the four cohomology groups

$$H^0(G, A) \quad H^1(G, A) \quad H^0(U, A) \quad H^1(U, A)$$

determine all the cohomology groups of A with respect to G and to U. We have determined what values this ordered set of four groups takes on as A runs through all finitely generated G-modules.

2. **Methods of proof.** First we show that every finitely generated G-module has the same cohomology as some finitely generated R-torsion free RG-module, where R is the ring of p-adic integers. Be-