taining near maximal heart rates for a longer period of time.

Simply defined, the heart is a muscle and can be strengthened accordingly. Physiological changes that take place with regular aerobic (with oxygen) exercising account for the differences in performance and bring about an enlargening of the heart: the ventricular cavities will become larger and allow the heart to fill with more blood before each contraction. As the heart is used more (being a muscle) it increases the amount of muscle tissue making it stronger and more capable of emptying completely each time it contracts. Together these changes mean that the heart can now considerably increase its output without appreciably increasing its rate and will account for the lower resting pulse rate in the conditioned person.

Blood and blood vessels

The blood and its vessels are extremely important factors to consider. A conditioned person's blood is improved because the number of red blood cells increases with conditioning and there is a higher haemoglobin count in each red blood cell. Haemoglobin is the substance responsible for storing the oxygen in the red cells for transportation to the muscle tissue. The amount of blood plasma is also increased. This means that the conditioned body is more able to transport oxygen and remove wastes owing to a healthier blood formation.

For the blood to move throughout the body it must have some form of momentum which is provided by the heart pumping initially. However, this movement is restricted, logically, by the amount of healthy blood vessels through which the blood must pass. This restriction is an unavoidable fact of mechanics which the cardiovascular system is designed to take into account. Problems arise however when the resistance provided by a degenerating vascular system increases too much. The resistance increases by the constriction of the smaller branches of the arteries, the hardening of the arteries and the depositing of fat along the artery walls. The tell tale sign of all this of course is high blood pressure . . . a greater pressure due to a greater resistance.

Physical conditioning leads to the lowering of blood pressure simply by reversing the degenerating process of the blood vessels. The resistance to the blood is lessened by increasing the number, size and elasticity of the blood vessels and by decreasing the build up of fats along the walls of the vessels. The latter could be likened to a water hose that has been constantly running at a trickle for years and has a build up of mud on the inner walls of the hose. When the hose is used more often and at greater pressures, the mud will slowly be forced away from the walls allowing for greater volumes of water to flow.

It should be conclusive then that the conditioned person's blood vessels are more efficient because there is a regular demand placed on them to circulate at extended rates. The blood vessels supplying the heart become more elastic and larger and so are less susceptible to blockage. Fatalities caused by heart attack are reduced owing to the increased number of blood vessels mitigating to some extent the effects of the blockage.

"FREEDOM" FOR JOHN JOHNSON

by Dani Rogers

Many an interesting story to tell his children has Assistant Commissioner John Johnson who recently returned from a six month course at Bramshill Police College, England.

Possibly the most exciting story is that of his presentation to the Royal Family and his admission to the Freedom of the City of London.

John and his wife, Pat, were presented to the Queen and Prince Phillip at a Garden Party at Buckingham Palace.

Mr Johnson, in the uniform of Assistant Commissioner of the Australian Federal Police, was presented along with three other distinguished Australians by Sir James Plimsoll, High Commissioner for Australia, in front of a large crowd of diplomats and other invited guests attending the Royal Garden Party.

A few weeks later, Mr Johnson was given the Freedom of the City of London at a ceremony conducted by the Chamberlain in his Court at the Guildhall in the City.

The ceremony was attended by the Right Honourable The Lord Mayor Sir Peter Gadsden, G.B.E., M.A., B.Sc., F.Eng., the Lady Mayoress, Senior officers of the City of London Police Force and other senior officers of the City of London Corporation.

Assistant Commissioner (Personnel), Mr John Johnson (centre) receives the Freedom of the City of London. Mr Johnson has spent six months in the United Kingdom attending a senior command course at Bramshill College.

"It was most impressive", Mr Johnson said. "The admission was bestowed with due ceremony with all the officials dressed in their ancient robes of office."

He added: "The Freedom of the City of London dates back to medieval England and the earliest evidence of its existence is a register of freemen and apprentices in 1275."

Recent recipients of the Freedom include the Duke of Gloucester, Edward Heath, Lord Feather, Morecambe and Wise, and Lord Goodman.

Among other living recipients of the Honorary Freedom are the Queen and the Duke of Edinburgh, the Prince of Wales, Princess Anne, Harold Macmillan, Pierre Trudeau, and Sir Harold Wilson.

The roll of past Honorary Freeman is a very distinguised one with people like Nelson, Wellington, Disraeli, Florence Nightingale, Baden-Powell, Churchill, Nehru and Montgomery of Alamein to name but a few.

"My admission to the Freedom of the City was not only an honour for me and my family, but also an honour for the Australian Federal Police," Mr Johnson said.

After leaving England, Mr Johnson visited Police officials in Toronto and Ottowa before moving on to Washington and the F.B.I. Academy at Quantico where he spent some time. He is now back at his desk in Canberra.