bands and lines are seen which do not appear when the sun is higher. Jupiter's spectrum shows absorption bands, some like those of our atmosphere, but one altogether different, probably indicating some gas or vapor not existing in our atmosphere. Mars seems to show the same absorption bands as our own atmosphere; but they have not been observed in Venus, nor does the moon show them. Almost any transparent medium seems to be opaque to some rays of the white light which passes through it. We have seen two dark lines like those of Fraunhofer in the spectrum of chlorine in a Geissler's tube. They must have been formed by the absorption of the light by the glass of the tube.

The most important result of the discovery that vapors and gases absorb the same light as they give out is, however, in the explanation of the lines in the solar spectrum. Let us quote from Kirchhoff's own account of his investigations in this direction : "In order to test in the most direct manner possible the frequently-asserted fact of the coincidence of the sodium lines with the lines D, I obtained a tolerably bright solar spectrum, and brought a flame colored by sodium vapor in front of the slit. I then saw the dark lines D change into bright ones. The flame of a Bunsen's lamp threw the bright sodium lines upon the solar spectrum with unexpected brilliancy. In order to find the extent to which the intensity of the solar spectrum could be increased without impairing the distinctness of the sodium lines, I allowed the full sunlight to shine through the flame, and to my astonishment I saw the dark lines D appear with an extraordinary degree of clearness.

"I then exchanged the sunlight for the Drummond's or oxy-hydrogen lime-light, which, like that of all incandescent solid or liquid bodies, gives a spectrum containing no dark lines.

"When this light was allowed to fall through a suitable flame colored by common salt, *dark* lines were seen in the spectrum in the position of the sodium lines." As far as he had gone, Kirchhoff now had a spectrum like that of the sun,