From (7.15), (7.17), (7.18), we conclude that these ∞^1 V_{m-1} contain axial points. Hence the theorem:

THEOREM. *The V_m in S_n of type* (3) *are either V_m in S_{m+2} or contain ∞^1 V_{m-1} with axial points.*

If the rank of $h_{\lambda\mu}$ (index $n-1$) is greater than two, then the rank of $\overline{B}^{\alpha\beta}_{\lambda\mu}h_{\alpha\beta}$ (h of index $n-1$) is greater than one. In this case, from Segre's theorem, the ∞^1 V_{m-1} lie in ∞^1 S_m. If the rank of $h_{\lambda\mu}$ (index $n-1$) is two and its nonzero *domain* does not* contain the nonzero domain of $h_{\lambda\mu}$ (index n), then the same result is valid; if it does contain the nonzero domain of this $h_{\lambda\mu}$, then $\overline{B}^{\alpha\beta}_{\lambda\mu}h_{\alpha\beta}$ (index $n-1$) is of rank one. In this last case the ∞^1 V_{m-1} are ∞^1 developable S_{m-1}.

From §§6 and 7, we have the theorem:

THEOREM. *If the rank of any of the two second fundamental tensors is greater than two, then V_m in S_n with planar points are* (1) *V_m consisting of ∞^1 V_{m-1} imbedded in ∞^1 S_{m+1}, or* (2) *V_m consisting of ∞^1 V_{m-1} imbedded in ∞^1 S_m, or* (3) *V_m lying in S_{m+2}.*

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ON TRANSITIVE GROUPS THAT CONTAIN CERTAIN TRANSITIVE SUBGROUPS†

W. A. MANNING

If a simply transitive permutation group G of compound degree n contains a regular abelian subgroup H of order n, and if at least one Sylow subgroup of H is cyclic, G is imprimitive. The proof of this important theorem, due to Wielandt,‡ is remarkable for its brevity. But familiarity with certain preliminary theorems of Schur's§ is assumed. Unfortunately these theorems, as presented by Schur, do not appear to be as elementary as they really are. It seems, therefore, worth while to offer a complete proof of Wielandt's theorem that is elementary throughout, free from the theories of rings and representations, and based on the fundamental concept of the double coset, introduced by Cauchy‖ in 1846. Some generalizations, too, can readily be made.

* Vol. 1, p. 19; German "Gebiet."

† Presented to the Society, December 29, 1938, under the title *A note on transitive groups with regular subgroups of the same degree.*

‡ H. Wielandt, Mathematische Zeitschrift, vol. 40 (1935), p. 582.

§ I. Schur, Sitzungsberichte der Preussischen Akademie der Wissenschaften, 1933, p. 598.

‖ A. L. Cauchy, Comptes Rendus, vol. 22 (1846), p. 630.