The ultra-violet light was provided by a xenon-arc monochromatic system described elsewhere⁴.

A 2 cm × 4 cm area on the forearms of ten young adults was stripped from eight to twelve times with 'Sello-tape' to remove stratum corneum. Both the stripped and adjacent unstripped control skin were irradiated with equal quantities of 254 and 297 mμ light. The erythema responses were graded 0-4+ after 8 h.

In five persons, one side of the back was stripped from eight to twelve times with 'Sello-tape'. Both the stripped and contralateral unstripped skin area were irradiated with varying amounts of energy at different wave-lengths of ultra-violet (250, 254, 260, 270, 280, 290, 297, 300 and 310 mμ). The minimal erythema dose (MED) was determined at each wave-length. The MED on the stripped side was then compared with the MED of intact skin.

In nine out of ten cases, forearm skin irradiated with 254 and 297 mμ light regularly developed greater erythema on skin stripped of stratum corneum (Table 1). A decrease in the MED of stripped skin was observed at nine different wave-lengths between 250 and 310 mμ (Table 2).

Table 1. CUTANEOUS ERYTHEMA AT 8 H

Patient	254 mμ		297 mμ	
	Stripped	Unstripped	Stripped	Unstripped
1	+++	+	+++	+
2	++	+	++++	++
3	++	+	++	+
4	+++	++	+++	++
5	+++	+	+++	+
6	++	+	++	+
7	+++	++	+++	++
8	++	++	+++	++
9	++++	+++	++	+
10	++	+	+++	+

Table 2. DECREASE IN MINIMAL ERYTHEMA ENERGY PRODUCED BY STRIPPING THE STRATUM CORNEUM

Wave-length (mμ)	Control MED minus stripped MED (Average 5 cases) (mW-sec/cm ²)
250	3,736
254	3,414
260	3,181
270	3,445
280	1,351
290	3,551
297	6,071
300	4,921
310	18,500

The increase in the erythema resulting from irradiation after removal of the stratum corneum suggests that an important function of this epidermal layer is to protect the underlying tissues from harmful rays. Urocanic acid, a strong absorber of ultra-violet light, has been shown to be a regular constituent of the horn layer^{5,6}. This compound may be the principal substance responsible for the observed protection conveyed by stratum corneum. These observations also suggest that the mechanism of erythema production is the same for each of the wave-lengths between 250 and 310 mμ and that the erythema-producing substance is produced or released at levels below the stratum corneum regardless of the wave-length of the eliciting light.

MARK ALLEN EVERETT
JAMES A. WALTERMIRE
ROBERT OLSON
ROBERT SAYRE

Department of Dermatology,
University of Oklahoma Medical Center,
Oklahoma City, U.S.A.

¹ Rottier, P. B., *Semeiologie et Therapeutique*, **21**, 14 (1951).

² Rottier, P. B., and Mullink, J. A. M., *Nature*, **170**, 574 (1952).

³ Claesson, S., Juhlin, L., and Wettermark, G., *Acta Dermato-Venerologica*, **39**, 3 (1959).

⁴ Sayre, R., Straka, E., Anglin, jun., J. H., and Everett, M. A. (in preparation).

⁵ Anglin, jun., J. H., Bever, A. T., Everett, M. A., and Lamb, J. H., *Biochim. Biophys. Acta*, **53**, 408 (1961).

⁶ Everett, M. A., Anglin, jun., J. H., and Bever, A. T., *Arch. Derm.*, **84**, 717 (1961).

IMMUNOLOGY

Reciprocal Relationship of Antigens 'I' and 'i' in Health and Disease

Giblett and Crookston¹ have recently described in thalassaemia and certain other diseases an increase in strength of the 'i' antigen in the red cells of adults without an apparent reciprocal decrease in 'I' antigen strength. McGinniss *et al.*² reported a decrease in 'I' antigen strength in the red cells of adults in leukaemia, but had not tested with anti-'i'. We have examined a case of leukaemia with weakened 'A' antigen in which the 'I' antigen was also depressed. Here, the 'i' antigen was stronger than in average adult cells so that the 'Ii' reciprocal relationship was maintained.

In the cases described by Giblett and Crookston, the estimation of the strength of the 'I' and 'i' antigens appears to be based entirely on agglutination titres. We suggest that a state of excessive erythrocyte sensibility to agglutination by anti-'I' and anti-'i' may exist in certain disease states, so that titration scores alone may not reflect the true antigen strength. Absorption and elution experiments would be useful in demonstrating the ability of the red cells to take up more than average amounts of the antibodies.

We have observed in an apparently healthy donor that both 'I' and 'i' were at the upper end of the normal distribution curve, which suggested the presence of a higher amount than normal of the precursor substance of 'i' prior to the development of 'i' in the red cells of this person.

It appears that in a few healthy adults and in certain disease states the usual 'Ii' reciprocal antigen strength is disturbed. Whether this is due to a genetically determined abundance of 'i' substance from which only a normal amount is utilized for conversion to 'I', or whether the 'i' antigen strength is stimulated by virtue of the disease is conjectural at present. We seek evidence of a change in the 'Ii' antigen strength during the development of a disease process. Such a change in 'Ii' status would support Giblett and Crookston's theory of "proliferative stress on early erythroid precursors".

W. J. JENKINS
W. L. MARSH

North-East Metropolitan
Regional Blood Transfusion Centre,
Brentwood, Essex.

E. R. GOLD

South-West Regional Transfusion Centre,
Southmead, Bristol.

¹ Giblett, E. R., and Crookston, M. C., *Nature*, **201**, 1138 (1964).

² McGinniss, M. H., Schmidt, P. J., and Carbone, P. P., *Nature*, **202**, 606 (1964).

Induction of an Immunological Response in Local Lymph Nodes by Chemical Carcinogens

AFTER a period during which intensive investigation of carcinogenesis continued along classical lines, there has recently developed a major shift in emphasis as it is becoming more apparent that certain carcinogens, even when applied locally, are capable of initiating significant changes in the genetic apparatus of the host cells. Some of the present developments have, to a large extent, been the outgrowth of investigations showing that some carcinogens arrest the synthesis of DNA dependent RNA, in a manner similar to actinomycin-D. Structurally related non-carcinogens, on the other hand, exert no such action. These results indicate the possibility that the initial event in carcinogenesis might be an impairment in the expression of genetic (DNA dependent RNA) information, as has been suggested recently by De Maeyer and