In the adult there is probably, as Sibson* found, a striking relation between the degree of severity of the articular affection and the frequency as well as the intensity of the heart disease. He found that in only 25% of all his severe cases did the heart present no signs of affection. This relationship probably becomes more pronounced with the advance of age, that is, it is closer at 40 than that at 25 or 30 years of age. The exact numerical relationship between heart disease and rheumatism at the different ages is very difficult, not to say impossible, to determine, because slight attacks of endo- and pericarditis readily escape detection, even by the most acute observers. But there is no doubt that Dr. Church's results are sufficiently near the truth to illustrate the great preponderance of cardiac affections in young subjects. He found the percentages of cardiac disease in the successive decades up to 50 years of age, to be 83, 69, 51, 30, 21.† These results indicate practically that in infancy rheumatism always attacks the heart, and after infancy up to ten years, the heart escapes in very few cases, and it is to be borne in mind that at this age rheumatism is almost always mild, often latent even. The occurrence of symptoms of acute articular rheumatism in children should be viewed with suspicion, as many, if not most of such, are not rheumatic, but due to sepsis, causing inflammation of periositeum, bone medulla and similar structures. Some cases have been reported of late as rheumatism that bear strong evidences of being due to septic poisoning.‡

No adequate explanation has been offered to account for this greater proclivity to heart disease in rheumatic children. It seems to me probable that their strong tendency to anæmia has a causative relation. Cheadle says that all such children early become anæmic, and my own experience accords with his. Bramwell§ and some others, however, believe anæmia less liable to develop in children than in adults, but the instability of the nervous system in children often masks the actual anæmia existing by disturbance of the vaso-motor system. The relationship of anaemia, as a predisposing cause, is strikingly borne out by the greater frequency of rheumatism in females from 11 to 15 years of age, in whom it is said to be three times as frequent as among males of the same age* ; and females at this age are peculiarly liable to anæmia. In this manner we may account, at least partly, for the greater frequency of mitral stenosis and chorea among females.

Next to age, the occupation and general condition in life have most influence in the productions of heart disease in rheumatic cases. Perhaps these have more to do with the degree, rather than the occurence of the disease. The ill-nourished, and insufficiently clad, living in unhealthful surroundings, furnish the greatest number of victims. These conditions render such people more exposed to the causes of rheumatism and more vulnerable to its influence.

The influence of sex is worthy of note. In youth, females are more liable, because their labor and exposure are quite as great as males, and they are much more frequently anæmic. Sibson says that young females with rheumatism are nearly always attacked or threatened with endo- or pericarditis or both. In after life males are most frequently the subjects of cardiac disease, owing to their greater exposure and labor, perhaps also on account of their greater indulgence of the appetite.

Of the cardiac affections, endocarditis is much the most common, the mitral area being especially vulnerable. Endocardial inflammation generally begins early in the rheumatic attack—in the first week usually, but may occur in the second, the third, or even the fourth week. The more severe the rheumatic attack the greater the liability to the endocarditis. If the patient escapes for the first week, and, is under suitable care and medication, some believe that the heart should be secure from attack. It is the general opinion that endocarditis is proportionately much more liable to occur in second, and still more so in third atttacks of rheumatism, even although the successive attacks be less severe. There is a very probable fallacy in this view. No doubt in many cases of rheumatism there occurs inflammation of endo- or pericardium, or both, without manifesting any signs of its existence ; permanent thickening of the endocardium may, however, result, and become at the affected points more vul-

* Reynolds' system.

† St. Bartholomew's Hosp. Rep. vol. xxii, p. 273.

‡ I would commend to your notice a paper by our friend Dr. Peters, to be read in Surgical Section.

§ Diseases of the Heart.

*British Collective Investigation Record.