

the eclipses of Jupiter's satellites. Jupiter, like the earth, casts a shadow, and when his moons pass through it they are eclipsed, just as our moon is eclipsed when passing through the earth's shadow. Jupiter's shadow far surpasses in magnitude that of the earth. His moons revolve around him much more rapidly than our moon revolves around the earth, and their orbits are nearly in the plane of the planet's orbit. Consequently they all, with the exception of the fourth and most distant satellite, pass through the planet's shadow, and are eclipsed at every revolution. Roemer, a Danish astronomer, made in 1675 some curious observations in regard to the times of the occurrences of these eclipses. When Jupiter is nearest the earth the eclipses occur about sixteen minutes earlier than when he is most distant from the earth. The difference in distance between the two points is about 135,000,000 miles, the diameter of the earth's orbit, or twice her distance from the sun. It takes light, therefore, sixteen minutes to traverse the diameter of the earth's orbit, and half that time to span the distance between the sun and the earth. Light is thus shown to travel 185,000 miles in a second, and to take eight minutes—or, more exactly, 500 seconds, in coming from the sun to the earth. It follows that we do not see the sun until eight minutes after sunrise, and that we do see him eight minutes after sunset. When we look at a star we do not see the star as it now is, but the star as it was eight years ago. It takes light three years to come to us from the nearest star, and were it suddenly blotted from the sky, we should see it shining there for three years to come. There are other methods of finding the velocity of light, but the satellites of Jupiter first revealed its progressive movement.—*Youths' Companion*.

Gymnasiums for Girls.

How much less essential to perfect manhood and womanhood is physical training than mental education? How much more important is it that scientific rules and principles of health should be observed in the rearing of boys than in the upbringing of girls? These are questions practically intelligent people have come to consider with a seriousness that is making seem foolish many of the theories and superstitions that have hindered the progress of the race and given the aspect of crimes to certain sins of omission that stupid custom has sanctioned. There is profound wisdom in the reflections of a discerning writer who says: "As intelligence advances mankind will perceive as a truth of general application that which is now but a struggling conception on the part of a few who belong to the noble army of fugatics and heretics, viz: That physical inadequacy is at the root of far more of the vices and sins of today than moral delinquency and a systematic intention of doing wrong. The proposition is almost self-evident. Physical infirmities and de-

ficiencies resulting from a disregard of the commonest rules of muscular development and bodily perfection must have their reflex in the spiritual and moral character of the victim. Strong, active, physical health is rarely associated with moral perversity in the rightly educated man or woman. In a vague way this fact is recognized by parents in its masculine bearing; but a here itary prejudice against whatever may tend to make girls less delicate, less dainty than is consistent with the notion of feminine refinement, condemns woman-kind to a position that is in most ways disadvantageous to her highest and best interests. The terrifying thought that physical training will make hoidens of their ethereal daughters causes most mothers to look frowningly upon the gymnasium. They care to cultivate only those parlor graces that a narrow society has chosen to regard as the evidence of gentility, indifferent that they represent, generally, an inferior state of womanhood. Everything in the discipline of a girl is repressive, bodily and mental, for it is not to be supposed a strong, broad, full mind can find place in a cramped, compressed, stunted physical frame. Free circulation of wholesome blood, the easy unobstructed play of carefully exercised muscles, are essential to a healthy, nervous system, and to an active energetic brain. The young form yet expanding, eager to expand into health and strength, is viciously imprisoned in tight laced stays, in oppressive clothing, and instead of the vigorous physique shown by the brother starting with no greater advantages, the girl soon presents a frail, delicate body many of the functions of which are peremptorily stopped, and struggles into maturity ready to suffer the manifold ills that stubborn prejudice has made her inevitable torments. This is because a low idea of what constitutes feminine beauty has made deformity preferable to symmetry, has substituted the taper waist and narrow shoulders and flat chest for the perfect, deep, respiring torso, with its every curve and uniform development. Common sense will rectify, in time, this egregious blunder, and the classic appreciation of beauty will revive in all its nobility. Just now we are moving slowly and reluctantly in the right direction. It is true the notion of a gymnasium for girls is yet hardly formed into a rational idea, a pretty sort of calisthenics that does well for exhibition purposes being its extent. But the proper discipline under competent direction, the limbs unobstructed, and the body allowed free play, is the problem of the future. The dressing is a matter of as great importance as the system of muscular development. Dress reform is possibly keeping pace with the increasing interest in physical culture, and it is gratifying to know there are several schools in this country where girls in sensible costumes are daily exercised in the gymnasium as a part of their general education. There schools are not only successful in themselves, but

they have set examples that are being gradually adopted in all institutions for the education of girls and young women. The results are such that it will be astonishing if the ridiculous prejudice against physical training for girls has not entirely disappeared within the next twenty years, in this country at least.—*Chicago Inter-Ocean*.

The Realizing Faculty.

There is no faculty of the mind which is so prominent in its influence on the moral nature as imagination. As the reasoning powers and the judgment are cultivated they reveal to us much knowledge of right and wrong, solve many of the knotty problems of life, and disentangle some of the intricacies of duty. But it is reserved for the imagination to touch the heart and to arouse the feelings. And as the essence of the moral life is the love of the right, and the desire to pursue it, whatever can inspire or nourish these deserves our special consideration. The imagination is almost boundless in its range. Without creating anything absolutely new, it has the power of so combining and recombining, fashioning and re-fashioning the actual materials and relations of life as to form innumerable fantastic and even impossible images, which appear, dissolve, and re-appear in ever new forms. But, aided by keen perceptions, wise discriminations and a sensitive nature, it also has the power of picturing things as they are, with a fair degree of correctness. This may be called the realizing faculty. Those accustomed to one line of thought, and associating only with those who share it, can not readily understand how any one can differ from them, and are, therefore, inclined to doubt either their honesty or their intelligence. Much bitter controversy, much harsh and unjust criticism is due to the feebleness of this power. Neither party can put himself in the place of the other or see how he came to hold such beliefs, or why he should not at once abandon them. So the estimates of guilt commonly made are seldom fair and just for the same. When a man, accustomed all his life to abhor some vice or to loathe some crime, and mingling only with those who share his feelings, forms his judgment of a delinquent from his own standpoint, it must be an erroneous one. He thinks what his own guilt would be in such a case, which is a very different matter. He does not pause to remember that the man whose birth, surroundings and education have made vice and crime familiar cannot regard it as he does. He cannot conceive of the strength of his passions or the force of his temptations. So the rich and the poor fail to understand each other, the well-informed and the ignorant, the employer and the employed, the young and the old. Their lives, their modes of thought, their influences, their standards of action are all different; and, failing to realize any but their own, their judgments of each other are erroneous and uncharitable. Could they but form true pic-