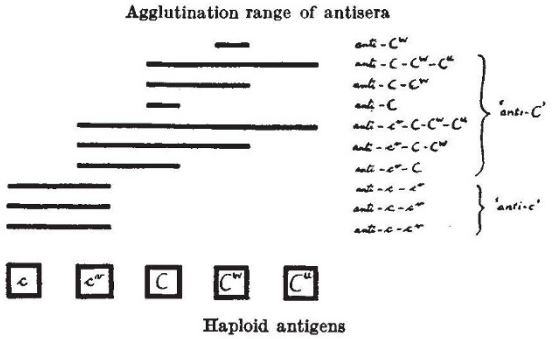
the metallographic measurements in steels containing 7 per cent or less retained austenite. It is considered that nital is improved by the addition of 'Zephiran Chloride'. However, the reason for the improvement has not been established yet.

WILLIAM J. HARRIS, jun.
Department of Metallurgy,
Massachusetts Institute of Technology,
Cambridge 39, Massachusetts.
Oct. 27.

[1] Cohen, J. B., Hurlich, A., and Johnson, M., *Trans. Amer. Soc. Met.*, **39**, 109 (1947).
[2] Averbach, B. L., Sc.D. Thesis, Department of Metallurgy, Massachusetts Institute of Technology (September 1947).
[3] Howard, R. T., and Cohen, M., Amer. Inst. Met. Eng., Tech. Pub. No. 2215, Metals Technology (August 1947).

Rh Genes Allelomorphic to *C*

THE third allelomorph, C^w, at the *C-c* locus of the *Rh* chromosome was not recognized until a pure anti-C^w serum was found[1]; but its existence could have been demonstrated by testing several hundred samples of blood with a range of anti-*C* sera, for some of these sera are of the specificity anti-*C* and some, the majority, anti-$C + C^w$. It is not yet clear why the latter type of antibody may result from stimulation by the antigen *C*.



separated. When such a serum is absorbed by either c^vc cells or *Cc* cells, all agglutinin is removed. Similarly absorption of anti-$C + C^w$ sera by C^wc or by *Cc* cells results in the removal of both components. It is probable that in such natural mixtures the antibodies may be on the same molecule. If an artificial mixture is made by adding pure anti-C^w to pure anti-*C* serum, the separation of the antibodies by absorption with C^wc or *Cc* cells is specific.

It will be seen from the diagram that it is possible to represent the interactions of the allelomorphic antigens with the antisera in such a way that the

							'anti-C'						
	anti	-D	-E	-e	-C^w	-c	-C	-C	-CC^w	-CC^w	-CC^w	-CC^w	Genotype
c^v donor	Mother	+	+	+	−	+	−	−	−	−	−	−	*cDE/cde*
	Father	+	+	+	−	+	−	+	+	−	−	+	c^vDE/*cde*
	1st son	+	+	+	−	+	−	+	+	−	−	+	c^vDE/*cde*
	2nd son	−	−	+	−	+	−	−	−	−	−	−	*cde/cde*
C^u donor		+	−	+	−	+	−	−	−	−	+	+	C^uDe/*cde*

In a search for further allelomorphs at this locus, 284 blood samples were tested with three anti-*C* sera, as well as with anti-*D*, *-E*, *-e*, *-c* and *-*C^w. Two bloods gave discrepant reactions with the anti-*C* sera; they were therefore more fully investigated and provided evidence of the existence of two more allelomorphs at this locus, which we propose to call c^v and C^u.

The agglutination reactions of the blood of the c^v donor and of his family are shown in the table. The table also shows the reactions of the C^u blood; the family of this donor was not available, and therefore the evidence for the existence of the fifth allelomorph, C^u, is somewhat incomplete.

The reactions given by the blood of the c^v donor and of his father were identical. The fortunate fact that the younger brother of the donor was *cde/cde* demonstrated clearly the exact genotype of each member of the family. The allelomorph c^v was segregating with *D* and *E* genes, and it was the partnership of these three genes on one chromosome that suggested that, in spite of the agglutination of the c^vc bloods by three out of six anti-*C* sera, the use of a small *c* was the more appropriate notation; for *cDE* is a common chromosome in England and *CDE* an extremely rare one. Strong support for this choice of notation was provided in the finding that the blood of both father and son gave a double-dose effect with the three anti-*c* sera available.

The anti-c^v component in the three anti-$C + c^v$ sera must have arisen in response to stimulation by the antigen *C*; the gene c^v is much too rare to have played a part in the three immunizations. The two components of an anti-$C + c^v$ serum have not been positive reactions of the latter show as uninterrupted lines. We do not yet know whether this is a chance occurrence; if it is of significance, it seems to impose a definite linear order, in one dimension, on the allelomorphs. At least it is clear that the allelomorph c^v bridges the gap between *C* and *c*.

A more detailed account of this work will be published elsewhere.

We wish to thank Dr. J. Loutit and the members of his staff at the National Blood Transfusion Service, Sutton, for supplying us with the 284 blood samples.

R. R. RACE
RUTH SANGER
SYLVIA D. LAWLER
Medical Research Council Blood Group Research Unit,
Lister Institute,
London, S.W.1.
Nov. 17.

[1] Callender, Sheila, and Race, R. R., *Ann. Eugen.*, **13**, 102 (1946).

Cytology of Staphylococci Before and After Treatment with Penicillin

IN a previous communication[1], we showed that, by means of enzymes, it is possible to localize both the nucleic acids of bacteria: (1) ribonucleic acid in the cytoplasm, (2) desoxyribonucleic acid in the nucleus. Thus, we have found a method, which seems to be general, of demonstrating the nuclei of bacteria. This method has enabled us to observe the nuclei, already known to exist, of the bacteria of the enteric and the anthracis-subtilis group and to dis-