Recently, after a lecture, I was surprised to find myself described as an iconoclast. I suppose that was a proper appellation, however, since every scientist must be occupied in smashing idols—not only other people’s, but his own. For scientists work, individually and collectively, by building and destroying hypotheses—at least, that is the way I understand the philosopher Karl Popper. So, if my introductory remarks seem to challenge some generally accepted notions, I hope you will take them as preparation for a good morning of scientific work.

In 1871, in his *Descent of Man*, CHARLES DARWIN suggested that the dark colour of Negroes protects them against harmful effects of the sun’s rays; and that this might be an example of natural selection in man. He made this suggestion with characteristic caution. A few years later, M. WEDDING, drawing analogy from his classical experiments on Buckwheat poisoning in cattle, concluded that Negroes are better fitted to inhabit the tropics; he did not mention DARWIN or natural selection. The effects of light on skin were not seriously studied until a good many years later, and neither DARWIN nor WEDDING could have been aware of numerous inconsistencies and fallacies in their arguments. They would not have recognized that the Negro might be somewhat worse off in sunlight because of the greater heat load he must bear. They could not have known that only a small fraction of sunlight (wavelengths shorter than about 320 nm, now called u.v. B) is responsible for sunburning; and would have had no basis for judging how this fraction, or for that matter total sunlight, is distributed over the surface of the earth. They could be pardoned for not taking into account the extent to which exposure to sunlight depends upon living habits, and upon the surroundings. Certainly they could have had no idea of the yet unsolved problems regarding the manner and extent of the protection against u.v. that still trouble us today, including the role played by melanin pigment.

On the other hand, those teleologically oriented evolutionists seeking
an ecological niche for each phenotypic character, who in the meantime have accepted Darwin's idea without critically examining it, may be less easily exonerated. That I be not misunderstood, I hasten to affirm my own position as a staunch Darwinian. But wherever the responsibilities lie, the notion that the Negro's pigment adapts him for life in the tropics, has become so generally accepted into anthropological and medical lore, that a mere photobiologist needs some temerity to question it.

Leaving aside teleology and evolutionary philosophy, there are problems regarding the role of melanin that remain to be solved. Following the demonstration of the protection afforded by a thickened corneum by Guillaume in 1926, the role of melanin in protecting against u.v. was rather discounted by photobiologists actively concerned with effects of light on skin. But in 1956 Thompson showed that Negro corneum is both thicker, and more opaque per unit thickness than that of white skins; this fitting with the relative immunity of the Negro to sunburn and skin cancer. The testimony of our eyes immediately leads us to attribute the greater opacity to the greater amount of melanin pigment in Negro skins; but in this case we are concerned with radiation the eye does not detect, and on closer examination numerous questions present themselves. How, for example, can a relatively small amount of melanin appreciably increase the opacity of the corneum, the protein of which is an excellent absorber for u.v.? Is melanin a better absorber weight for weight, or does it by scattering from its finely divided particles lengthen the light path and thus increase attenuation by the corneum? Is the location of the melanin in the epidermis an important factor, or does it perform some other function? Is it possible, after all, that we have overestimated the protection afforded by melanin? And is it not pertinent to ask whether dark skins other than Negro offer comparable protection against u.v., a question that seems not to have been examined. The papers summarized bear on these matters.