ERRATA

Robert L. Hemminger, The lexicographic product of graphs, vol. 33(1966), pp. 499–502. The Theorem as stated is incorrect. The correct statement is:

For graphs X and Y such that $Y \not\approx X^* \circ Y$ for some subgraph X^* of X with $|X^*| > 1$ we have $G(X \circ Y) = G(X) \circ G(Y)$ if and only if

(1) Y is connected if $R \neq \Delta$.
(2) Y' is connected if $S \neq \Delta$.
(3) If Y has a set of vertex disjoint section graphs $\{Y_\alpha\}_{\alpha \varepsilon \Omega}$, $|\Omega| \geq 2$, such that $Y_\alpha \approx Y$ for all $\alpha \varepsilon \Omega - \{1\}$, $1 \varepsilon \Omega$, $V(Y) = \bigcup_{\alpha \varepsilon \Omega} V(Y_\alpha)$, and for $\alpha, \beta \varepsilon \Omega$ either all or none of the possible edges between Y_α and Y_β exist in Y, then X does not contain a section graph T on $V(T) = \{x_\alpha\}_{\alpha \varepsilon \Omega}$ such that (a) $V(X, x_\alpha) - V(T) = V(X, x_\beta) - V(T)$ for all $\alpha, \beta \varepsilon \Omega$, (b) $[x_\alpha, x_\beta] \varepsilon E(X)$ if and only if $[y_\alpha, y_\beta] \varepsilon E(Y)$ for some $y_\alpha \varepsilon V(Y_\alpha)$ and $y_\beta \varepsilon V(Y_\beta)$, and (c) $[x_1, x_\alpha] \varepsilon E(X)$ for all $\alpha \varepsilon \Omega - \{1\}$ or else for no $\alpha \varepsilon \Omega - \{1\}$.

The proof is then as in the paper. The hypothesis that $Y \not\approx X^* \circ Y$ is needed in (2.7) of the proof to guarantee that $U_c \neq Y_c$ for some $c \varepsilon C_x$. Also Lemma (2.6) should be restated as: *There is at most one $c \varepsilon C_x$ such that $U_c \neq Y_c$.* The part of (2.6) left out here is covered by the change in (3c) in the theorem. Sabidussi's theorem [2] is still an obvious special case. The correct necessary and sufficient conditions for the lexicographic case will be contained in a forthcoming paper of the author where necessary and sufficient conditions are given for the group of an X-join of graphs $\{Y_x\}_{x \varepsilon X}$ to be the group of "natural" automorphisms. See [1] for the definition of an X-join. The "natural" automorphisms are those obtained by a permutation of the Y_x, as determined by a permutation of the subscripts by an automorphism of X, followed by an arbitrary automorphism of each Y_x. If $Y_x = Y$ for each $x \varepsilon X$ then the X-join is the lexicographic product $X \circ Y$, and the group of "natural" automorphisms is the wreath product $G(X) \circ G(Y)$.

References

1. G. Sabidussi, *Graph derivatives*, Math, Zeitschr., vol. 76(1961) pp. 385–401.
2. G. Sabidussi, *The lexicographic product of graphs*, this Journal, vol. 28(1961) pp. 573–578.

H. H. Wicke and J. M. Worrell, Jr., *Open continuous mappings of spaces having bases of countable order*, vol. 34(1967), pp. 255–272.

p. 256, replace lines 7 and 8 by "A base B is said to be *monotonically complete* if and only if the closures of the elements of every monotonic subcollection of B have a (non-empty) common part."