

all common modes does. He showed the effects of the monochromatic light of sodium on colours. Solar light, he stated, was defective in showing colour, as it was incapable of showing tints brought out by sodium, and that, consequently, a pigment containing these tints would be invisible by daylight. Sunlight passed through a variety of vapours, of which sodium was one, and the lecturer showed how the sodium band in the spectrum was obscured when the light passed through the incandescent vapour of sodium. Solar light, however, had one great advantage over that from all other sources, inasmuch as it was attended with less heat, and, consequently, ordinary daylight produced less discomfort in the eye than any artificial light.

The disadvantage of having heat associated with light was, that the greater part of it was absorbed by the humours of the eye, there causing pain and discomfort. The behaviour of the eye towards the heat of a moderator lamp had been examined, and the following diagram represented the amount reflected and absorbed by the various media:—

	Eye of ox.	Eye of sheep.	Eye of pig.
Rays reflect'd at surface of cornea	4	4	4
Rays absorbed by cornea	59.8	56.9	57.5
“ “ aqueous humour.	19.2	—	20.6
“ “ crystalline lens...	6.8	30.7	7.2
“ “ vitreous lens.....	2.5	—	1.6
Rays which penetrate to retina .	7.7	8.4	9.1
	100.0	100.0	100.0

In conclusion, Dr. Frankland alluded very briefly to the difficulties in the way of applying the discoveries of science to every-day purposes. It was thirty years ago that Reichenbach first made paraffin and paraffin oil in the laboratory, and twenty years elapsed before any practical use was made of them. It was thirty years since Dr. Faraday showed the magneto-electric spark. How long shall we have to wait for any development of thermo-electricity, or the direct transformation of heat into light by electricity? In the magneto-electric machine the transformation was accomplished by the intermediate transformation of heat into mechanical force, by which there was experienced a loss of nine-tenths of the heat force. The man of science was rewarded by the truths which he discovered: it was not his function to apply these truths to useful purposes. That required quite different powers of mind.

NOTES ON INDIAN CORN.

Indian corn or maize may be said to be the staple and peculiar crop of North America. The export of this grain is fast becoming the *hydra* of famine throughout the world. Whenever Europe is short of food, America stands ready to supply the deficiency with the excess of her corn crop. No plant is more beautiful, and none so well suited to the varieties of the climate; for anywhere between the 43rd degree of north latitude and a corresponding parallel south, it may be grown in the greatest perfection. Its ease of hybridation has produced innumerable varieties, suited to every kind of soil and every degree of temperature, from the time-enduring hard corn of Canada, to the Stowell's evergreen for boiling in the unripe state. We have it suited to summers, varying from three to six

months; thus we find it in the North requiring but half the time for its growth that is requisite in the South, and still in each locality are kinds appropriated to the different lengths of summers. We may say of the Indian corn crop of America what Mr. Webster said of the turnip crop of England, that “its failure for three successive years would nearly bankrupt the nation.” Fortunately, however, by the recent improvements in agriculture they are enabled, in the growth of this crop, almost to defy drought, and to render every variety of soil suitable for the production of maximum quantities. It is the food of both man and animals; and even its stalks, by proper treatment, have been rendered equal in value to the whole labour and expense of raising the crop. To it America is indebted for her fine beef, her plentiful supply of pork, and also as an article of human food. It is the plant of the country: and the olive branch might with propriety be taken from the claw of the national emblem, and the Indian corn plant substituted in its place.

In proof of the American origin of this plant, it may be stated that it is still found growing in a wild state from the Rocky mountains to the humid forests of Paraguay, where, instead of having each grain naked, as is always the case after long cultivation, it is completely covered with glumes or husks. Columbus found the natives of Hispaniola cultivating it in extensive fields, and those of other places first visited by him were also in possession of it. The first Englishmen by whom it was cultivated were they who settled in Virginia in 1760.

In England all cereals used as food for man are called “corn;” but those who first landed in America from that country found a new cereal, also used as food by the aborigines. They added it to their catalogue of corn with the prefix of Indian. As it had been for ages the main dependence of the Indians, so it has since become the staff of life to thirty millions who now occupy their places, while it is gradually making its way to favour among other millions in Europe. The pioneers give no account of the Indians having many varieties of corn. They seem to have been content with what they had. The higher civilization of the whites quickly seized on the new cereal, recognised its value as food for man and beast, improved its culture, multiplied its varieties, made its increase a hundred-fold, and, by the invention of machines for shelling it rapidly and grinding it cheaply, raised it to the position of a staple so important, that if the whole wheat crop of America were suddenly annihilated, the crop alone would supply the people plenteously with food. It already equals the wheat crop of the whole. The latter can be profitably cultivated only in certain latitudes, but corn grows luxuriantly in all. The border states of the tropics refuse to yield wheat. Louisiana and Florida produce but 1,500 bushels annually, but nearly 14,000,000 bushels of corn.

The annual average wheat crop of the world is 900,000,000 bushels, of which nearly 200,000,000 may be credited to the United States. In 1850 her corn crop was over 590,000,000 bushels, and in 1860 it was fully 900,000,000, thus equalling the wheat crop of the whole earth. The varieties of corn are numerous, and are continually increasing by improvement, and the introduction of seed from one