THE CHEMICAL HISTORY OF A CANDLE A COURSE OF LECTURES DELIVERED BEFORE A JUVENILE AUDIENCE AT THE ROYAL INSTITUTION BY MICHAEL FARADAY, D.C.L., F.R.S. EDITED BY WILLIAM CROOKES, F.C.S. THE CHEMICAL HISTORY OF A CANDLE LECTURE I. A CANDLE: THE FLAME--ITS SOURCES--STRUCTURE--MOBILITY--BRIGHTNESS. I purpose, in return for that honour you do us by coming so early to see what are our proceedings here, to bring before you, in the course of these lectures, the Chemical History of a Candle. I have taken this subject on a former occasion; and were it left to my own will, I should prefer to repeat it almost every year--so abundant is the interest that attaches itself to the subject, so wonderful an every part of this universe to which does not come into play, and is touched upon in these phenomena. There is no better, there is no more open door by which you can enter into the study of natural philosophy, than by considering the physical phenomena of a candle. I trust, therefore, I shall not disappoint you in choosing this for my subject rather than any one which could be better, were it even so good. And before proceeding, let me say this also--that though our subject be so great, and our intention that of treating it honestly, seriously, and philosophically, yet I mean to pass away from all those who are seniors amongst us. I claim the privilege of speaking to juveniles as a juvenile myself. I have done so on former occasions--and, I shall do again. And though I stand here with the knowledge of having the same familiar way to those whom I esteem nearest to me on this occasion. And now, my boys and girls, I must first tell you of what candles are made. Some are great curiosities. I have some bits of timber, branches of trees particularly famous for their burning. And here you see a piece of that very curious substance taken out of some of the bogs in Ireland, called candle-wood--a hard, strong, excellent wood, evidently filled for good work as a resiner as well as for many years; subject to the action of salt water. It shews you how well candles may be preserved; for though it is cracked about and broken a good deal, yet, when it is split open, it burns readily, and the tallow resumes its natural condition as soon as it is used. Mr. Field, of Lambeth, has supplied me abundantly with beautiful illustrations of the candle and its materials. I trust, there is the suet--the fat of the ox--Russian tallow candle, which is a perfect resistant of air. I have allowed no air to get to it, save round the outside of the flame, and so let air come in there, you will see how much more beautifully it burns. If I shut the air off, look how i